

# CENTRAL UNIVERSITY OF RAJASTHAN



## Minutes

of

### The Eighteenth Meeting of the Academic Council

Meeting No.	:	Eighteenth (18 <sup>th</sup> )
Venue	:	Meeting Room First Floor of Administrative Building Central University of Rajasthan, Bandarsindri, NH-8, Tehsil – Kishangarh-305817 Dist. -Ajmer (Rajasthan)
Date	:	Thursday, 1 <sup>st</sup> November, 2018
Time	:	02:30 P.M.

**Minutes of the 18<sup>th</sup> Meeting of the Academic Council held on Thursday, 1st November, 2018 at 02:30 PM in the Meeting Room, first floor of Administrative Building, Central University of Rajasthan, Bandarsindri, NH-8, Tehsil-Kishangarh, District-Ajmer (Rajasthan)**

The following members were present:

1.	Prof. Arun K Pujari	:	Chairman
2.	Prof. S. N. Ambedkar	:	Member
3.	Prof. M. D. Shrimali	:	Member
4.	Prof. D. C. Sharma	:	Member
5.	Prof. Pradeep Verma	:	Member
6.	Prof. Vipin Kumar	:	Member
7.	Dr. N. Lakshmi Aiyar	:	Member
8.	Ar. Ritu B Rai	:	Member
9.	Dr. Praveen Sahu	:	Member
10.	Dr. Laxmi Kant Sharma	:	Member
11.	Dr. Ajit Kumar Patra	:	Member
12.	Prof. R. T. Pardasani	:	Member
13.	Prof. Supriya Agarwal	:	Member
14.	Prof. M. Krishnan	:	Member
15.	Prof. Someshwar Das	:	Member
16.	Prof. J. K. Prajapat	:	Member
17.	Prof. M. R. P. Singh	:	Member
18.	Dr. S. Kandasamy	:	Member
19.	Dr. Pankaj Goyal	:	Member
20.	Dr. Chandi Charan Mandal	:	Member
21.	Dr. Anjali Sharma	:	Member
22.	Dr. Subhasis Bhadra	:	Member
23.	Dr. Manas Kumar Patra	:	Member
24.	Dr. Chandra Shekhar Gahan	:	Member
25.	Prof. A. K. Gupta	:	Member
26.	Prof. Neeraj Gupta	:	Member
27.	Dr. Pawan K. Dadheech	:	Member
28.	Dr. Jitendra Kumar	:	Member
29.	Dr. Jagdish Ulhas Jadhav	:	Member
30.	Dr. Bhumika Sharma	:	Member
31.	Dr. Tulsi Giri Goswami	:	Member
32.	Dr. Sanjay Kumar	:	Member
33.	Prof. R. Prasad	:	Member
34.	Prof. K.C. Sharma	:	Member
35.	Prof. Chandrakala Padia	:	Member
36.	Prof. Aparna Rayaprol	:	Member
37.	Dr. Utpal Kumar Debnath	:	Member
38.	Dr. Vijaykumar M.	:	Member
39.	Ms. Hemlata Manglani	:	Member
40.	Dr. Nagaraju Aitha	:	Member
41.	Dr. Deepesh Bhati	:	Member
42.	Dr. Pranta Pratik Patnaik	:	Member
43.	Dr. Gyana Ranjan Panda	:	Member
44.	Sh. K.V.S. Kameswara Rao	:	Ex-officio Secretary

Special Invitee:

1. Dr. Devesh Sharma

Leave of absence was granted to:

1. Prof. Maithili Sharan : Member

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	18-7.4	Approval for Course Code for Pre-Ph.D. Course work and Approval for Evaluation /Assessment process for ED-501, Internship (8 Credits) and ED-502, Internship and Teaching Practice (12 Credits), V Semester of Integrated M.Sc. B.Ed. Programme (2018 onwards) in School of Education.
	18-7.5	Approval of two Courses: Algebra-I (04 Credits), Algebra-II (04 Credits) in Department of Mathematics for Pre-Ph.D. Coursework.

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## DETAILED MINUTES

Item No.	Particulars		
18-1.0	<p><b>Welcome by Chairman, Academic Council.</b></p> <p>Chairman welcomed all the members present including the special invitees. New members were also introduced later. The Chairman apprised the members about the VI Rajasthan Science Congress; an annual event organized successfully by Central University of Rajasthan and congratulated the faculty involved in the task. Prof. Ashutosh Sharma, Secretary DST, Govt. of India inaugurated the Rajasthan Science Congress where the scientific community of Rajasthan as well as of other states was present. To improve the employability enhancement of the graduating students of CURaj, MoU was signed with HireMee - a free online assessment and placement assistance platform. The Chairman also apprised that the Teaching Learning Centre at CURaj organized a workshop on "UGC quality mandate in HEIs." The members were also informed about the Dignitaries who visited the University, International visits by faculty, Awards / Prizes won by faculty, Cultural activities, Projects and Consultancy grants, Awards / Prizes won by students, Other academic / co-curricular / extra-curricular achievement of the students. They were also informed that many of the Research Scholars of the University are also getting an opportunity to visit abroad. In terms of number of publications, CURaj scored the second highest and he expressed that by continuing the hard work, the next level is to be attained.</p>		
18-2.0	18-2.1	Confirmation of the Minutes of the 17 <sup>th</sup> Meeting of the Academic Council held on Friday, 11th May, 2018 at 3:00 PM. <b>(Annexure-A) [Page No. : 14 to 37]</b>	
		<b>Resolution: Confirmed</b>	
	18-2.2	<b>Action Taken Reports</b>	
		<i>Item No.</i>	<i>Particulars</i>
		<b>17-3.0</b>	<b>Semester Registration Process</b>
		17-3.1	<p><i>Payment of Fee by the Students and Ph.D. Scholars for Semester Registration</i></p> <p><i>As per the approval of the AC, it has been implemented.</i></p>
		17-3.2	<p><i>Semester Registration Card.</i></p> <p><i>As per the approval of the AC, the procedure of Semester Registration for continuation in every semester has been implemented.</i></p>
		<b>17-4.0</b>	<b>Admission -2018</b>
		17-4.1	<p><i>The list of courses, the minimum eligibility and Intake of the courses for Admission 2018</i></p> <p><i>The AC ratified the list of courses, the minimum eligibility and intake of the courses for Admission 2018.</i></p>
		17-4.2	<p><i>Increase in the number of Seats for admission in M.Sc (Atmospheric Science)</i></p> <p><i>As per the approval of AC, the students were admitted in the Department of Atmospheric Science as per the increase in the number of seats.</i></p>
		17-4.3	<p><i>Increase in the number of Seats for admission in M.Sc. Computer Science (Big Data Analytics)</i></p> <p><i>As per the approval of AC, the students were admitted in the Department of Computer Science (Big Data Analytics) as per the increase in the number of seats.</i></p>
		17-4.4	<p><i>To Accept students having High School Diploma issued by Northwest Accreditation Commission (NWAC), USA for courses run by the University.</i></p> <p><i>As approved by AC, the NWAC was informed accordingly.</i></p>
		17-4.5	<p><i>Relaxation to GPAT qualified candidates for admission to Ph.D programme in Pharmacy</i></p> <p><i>As approved by AC, relaxation of 5% to GPAT qualified candidates in CUCET qualifying marks has been implemented.</i></p>
		17-4.6	<p><i>CUCET-2018</i></p> <p><i>CUCET-2018 was successfully conducted and the new courses as approved have been implemented.</i></p>

Item No.	Particulars		
		<b>17-5.0</b>	<b>Evaluation &amp; Examination</b>
		17-5.1	<p><i>Promotion from odd semester to even semester for the students.</i></p> <p><i>The AC ratified the matter of Promotion from odd semester to even semester for the students of batch 2017-18 based on the request by the students and the same has been implemented.</i></p>
		17-5.2	<p><i>Re-registration of back papers</i></p> <p><i>The AC ratified the matter and resolved that all students will be allowed to clear the back papers at the earliest opportunity whenever available with the Department. It has been implemented.</i></p>
		17-5.3	<p><i>Explicit list of names of professional programmes</i></p> <p><i>As resolved in AC, professional courses have been identified and accordingly the passing marks have been decided and implemented.</i></p>
		17-5.4	<p><i>Condonation of Attendance</i></p> <p><i>In very exceptional cases, as approved, the condonation of attendance of the students has been implemented.</i></p>
		<b>17-6.0</b>	<b>New Schools</b>
		17-6.1	<p><i>Establishment of School of Sports Sciences</i></p> <p><i>The School has been established with the approved positions and the fee structure.</i></p>
		<b>17-7.0</b>	<b>New Departments</b>
		17-7.1	<p><i>Establishment of Department of Society – Technology Interface</i></p> <p><i>The Department has been established with the approved positions and the fee structure.</i></p>
		17-7.2	<p><i>Establishment of Department of Data Science and Analytics</i></p> <p><i>The Department has been established with the approved positions and the fee structure.</i></p>
		<b>17-8.0</b>	<b>New programme of studies, its Course Structure and syllabi</b>
		17-8.1	<p><i>To Start 2 Yr M.Ed. and B.Ed. programme in School of Education</i></p> <p><i>The programme is to be started and the implementation process is on. The coordinator has been identified.</i></p>
		17-8.2	<p><i>To start B.Tech. in Bio-engineering under School of Engineering &amp; Technology.</i></p> <p><i>As approved by AC to start the programme from the session 2019-20, the process is on.</i></p>
		<b>17-9.0</b>	<b>Existing programme of studies, Course Structure (New Courses)</b>
		17-9.1	<p><i>Inclusion of new elective course “Cloud Computing” to the M. Tech CSE curriculum from the semester Jan-May, 2018.</i></p> <p><i>New Elective course “Cloud Computing” to the M. Tech CSE curriculum is included from the semester Jan-May, 2018.</i></p>
		17-9.2	<p><i>Elective Courses for M.Sc. Chemistry Programmes</i></p> <p><i>As approved by AC, the title of the elective courses has been modified with respect to the credits and efforts are made to provide more flexibility for the students to attend elective courses.</i></p>
		17-9.3	<p><i>Elective Courses for M.Sc. Physics Programme</i></p> <p><i>The elective courses as recommended by the School Board and as approved by AC have been implemented.</i></p>

Item No.	Particulars		
	17-9.4	<i>Courses for Winter Semester 2018-MOOCs and Electives</i>	<i>Academic Council approved the Courses of Winter Semester 2018-MOOCs and Electives. It has been informed by the SWAYAM Cell Coordinator Dr. Umesh Gupta that the list of new courses is generally uploaded to the UGC MOOCs website in the month of May/June (for the semester starting from the July) and in the month of November / December (for the semester starting from January or winter session). The SWAYAM cell will circulate details and web-links of all the courses starting from January 2019 semester case once the UGC-MOOCs/SWAYAM website uploads the same in the month of November 2018, so that the departmental faculty/student may adopt the interested courses/students in their departments for winter season.</i>
	17-9.5	<i>M.A. Hindi (2 Yr)</i>	<i>Revised course structure has been approved and implemented.</i>
	17-9.6	<i>M.A. English (2 Yr)</i>	<i>Revised course structure has been approved and implemented.</i>
	17-9.7	<i>Shifting of courses of three Year Integrated M.Sc. B.Ed from one Semester to another</i>	<i>Revised syllabus has been approved and implemented.</i>
	17-9.8	<i>M. Arch. (Sustainable Architecture) (2 Yr)</i>	<i>Revised course curriculum and programme structure has been approved and implemented.</i>
	<b>17-10.0 Existing programme of studies, revision of syllabi</b>		
	17-10.1	<i>Minor Change in course title/credit hours in the scheme of M.S(2 Yr) and Integrated M.Sc (5 Yr) Chemistry Programmes</i>	<i>Revised syllabus has been approved and implemented.</i>
	17-10.2	<i>M.Sc Environmental Science (2 Yr)</i>	<i>Revised syllabus has been approved and implemented.</i>
	17-10.3	<i>M.Sc Atmospheric Science (2 Yr)</i>	<i>Revised syllabus has been approved and implemented.</i>
	17-10.4	<i>Pb.D Environmental Science</i>	<i>Revised syllabus has been approved and implemented.</i>
	17-10.5	<i>M.Sc Biotechnology (2 Yr)</i>	<i>Revised syllabus has been approved and implemented.</i>
	17-10.6	<i>M.Sc Mathematics (2Yr) and Int M.Sc. Mathematics (5 Yr)</i>	<i>Revised syllabus has been approved and implemented.</i>
	17-10.7	<i>Int M.Sc B.Ed Mathematics (3 Yr)</i>	<i>Revised syllabus has been approved and implemented.</i>
	17-10.8	<i>Pb.D Mathematics</i>	<i>Revised syllabus has been approved and implemented.</i>
	17-10.9	<i>M.Sc. Statistics (2 Yr) and Int. M.Sc. Statistics (5 Yr)</i>	<i>The syllabus was approved but there is a requirement of slight deviation which is put up as a separate agenda item.</i>

Item No.	Particulars		
	17-10.10	Ph.D Statistics	Revised syllabus has been approved and implemented.
	17-10.11	M.Tech Computer Science- Cyber Physical System (2 Yr)	Revised syllabus has been approved and implemented.
	17-10.12	M.Sc. Computer Science (2 Yr)	Revised syllabus has been approved and implemented.
	17-10.13	M.Sc. Computer Science – Big Data Analytics	Revised syllabus has been approved and implemented.
	17-10.14	Ph.D. Computer Science	Revised syllabus has been approved and implemented.
	17-10.15	M.Sc. Physics(2 Yr)	Revised syllabus has been approved and implemented.
	17-10.16	M.Com (2 Yr)	Revised syllabus has been approved and implemented.
	<b>17-11.0 Policy Matters</b>		
	17-11.1	Proposal for considering the equivalence of the training programs, organized by TLC@CURaj, (under PMMMMNMTT) to orientation and refresher courses of UGC-HRDC as well as for promotion under CAS and for API score.	AC approved and the same has been implemented.
	<b>17-12.0 Other Matters</b>		
	17-12.1	Admission-2018	The admission to following courses: 1. MSc (Sports Biochemistry) with 10 seats 2. MSc (Exercise/Sports Physiology) with 10 seats 3. MSc (Sports Nutrition) with 10 seats 4. MA (Sport Psychology) with 10 seats. 5. B. Voc. with 50 Seats 6. PG diploma in Cultural Informatics with 10 seats as approved has been implemented.
	17-12.2	Fee Structure for various existing programmes/new programmes being run in the University for Academic Session 2018-19	The same has been implemented as per the approval.
	17-12.3	Alumni contribution to be charged from each student from Academic Year 2018-19	The Alumni contribution of Rs 1000 to be charged from each student from Academic Year 2018-19 as approved has been implemented.
	17-12.4	Approval for Dr. Sanjeev Vidhyarthi as Joint supervisor for Ms. Swagatika Mishra, PhD scholar, Dept. of Architecture.	The necessary order has been issued as per the approval.
	<b>17-13.0 Any other item(s) with permission of the Chair.</b>		
	17-13.1	Ph.D. Course work for Ph.D. in Dept. of Education	As per approval, the same will be included in CUCET 2019.



Item No.	Particulars			
		17-13.2	<i>Adoption of MOOCs through SWAYAM Platform at Central University of Rajasthan.</i>	<i>The TV channel link and Radio jingles for the popularization of MOOCs among faculty and students has already been uploaded to the university website. In the current semester (July-December 2018) 133 students (total from all the departments) have been enrolled for credit courses and the number of SWAYAM courses approved by the institute, for credit transfer is 10.</i>
		17-13.3	<i>To start undergraduate programmes and Integrated Dual Degree in Engineering from Academic Session 2018.</i>	<i>As resolved, to start undergraduate programmes and Integrated Dual Degree in Engineering from Academic Session 2019-20, the matter is under process.</i>
		17-13.4	<i>Approval for Dr. Srinivasa Gopalan Sampathkumar as Co-supervisor for Mr. Shubham Parashar, PhD Scholar, Dept. of Pharmacy.</i>	<i>The necessary order has been issued as per the approval.</i>
		17-13.5	<i>Course Structure for Int. M.Sc. - 5 Yr. Programme.</i>	<i>As approved by AC, the revised course structure as recommended by the Committee for first two semesters has been implemented.</i>
		17-13.6	<i>Revised syllabi/new course syllabi offered by the School of Social Sciences.</i>	<i>The approved syllabi as approved have been implemented.</i>
		17-13.7	<i>Appropriate Grade Conversion between IIT-Bangalore and Central University of Rajasthan</i>	<i>As approved by AC, CoE was authorized for appropriate conversion of the Grade received from IIT-Bangalore in sync with the Grading System Central University of Rajasthan. It has been implemented.</i>
		17-13.8	<i>Registration of Research Scholar for Academic Session 2016-17</i>	<i>It has been implemented.</i>
		17-13.9	<i>To start a course of Studies on India's Intellectual Tradition</i>	<i>As per the approval, the designing of course structure and syllabus is under process. Necessary action is being taken by Prof. Neeraj Gupta.</i>
	<b>Resolution: Noted</b>			
18-3.0	<b>Convocation</b>			
	18-3.1	<p>Proceedings of the 5th Convocation scheduled on Friday, 2<sup>nd</sup> November, 2018. <b>(Annexure-B) [Page No. : 38 to 66]</b></p> <p><b>Resolution: The Academic Council approved the Proceedings of the Fifth Convocation scheduled on 2nd November, 2018 in the University.</b></p>		
	18-3.2	<p>List of Degree Awardees for Fifth Convocation. <b>(Annexure-C) [Page No. : 67 to 116]</b></p> <p><b>Resolution: The Academic Council approved the list of Degree Awardees for the Fifth Convocation of the University.</b></p>		
	18-3.3	<p>a) List of University Gold Medal Awardees and Certificate of Merit. <b>(Annexure-C) [Page No. : 117 to 119]</b></p> <p>b) List of Endowment Medal Awardees <b>(Annexure-C) [Page No. : 120 to 127]</b></p> <p><b>Resolution: The Academic Council approved awarding the Gold Medal and Certificate of Merit to the toppers of all the programmes during the Fifth Convocation of the University.</b></p>		

Item No.	Particulars	
18-4.0	Evaluation & Examination	
	18-4.1	<p><b>Amendment in Clause 22 of Ordinance 3.</b> 59th Deans' Committee recommendation for amendment in Clause 22 of Ordinance 3 is as follows:</p> <p><b>22. Ranking of Students and Award of Gold Medal</b></p> <p><b>22.1.</b> A merit list of the student for every programme of study shall be prepared on the basis of the FGPA calculated for the award of the certificate/diploma/degree.</p> <p><b>22.2.</b> The first rank holder as per the merit list (22.1) in each Programme of Study shall be awarded the Gold Medal and Certificate of Merit, provided that such first rank holder</p> <ol style="list-style-type: none"> <li>a. should have been first rank holder with minimum 7 CGPA/FGPA in aggregate of all courses; and</li> <li>b. should have passed all the Semesters of a Programme of Study without any break; and</li> <li>c. should have passed all the Courses in a Programme of Study without any back log meaning thereby that he/she has never been awarded "F" or "Dt" grade in any course; and</li> <li>d. should have exhibited good conduct and character during the period of the Programme of Study and</li> <li>e. should not have faced any censure / punishment for any indiscipline during the programme of Study.</li> </ol> <p><b>22.3.</b> In the event, if the first rank holder in the merit list does not qualify as per Clause 22.2, no Gold Medal shall be awarded.</p> <p><b>22.4.</b> In case of tie (having the same CGPA/FGPA) between two or among more students</p> <ol style="list-style-type: none"> <li>a. the student with maximum number of times he/she obtained highest SGPA will be ranked in higher position in the merit list.</li> <li>b. in case of not resolved by (a), the rank will be decided on the basis of marks obtained.</li> </ol> <p>Relevant text regarding Clause 22 of Ordinance 3 is placed as <b>Annexure-D [Page No. : 128]</b>.</p> <p>The matter was placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the recommendation of the Deans' Committee regarding amendment in Clause 22 of Ordinance 3.</b></p>
	18-4.2	<p><b>Amendment in Ordinance 9 under "SUBMISSION OF THESIS."</b></p> <p>While submitting the copies of Ph.D. thesis, it is felt that the submission of copies of Ph.D. thesis may be made on hard bound copies in place of spiral bound copies to enable the external examiner to go through the thesis in more presentable and intact manner to reduce the possibility of pages getting teared. Looking into that, it is proposed that a Scholar shall submit hard bound Ph.D. copies instead of spiral bound copies to the office of Dean (Research).</p> <p>Relevant text regarding Ordinance 9 under "SUBMISSION OF THESIS" is placed as <b>Annexure-E [Page No. : 129]</b>.</p> <p>The matter was placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the proposal regarding amendment in Ordinance 9 under "SUBMISSION OF THESIS and recommended to use the word 'stitched bound' instead of ' hard bound'.</b></p>
	18-4.3	<p><b>To consider incorporation of different aspects of the Massive Online Open Courses (MOOCs) in the Semester Grade Sheet.</b></p> <p>In compliance to the MHRD directives and as per resolution of Academic Council Meeting, the MOOC courses have been introduced from the current Semester of the University curriculum. MOOC courses are delivered through different MOOC Provider like NPTEL, SWAYAM, NMEICT etc. with different nomenclature of MOOC courses, different credits, different grades and being conducted by different National Institutions.</p> <p>Therefore, while incorporating the MOOC courses with its different variables, it is felt that</p>

Item No.	Particulars																	
	<p>there should be consensus in the name of the course, credit, grade, name of MOOC Provider and name of offering Educational Institutions to be mentioned in the Semester Grade Sheet as follows: (Sample placed as <b>Annexure-F</b>) [<b>Page No. : 130</b>].</p> <table border="1"> <thead> <tr> <th>S. No.</th> <th>Course Code</th> <th>Course Title</th> <th>Credit</th> <th>Grade</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>7.</td> <td>DSA(M*)-1</td> <td>Landscape Architecture and Site Planning Basic Fundamentals</td> <td>2</td> <td>A</td> <td>NPTEL IIT Kharagpur</td> </tr> </tbody> </table> <p>The matter was placed before the 59<sup>th</sup> Deans' Committee for consideration. The Deans' Committee discussed and resolved that the course code, course title, credits, shall be mentioned as approved by the School Board. The grade as earned by the student shall be mentioned. The name of the Institute shall be mentioned in the column of Remarks of the Grade Sheet.</p> <p>The matter was placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council deliberated on the matter and approved the proposal with a suggestion that the unique course code must be given by the School Board while approving the MOOC courses. Instead of complicating the course code with parenthesis, it was suggested that in the remarks column of the grade sheet it may be recorded 'MOOC'.</b></p>						S. No.	Course Code	Course Title	Credit	Grade	Remarks	7.	DSA(M*)-1	Landscape Architecture and Site Planning Basic Fundamentals	2	A	NPTEL IIT Kharagpur
S. No.	Course Code	Course Title	Credit	Grade	Remarks													
7.	DSA(M*)-1	Landscape Architecture and Site Planning Basic Fundamentals	2	A	NPTEL IIT Kharagpur													
18-4.4	<p><b>Establishment of Soft Skills Development Cell in the University.</b></p> <p>It is proposed to start a Soft Skills Development Unit in the University that can, to begin with, start communication skill course for the integrated programmes. For this, it is proposed to appoint Communication Skills Trainer in the University. The courses curriculum could be developed with the help of internal Faculty of the University.</p> <p>Similarly, a bridge course on Mathematics is felt as a requirement for students from non-mathematics background. The course curriculum could be developed by the Department of Mathematics and modalities for administering this course can be worked out accordingly.</p> <p>The matter was placed before the 59<sup>th</sup> Deans' Committee for consideration. The Deans' Committee deliberated on the matter and resolved that keeping in view the faculty positions available in the Department of Yoga, Education and Integrated Studies, one position each of Assistant professor available in Department of Education and Integrated Studies at present may be utilized to start the Soft Skills Development Cell.</p> <p>The matter was placed before the Academic Council for consideration.</p> <p><b>Resolution: The Academic Council approved the proposal to start the 'Soft Skills Development Cell'. Initially, the two courses as approved in the Deans committee Meeting may be started. Later additional courses may be proposed after assessing the need of the students and availability of teaching resources. It was recommended to report the progress in the next Academic Council meeting.</b></p>																	
18-5.0	<b>Course Structure and Syllabi</b>																	
18-5.1	<p><b>Approval of syllabus for Elective Course (SSS 320): Governance and Social Accountability jointly instructed by the faculty of School of Social Sciences and the Public Affairs Centre, Bangalore.</b></p> <p>Central University of Rajasthan has signed an MoU with the Public Affairs Centre, Bangalore. Under the MoU, CURaj has agreed to introduce one Elective Course (SSS 320): Governance and Social Accountability for the students of the School of Social Sciences. The syllabus has been approved by the School Board of School of Social Sciences.</p> <p>Detailed syllabus is placed at <b>Annexure-G [Page No. : 131 to 134]</b></p> <p>The matter was placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the proposed syllabus for Elective Course (SSS 320): Governance and Social Accountability jointly instructed by the faculty of School of Social Sciences and the Public Affairs Centre, Bangalore.</b></p>																	

Item No.	Particulars	
18-5.2	<p><b>Approval of the course structure and detailed syllabus of four M.Sc. Programmes in the School of Sports Science.</b></p> <p>School of Sports Science has proposed the course structure and detailed syllabus of four M.Sc. Programmes namely:</p> <ol style="list-style-type: none"> <li>1. M.Sc. Sports Psychology</li> <li>2. M.Sc. Sports Biochemistry</li> <li>3. M.Sc. Sports Nutrition</li> <li>4. M.A./M.Sc. Sports Physiology</li> </ol> <p>Course structure and detailed syllabus will be placed on table as <b>Annexure-H [Page No. : 135 to 195]</b>.</p> <p>The matter was placed before the Academic Council for consideration but the reservation made by one of the expert members of the School Board will be considered by Vice Chancellor in due course of time.</p> <p><b>Resolution: Academic Council approved the proposed syllabus and authorized the Vice Chancellor to sort out the reservation made by one of the expert members of the School Board in due course of time.</b></p>	
18-5.3	<p><b>Implementation of the new syllabus of Integrated M.Sc. Statistics (VII – X Semester) for existing VII Semester students.</b></p> <p>The department of Statistics requested to implement new integrated M. Sc. syllabus (approved in 17th Academic council) for the existing Integrated M.Sc. batch (2015) and upcoming Integrated M.Sc batches (2016 and 2017).</p> <p>The exact deviation for old to new in the approved Integrated M.Sc syllabus are as follows:</p> <ol style="list-style-type: none"> <li>1. VII Semester: Students are learning a course on "MST 105: R: Statistical Programming Language", which is a repetition, as the course is taught in course "MSTA 106: Practical". Hence the department feels that there is no need of this course.</li> <li>2. VIII Semester: In old syllabus, Design of Experiment-II is offered as an elective, whereas in the new syllabus it made compulsory. Further, elective-II in old syllabus is offered from other department, keeping actuarial science as an elective in view. However, in the new syllabus this has been removed.</li> <li>3. IX Semester: MSTA 301: Decision Theory and Non parametric is offered as an elective in the new syllabus, whereas MST 303: Multivariate Analysis is offered in IV Semester as compulsory syllabus in new syllabus. We revise the list of electives offered in the IX semester.</li> <li>4. X Semester: MSTA 401 National Development Statistics is offered as an elective in the IX semester and instead of two electives in the old syllabus, we offer only one elective in last Semester.</li> </ol> <p>Old and new scheme for <b>(VII – X Semester)</b> is placed at <b>Annexure-I [Page No. : 196 to 198]</b></p> <p>Placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the proposed changes and implementation of the new syllabus of Integrated M.Sc. Statistics (VII – X Semester) for existing VII Semester students.</b></p>	
18-6.0	<b>Other Matters</b>	
18-6.1	<p><b>Academic Council member to be co-opted in place of Prof. Ramakrishna Ramaswamy, under Statute 13(1)(viii).</b></p> <p>Prof. Ramakrishna Ramaswamy has expressed his inability to continue as Member of the Academic Council due to his prior commitments. A new member is to be co-opted preferably from an academic area which is not represented as of now under Statute 13(1)(viii) which says "Six persons not in the service of the university co-opted by the Academic Council for their special knowledge in education progress and development."</p> <p>Placed before the Academic Council for consideration.</p>	

Item No.	Particulars	
		<p><b>Resolution: Academic Council deliberated the matter and recommended that the suggested names preferably from an academic area which is not represented may be sent to the Vice Chancellor which may be circulated to all members and after the consent, the name may be finalized.</b></p>
	18-6.2	<p><b>Adoption of UGC Regulations on minimum qualifications for appointment of teachers and other Academic staff for the maintenance of standards in Higher Education, 2018.</b></p> <p>The UGC has notified UGC Regulations on minimum qualifications for appointment of teachers and other academic staff in universities and colleges and measures for the maintenance of standards in Higher Education, 2018 in supersession of the “UGC Regulations on Minimum qualifications for Appointment of Teachers and other Academic Staff in Universities and Colleges and Measures for the Maintenance of Standards in Higher Education 2010” (Regulation No.F.3-1/2009 dated 30th June, 2010).</p> <p>Placed before the Academic Council for adoption and subsequent implementation for University Employees (<b>Annexure-J</b>) [Page No. : 199 to 253]</p> <p><b>Resolution: Academic Council approved the adoption of UGC Regulations and its and subsequent implementation.</b></p>
	18-6.3	<p><b>Constitution of Students’ Council.</b></p> <p>The list of the elected and nominated students for the Students’ Council for the year 2018-19 is placed herewith as <b>Annexure-K</b> [Page No. : 254 to 255]</p> <p>Constitution of Students’ Council is hereby reported to Academic Council.</p> <p><b>Resolution: Academic Council ratified and approved the Constitution of Students’ Council.</b></p>
18-7.0	<b>Any other item(s) with permission of the Chair.</b>	
	18-7.1	<p><b>To consider Ph.D. admission during December 2018 for unfilled approved seats of Academic Session 2018-19.</b></p> <p>It is proposed that the unfilled approved seats of Ph.D. admission of Academic Session 2018-19 may be filled during December 2018. Since, it will not be possible to conduct the written test; the Ph.D. admission during December 2018 may be restricted to the candidates exempted from written test as per the UGC guidelines placed as <b>Annexure-L</b> [Page No. : 256 to 258].</p> <p>Interviews by the Departments may be conducted from 10th to 17th December 2018.</p> <p>Result Declaration to be done on 19th December 2018.</p> <p>Admission Process to be started from 19th December 2018 to 1st January 2019.</p> <p>Last date for admission may be 1st January 2019.</p> <p>Placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the proposal to consider Ph.D. admission during December 2018 for unfilled approved seats of Academic Session 2018-19.</b></p>
	18-7.2	<p><b>Minor modification in the course structure of II Semester of Integrated M.Sc. (5 year) programme.</b></p> <p>The revised course structure for the Integrated M.Sc. (5 Years) programme is adopted from the session July 2018. In column no. 8 of second semester, there are two courses (English-02 credit and ICT-01 credit) which make total credits equal to 19 in place of 18. Course curriculum review committee of Integrated M.Sc. Programme reviewed the matter and recommended that students may opt any one course between English or ICT with 2 credits. The committee recommendation for minor modification in the column 8 of II Semester is placed before the Academic Council as <b>Annexure-M</b> [Page No. : 259 to 260].</p> <p>Placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the minor modification in the course structure of II Semester of Integrated M.Sc. (5 year) programme as proposed.</b></p>

Item No.	Particulars	
18-7.3		<p><b>Approval of the course structure of III and IV Semester Integrated M.Sc. (5 year) programme.</b></p> <p>The revised course structure for the Integrated M.Sc. (5 Years) programme is adopted from the session July 2018. In the 17th academic council meeting, course structure of first two semesters (I &amp; II) was approved. The course structure of III and IV Semester Integrated M.Sc. (5 year) programme is placed before the Academic Council as <b>Annexure-N [Page No. : 261 to 262]</b>.</p> <p>Placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council resolved that the Vice Chancellor is authorized to approve the syllabus and other aspects on behalf of the Academic Council.</b></p>
18-7.4		<p><b>Approval for Course Code for Pre-Ph.D. Course work and Approval for Evaluation /Assessment process for ED-501, Internship (8 Credits) and ED-502, Internship and Teaching Practice (12 Credits), V Semester of Integrated M.Sc. B.Ed. Programme (2018 onwards) in School of Education.</b></p> <p>Detailed syllabus is placed at <b>Annexure-O [Page No. : 263 to 270]</b></p> <p><b>Resolution: Academic Council resolved that the Vice Chancellor is authorized to approve the syllabus and other aspects on behalf of the Academic Council.</b></p>
18-7.5		<p><b>Approval of two courses: Algebra-I (04 Credits), Algebra-II (04 Credits) in Department of Mathematics for Pre-Ph.D. Coursework.</b></p> <p>Detailed syllabus is placed at <b>Annexure-P [Page No. : 271 to 272]</b></p> <p><b>Resolution: Academic Council resolved that the Vice Chancellor is authorized to approve the syllabus and other aspects on behalf of the Academic Council.</b></p>

Meeting ended with thanks to the Chair

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# CENTRAL UNIVERSITY OF RAJASTHAN



## Minutes

of

### The Seventeenth Meeting of the Academic Council

Meeting No.	:	Seventeenth (17 <sup>th</sup> )
Venue	:	Meeting Room First Floor of Administrative Building Central University of Rajasthan, Bandarsindri, NH-8, Tehsil – Kishangarh-305817 Dist. -Ajmer (Rajasthan)
Date	:	Friday, 11 <sup>th</sup> May, 2018
Time	:	03:00 P.M.

**Minutes of the 17<sup>th</sup> Meeting of the Academic Council held on 11<sup>th</sup> May, 2018 at 03:00 PM in the Meeting Room first floor of Administrative Building, Central University of Rajasthan, Bandarsindri, NH-8, Tehsil Kishangarh, District – Ajmer, (Rajasthan)**

The following members were present:

1. Prof. Arun K Pujari	:	Chairman
2. Prof. K. C. Sharma	:	Member
3. Prof. ChandrakalaPadia	:	Member
4. Prof. A. K. Gupta	:	Member
5. Prof. Neeraj Gupta	:	Member
6. Prof. Supriya Agarwal	:	Member
7. Prof. Pradeep Verma, Dean	:	Member
8. Prof. S.N. Ambedkar, Dean	:	Member
9. Prof. Manish Shrimali, Dean	:	Member
10. Prof. D. C. Sharma, Dean	:	Member
11. Prof. M. R. P. Singh, Dean	:	Member
12. Prof. Vipin Kumar, Dean	:	Member
13. Dr. Laxmi Kant Sharma	:	Member
14. Prof. Maithili Sharan	:	Member
15. Dr. N. Lakshmi Aiyar, Dean	:	Member
16. Dr. Pawan Kumar Dadheech	:	Member
17. Dr. Jitendra Kumar	:	Member
18. Ms. Ritu B. Rai, Dean	:	Member
19. Dr. Pankaj Goyal	:	Member
20. Dr. JagdishJadhav	:	Member
21. Dr. S.Kandasamy	:	Member
22. Dr. Praveen Sahu	:	Member
23. Dr. Chandi C. Mandal	:	Member
24. Dr. Subhasis Bhadra	:	Member
25. Dr. Arun Kumar Giri	:	Member
26. Dr. Anjali Sharma	:	Member
27. Dr. Bhumika Sharma	:	Member
28. Dr. Sanjay Kumar	:	Member
29. Dr. Ajit Patra	:	Member
30. Dr. TulsiGiriGoswami	:	Member
31. Dr. Vijay Kumar M.	:	Member
32. Dr. Utpal Debnath	:	Member
33. Shri K.V.S.Kameswara Rao	:	Secretary

Spical Invitee:

1. Prof. M. Krishnan
2. Prof. Someshwar Das
3. Dr. Chandar Sekhar Gahan
4. Dr.Raghu Chitta
5. Dr. Nagaraju Aitha
6. Dr. Pranta Pratik Patnaik
7. Dr.Gyana Ranjan Panda
8. Dr. Chhabi Rani Panigrahi
9. Mr. Ravi Saharan
10. Mr. Atul Nag



Leave of absence was granted to:

- |                          |   |        |
|--------------------------|---|--------|
| 1. Prof. R. Prasad       | : | Member |
| 2. Prof. Ram Ramaswamy   | : | Member |
| 3. Prof. Maithili Sharan | : | Member |
| 4. Prof. Aparna Rayaprol | : | Member |
| 5. Prof. J.K. Prajapat   | : | Member |
| 6. Dr. JogeswarPanigrahi | : | Member |

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**DETAILED AGENDA**

Item No.	Particulars		
17-1.0	<p><b>Welcome by Chairman, Academic Council.</b></p> <p>Chairman welcomed all the members present and introduced all the new Members and Special Invitee Members. The Chairman apprised the members about the presentation of all Central Universities established in 2009 before the visitor on 06/01/2018 and presentation of IOE given on 23/04/2018. Central University of Rajasthan placed top among the Central Universities started after 2009 with respect to Publications, Infrastructure facilities and filling of the Statutory positions. Considering among all the Central Universities, Central University of Rajasthan is ranked within first 5-6. Further he mentioned that information on various activities of the University such as International collaboration by the faculty member is not available in the application submitted to various agencies. New Digital Learning and Monitoring cell is going to be established consisting of faculty members to look into the collection of various activities of the University including preparation of NAAC, University Annual Reports etc., and advertisement for recruitment of Information Scientist has been released. University is going to sign a MoU with Indira Gandhi National Centre for the Arts to start new programme. The Chairman also apprised that 5 students of Big Data Analytics programme got placement in TCS, and INSA young scientist award won by the faculty of CURaj.</p>		
17-2.0	17-2.1	<p><b>Confirmation of the Minutes of the 16<sup>th</sup> Meeting of the Academic Council held on Sunday, November 12, 2017. (Annexure-1) [Page No. : 19-32 ]</b></p>	
		<p><b>Resolution: Confirmed</b></p>	
	17-2.2	<p><b>Action Taken Reports</b></p>	
		<p><b>Item No.</b></p>	<p><b>Particulars</b></p>
		<p><b>16-3.0</b></p>	<p><b>Convocation</b></p>
		<p>16-3.1</p>	<p>4<sup>th</sup> Convocation Proceedings</p>
			<p>Convocation was held on 13<sup>th</sup> November, 2017. 446 students got the degrees in the Convocation.</p>
		<p>16-3.2</p>	<p>Award of Degrees during the Convocation</p>
			<p>Degrees were awarded during 4<sup>th</sup> Convocation.</p>
		<p>16-3.3</p>	<p>Approval to award the Gold Medal and Certificate of Merit to the toppers of all the programmes</p>
			<p>Gold Medals and Certificates of Merit were awarded during 4<sup>th</sup> Convocation</p>
		<p>16-3.4</p>	<p>Approval to confer Degree Certificates to the successful students during the fourth Convocation of the University</p>
			<p>Conferred the Degree Certificates during the 4<sup>th</sup> Convocation.</p>
		<p><b>16-4.0</b></p>	<p><b>Policy Matters</b></p>
		<p>16-4.1</p>	<p>To establish Innovation Cell at Central University of Rajasthan.</p>
			<p>Innovation Cell was established. Prof. Someshwar Das is in-charge of Innovation Cell.</p>
		<p>16-4.2</p>	<p>Alternative arrangement of an administrative supervisor/ another supervisor in the absence of a research supervisor</p>
			<p>In the absence of Research Supervisor, HoD or any other teacher nominated by HoD will be appointed as the administrative supervisor.</p>
		<p>16-4.3</p>	<p>Central University of Rajasthan Armstrong award for Vocational Education</p>
			<p>The First two batches conferred the Armstrong award during the Fourth Convocation of the University.</p>
		<p>16-4.4</p>	<p>Collaborating with Public Affair Centre, Bangalore</p>
			<p>MoU with Public Affair Centre, Bangalore has been signed.</p>
		<p>16-4.5</p>	<p>Collaborating with Institute of Development Studies (IDS), Jaipur.</p>
			<p>Dr. Ganesh Kawardia Prof. of Economics has been appointed recently and he will look into the feasibility of collaboration and</p>

Item No.	Particulars	
		<i>proceed further for signing of MoU with IDS</i>
<b>16-5.0</b>	<b>Evaluation &amp; Examination</b>	
16-5.1	<i>Format of Degree Certificate and Provisional Degree Certificate for Ph.D.</i>	<i>Standard format for Degree and provisional certificate for Ph.D has been framed and implemented</i>
16-5.2	<i>Revised format for Provisional Certificate and Application form for provisional certificate of all courses other than Ph.D.</i>	<i>Revised format for application for provisional certificate and revised format of provisional certificate for all courses other than Ph.D has been approved and implemented.</i>
<b>16-6.0</b>	<b>GIAN Course &amp; Credits</b>	
16-6.1	<i>Global Initiative of Academic Network (GLAN) course, and initiative of MHRD, GOI has approved a course on (Machine Learning) conducted from 30<sup>th</sup> October, 2017 to 11<sup>th</sup> Nov, 2017.</i>	<i>Academic Council in its 16<sup>th</sup> meeting approved the student participation in the above-said course along with exemption from the course of Machine Learning to be conducted in the even Semester for M.Sc. Big data analytics and M.Sc. Computer Science programme.</i>
16-7.4	<i>Approval of proposed GLAN Course (Architecture) as 2 credit course</i>	<i>GLAN Course conducted in Architecture Department was approved as 2 credit course for all the participants.</i>
16-7.5	<i>Replacing of 4<sup>th</sup> Unit of Neural Network paper by Big Data Analysis and Mining in Deep Web Repositories (GLAN Course) in M.Sc. Computer Science in Big Data Analytics programme of 2<sup>nd</sup> Semester.</i>	<i>Replacing of 4<sup>th</sup> Unit of Neural Network paper by Big Data Analysis was approved and implemented.</i>
<b>16-7.0</b>	<b>Revision of Course Structure and Syllabi</b>	
16-7.1	<i>To Revise syllabus of M.Des., and B.Des., programme in collaboration with IICD.</i>	<i>Revised syllabus has been approved and implemented</i>
16-7.2	<i>Course Structure/ Syllabus of Ph.D. Programme in Architecture</i>	<i>Revised course structure/syllabus of Ph.D. Programme in Architecture has been approved and implemented</i>
16-7.3	<i>The Syllabus of IPR – Elective subject</i>	<i>Syllabus for IPR has been approved and implemented.</i>
16-7.6	<i>Syllabus revision of M.Sc. Computer Science in Big Data Analytics</i>	<i>Revised Syllabus of M.Sc. Computer Science in Big Data Analytics has been approved and implemented.</i>
<b>16-8.0</b>	<b>New Programmes of Studies</b>	
16-8.1	<i>To start B. Tech., in Computer Science and Engineering and B.Tech., in Electronics and Communication</i>	<i>As per present situation, attraction towards Engineering programmes found to be declining. Further, faculty appointment could not be done because of the new roaster procedure. However, a brainstorming session is to be held to finalize the Engineering programmes, till that time it has been kept in abeyance.</i>

Item No.	Particulars														
	<b>16-9.0</b>	<b>Admissions</b>													
	16-9.1	CUCET-2018	CUCET-2018 has been successfully conducted on 28 <sup>th</sup> and 29 <sup>th</sup> April, 2018.												
	<b>16-10.0</b>	<b>Other Matters</b>													
	16-10.1	Institute of Eminence	University applied for Institute or Eminence and given presentation on 23/04/2018.												
	16-10.2	Constitution of Student Council	Student Council constituted for Academic Session 2017-18.												
	16-10.3	Confirmation of Newly Constituted School Boards and Board of Studies	Newly Constituted School Boards and Board of Studies were confirmed.												
	<b>16-11.0</b>	<b>Any other item(s) with permission of the Chair.</b>													
	16-11.1	Syllabus revision of Dept. of Statistics.	Revised syllabus of Dept. of Statistics was approved and implemented.												
	<b>Resolution: Noted</b>														
<b>17-3.0</b>	<b>Semester Registration Process</b>														
	<b>17.3.1</b>	<p><b>Payment of Fee by the Students and Ph.D. Scholars for Semester Registration</b></p> <p>To register for a semester a student shall pay fee online during the vacations before commencement of the semester. As it is a cashless process, students can pay the requisite fee as per their convenience even before returning to the campus from vacations. The schedule for payment of online fee for the Semester is as follows:</p> <table border="1"> <thead> <tr> <th>S. No</th> <th>Particulars</th> <th>Last date*</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Without late fee</td> <td>Up to the notified date</td> </tr> <tr> <td>2</td> <td>With late fee of 10% of basic fee</td> <td>Up to 2 weeks from the above notified date</td> </tr> <tr> <td>3</td> <td>With late fee of 25% of the basic fee (with the request from the student as approved by the Dean on recommendation of the HoD)</td> <td>Up to 4 weeks from the notified date</td> </tr> </tbody> </table> <p><i>*The exact date will be intimated in every semester.</i></p> <p>Name of the default students and Research Scholars will be notified and removed from the roll of the University and registration of default Research Scholars will be cancelled. If a student of PG programme is requesting to pay the fee after last date (which is with late fee of 25%), she/he has to pay re-admission fee apart from the semester fee and in case of Research Scholars, they have to re-register themselves by paying the registration fee fixed by the University time to time.</p> <p>Placed before the Academic Council for consideration</p> <p><b>Resolution: Payment of semester fee, semester registration, Re-admission and Re-registration for default students as described above is approved. It is further resolved that the list of default Students and Research Scholars should be intimated to Dean of the respective Schools for further action by the Academic Section. Academic Council also resolved that DRC of all Research Scholar should be conducted before the end of each semester and list of Research Scholars recommended by the DRC for continuation of registration should be forwarded to Dean (Academic) office by the respective Deans for further process.</b></p>		S. No	Particulars	Last date*	1	Without late fee	Up to the notified date	2	With late fee of 10% of basic fee	Up to 2 weeks from the above notified date	3	With late fee of 25% of the basic fee (with the request from the student as approved by the Dean on recommendation of the HoD)	Up to 4 weeks from the notified date
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Item No.	Particulars	
17-3.2	<p><b>Semester Registration Card.</b>  University has framed the norms to issue semester Registration Card to Students to indicate that student is a registered student of the respective semester. Students can get their Semester Registration card from the Office of the Dean Academics by showing their ID card and proof of confirmation of payment of fees for the semester.  The matter was placed before the 50<sup>th</sup> Deans' Committee for consideration. The Deans' Committee approved the proposal. Academics Office has started distributing Semester Registration Cards from January 2018 Semester onwards.</p> <p>The matter was placed to Academic Council to approve the procedure for continuation in every semester henceforth.</p> <p><b>Resolution: Academic Council approved the procedure of Semester Registration for continuation in every semester henceforth. Semester registration cards are to be issued in each semester. ID-cards should also be issued on admission.</b></p>	
17-4.0	<b>Admission -2018</b>	
17-4.1	<p><b>The list of courses, the minimum eligibility and Intake of the courses for Admission 2018</b></p> <p>The list of courses, the minimum eligibility criterion and intake of the courses for Admissions in various programmes of Academic Session 2018-19 is placed before Academic Council for consideration. Also it is proposed to authorize Vice- Chancellor to revise intake for Ph.D admission if required. (Annexure-2) [Page No. : 33-42 ]</p> <p><b>Resolution: Academic Council ratified the list of courses, the minimum eligibility and Intake of the courses for Admission 2018 and also authorized Vice-Chancellor to revise the intake of Ph.D on request basis.</b></p>	
17-4.2	<p><b>Increase in the number of Seats for admission in M.Sc (Atmospheric Science)</b></p> <p>In view of large response of students in CUCET-2018 for admission into M.Sc. (Atmospheric Science) programme, Coordinator, Department of Atmospheric Science has requested to Increase the number of seats from 10 to 15. This would also fulfill the requirement for qualifying the student for INSPIRE fellowship, for which the eligibility is based on the top rank of the student in a class of at least 12 students.</p> <p>Placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the increase in number of seats in M.Sc (Atmospheric Science) from 10 to 15.</b></p>	
17-4.3	<p><b>Increase in the number of Seats for admission in M.Sc. Computer Science(Big Data Analytics)</b></p> <p>Approved intake for M.Sc. Computer Science (Big Data Analytics) is 20. It is proposed to increase the number of intake from 20 to 40 (as requested by TCS).</p> <p>Placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved Increase in the number of Seats for admission in M.Sc. Computer Science(Big Data Analytics) from 20 to 40</b></p>	
17-4.4	<p><b>To Accept students having High School Diploma issued by Northwest Accreditation Commission (NWAC), USA for courses run by the University.</b></p> <p>Deans' Committee vide agenda item no 50-4.4 recommended to accept students having High School Diploma (Grade12/Senior Secondary) issued by Northwest Accreditation Commission, USA for the admission in the eligible programmes available at CURaj.</p> <p>The Recommendation of Deans' Committee was placed before the Academic Council</p>	



Item No.	Particulars							
		<p>for consideration.</p> <p><b>Resolution: Academic Council approved the recommendation of Deans' Committee.</b></p>						
17-4.5		<p><b>Relaxation to GPAT qualified candidates for admission to Ph.D programme in Pharmacy</b></p> <p>Deans' Committee in its 52<sup>nd</sup> meeting resolved that 5% relaxation in CUCET qualifying marks in all categories can be given to GPAT qualified candidates for admission to Ph.D programme in Pharmacy.</p> <p>The matter was placed before the Academic Council for consideration</p> <p><b>Resolution: Academic Council approved the recommendation of Deans' Committee to give relaxation of 5% in CUCET qualifying marks to GPAT qualified candidates for admission to Ph.D programme in Pharmacy.</b></p>						
17-4.6		<p><b>CUCET-2018</b></p> <p>It is to report to the Academic Council that admission to various courses for the academic year 2018-2019 will be through CUCET -2018. Central University of Rajasthan has participated for 1 UG, 40 PG programmes and 21 Ph.D. programmes. Total 38,496 students have registered for admission to various programme of Central University of Rajasthan.</p> <p><b>Resolution: Matter was noted by the Academic Council and the Academic Council also approved admission to following courses which are to be offered in 2018-19 but not included in CUCET-2018 through a separate entrance examination to be conducted at selected centre.</b></p> <ol style="list-style-type: none"> <li>1. MSc(Sports Biochemistry) with 10 seats</li> <li>2. MSc (Exercise/Sports Physiology) with 10 seats</li> <li>3. MSc (Sports Nutrition) with 10 seats</li> <li>4. M.A (Sport Psychology) with 10 seats.</li> <li>5. B. Voc with 50 Seats</li> <li>6. PG diploma in Cultural Informatics with 10 seats</li> </ol>						
17-5.0	<b>Evaluation &amp; Examination</b>							
17-5.1		<p><b>Promotion from odd semester to even semester for the students.</b></p> <p>The revised ordinance 03 is in force from the academic year 2017-18, in which a provision of promotion for next semester is detailed. According to the revised ordinance, a student can be promoted to even semester from odd semester even with backlog papers but cannot be promoted from even semester to odd semester unless 70% of credits in total are cleared. This new provision is applicable to the students who have taken admission in 2017-18 sessions.</p> <p>On request of some students of other batches to extend this provision to them in this academic year, the Deans' Committee resolved that such request be favorably considered.</p> <p>The matter was placed before the Academic Council for ratification</p> <p><b>Resolution: Academic Council ratified the matter of promotion from odd semester to even semester for the students of batch other than 2017-18, based on the request of the students.</b></p>						
17-5.2		<p><b>Re-registration of back papers</b></p> <p>Below mentioned students of Physics department have requested for re-registration of back papers in current semester (January to June 2018):</p> <table border="1"> <thead> <tr> <th>Programme</th> <th>Name</th> <th>Back paper</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Programme	Name	Back paper			
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Item No.	Particulars																											
	<table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%;"></th> <th style="width: 20%; text-align: right;"><b>course Name</b></th> </tr> </thead> <tbody> <tr> <td>• Int. M.Sc. Physics, 2013 Batch</td> <td>Akash Kumar</td> <td>Condensed Matter Physics</td> </tr> <tr> <td>• Int. M.Sc. Physics, 2013 Batch</td> <td>Meena</td> <td>Physics</td> </tr> <tr> <td>• Int. M.Sc. Physics, 2013 Batch</td> <td>Raveena</td> <td>Electronics</td> </tr> <tr> <td>• M.Sc. Physics, 2016 Batch</td> <td>Basant Kumar</td> <td>Condensed Matter Physics</td> </tr> <tr> <td>• M.Sc. Physics, 2016 Batch</td> <td>Doot</td> <td>Physics</td> </tr> <tr> <td>• M.Sc. Physics, 2016 Batch</td> <td>Sandhya Singh</td> <td>Condensed Matter Physics</td> </tr> <tr> <td>• M.Sc. Physics, 2016 Batch</td> <td>Vinay Kumar</td> <td>Condensed Matter Physics</td> </tr> <tr> <td>• Int. M.Sc. B.Ed. Physics, 2016 Batch</td> <td>Namrata Verma</td> <td>Electronics</td> </tr> </tbody> </table> <p>The abovementioned students have not cleared the papers indicated with their names in their respective semesters and the earliest opportunity to pass these back papers is current semester i.e Jan to May 2018.</p> <p>Dean School of Physical Sciences and Head, Dept. of Physics has recommended to allow them to appear in the Internal and EoSE of Jan to May 2018 Semester and same has been approved by the Competent Authority.</p> <p>The matter was placed before the Academic Council for ratification</p> <p><b>Resolution: Academic Council ratified the matter and also resolved that all students will be allowed to clear back papers at the earliest opportunity whenever available in the Department.</b></p>			<b>course Name</b>	• Int. M.Sc. Physics, 2013 Batch	Akash Kumar	Condensed Matter Physics	• Int. M.Sc. Physics, 2013 Batch	Meena	Physics	• Int. M.Sc. Physics, 2013 Batch	Raveena	Electronics	• M.Sc. Physics, 2016 Batch	Basant Kumar	Condensed Matter Physics	• M.Sc. Physics, 2016 Batch	Doot	Physics	• M.Sc. Physics, 2016 Batch	Sandhya Singh	Condensed Matter Physics	• M.Sc. Physics, 2016 Batch	Vinay Kumar	Condensed Matter Physics	• Int. M.Sc. B.Ed. Physics, 2016 Batch	Namrata Verma	Electronics
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17-5.3	<p><b>Explicit list of names of professional programmes</b></p> <p>It has been brought to the notice by CoE that as per revised ordinance No. 3, in case of professional programmes, a student must secure a minimum of 45% marks or equivalent letter grade ‘P’ after combining the component of CIA (40% weight) and EoSE (60% weight). The student shall also be required to independently score minimum of 45% marks or equivalent letter grade ‘P’ in the EoSE to get promoted in next semester. It is necessary to identify the courses which are professional courses.</p> <p>The matter was placed before 51<sup>st</sup> Deans’ Committee for consideration and the Deans’ Committee resolved the following on this matter:  Programme of studies that requires approval of any regulatory authority (irrespective of whether approval is obtained or not) is a Professional programme. Professional programmes at present include</p> <ul style="list-style-type: none"> <li>• <b>M.Tech (Computer Science and Engineering),</b></li> <li>• <b>M.Tech (Cyber Physical System,</b></li> <li>• <b>M.Pharm (Pharmaceutics),</b></li> <li>• <b>M.Pharm (Pharmaceutical Chemistry),</b></li> <li>• <b>M.Arch (Sustainable Architecture),</b></li> <li>• <b>M.Sc-B.Ed (Chemistry),</b></li> <li>• <b>M.Sc-B.Ed (Mathematics),</b></li> <li>• <b>M.Sc-B.Ed (Physics),</b></li> <li>• <b>M.Sc-B.Ed (Economics)</b></li> <li>• <b>MBA</b></li> </ul> <p>The matter was placed before Academic Council for consideration</p> <p><b>Resolution: It is resolved that the following courses have been approved as professional programmes of studies</b></p> <ul style="list-style-type: none"> <li>• <b>M.Tech (Computer Science and Engineering),</b></li> <li>• <b>M.Tech (Cyber Physical System,</b></li> <li>• <b>M.Pharm (Pharmaceutics),</b></li> <li>• <b>M.Pharm (Pharmaceutical Chemistry),</b></li> <li>• <b>M.Arch (Sustainable Architecture),</b></li> </ul>																											

Item No.	Particulars									
		<ul style="list-style-type: none"> <li>• <b>MBA.</b></li> <li>• <b>M.Sc. in Computer Science (Big Data Analytics)</b></li> </ul> <p>As per the Ordinance No-03, 13.4 in the professional programmes, a student must score a minimum of 45 % passing marks in each course of these programmes.</p> <p><b>Note: If a course is offered jointly for professional programme and other programme, then the course will have two different passmark – 45% for students of professional programme and 35% for the students of other programme.</b></p>								
17-5.4		<p><b>Condonation of Attendance</b></p> <p>As per ordinance-03 of CURaj a student has to put in a minimum of 75% of attendance in the registered courses and in very exceptional cases such as medical or other unavoidable ground the Competent Authority can condone shortage of attendance of student under following conditions.</p> <ol style="list-style-type: none"> <li>1. Condonation cannot be for attendance less than 65%</li> <li>2. Condonation can be for only one occasion in the entire duration of programme of study.</li> </ol> <p>In view of the above, Deans' Committee resolved that the students having 75% attendance are eligible to appear EoSE. If a student has attendance between 70-75%, the course instructor shall report the shortage of attendance to the HoD who shall verify the authenticity and genuineness of reason of absence from the classes. Dean of the School in consultation with the HoD, may condone shortage of attendance upto 5% after examining the circumstances and merits of the individual case. Dean may reject the case after recording the reasons for such rejection (Ordinance -03 clause 6.5).</p> <p>In very exceptional cases such as medical or any other unavoidable ground, the condonation of the shortage of attendance of a student having attendance between 65-70% may be recommended and forwarded to office of the CoE and same may be submitted to higher authority for approval.</p> <p>The matter was placed before the Academic Council Consideration</p> <p><b>Resolution: Academic Council approved the proposal as proposed.</b></p>								
17-6.0	<b>New Schools</b>									
17-6.1		<p><b>Establishment of School of Sports Sciences</b></p> <p>Ministry of Youth Affairs and Sports, New Delhi (vide its letter No. F.No.1-1/2012-ID/Funding Universities dated 12<sup>th</sup> March, 2018) has sanctioned School of Sports Sciences (Ministry of Youth Affairs and Sports) with funding of Rs. 25.00 Crores for 5 years with 12 teaching and 15 non-teaching positions with an intention of starting 5 programmes namely M.Sc. in Sports Nutrition, Exercise Physiology, Sports Biomechanics, Sports Biochemistry and M.A. (Sports Psychology), M.P.T. (Sports Physiotherapy), and Certificate courses (Sports Anthropometry).</p> <p>School of Sports Sciences will be started with three departments:</p> <ul style="list-style-type: none"> <li>• Department of Sports Bioscience</li> <li>• Department of Sports Psychology</li> <li>• Department of Sports Biomechanics</li> </ul> <p>12 Teaching positions, as sanctioned by Ministry of Youth Affairs and Sports, Department of Sports, Govt. of India will be allotted to this newly formed School. In addition, 7 positions, equivalent to the departments will be allocated to this school. Thus, total 19 positions would be allocated. The School Board will identify the faculty positions and specialization for each stream. Currently the following break-up is approved by the Executive Council in its 31<sup>st</sup> Meeting held on 28<sup>th</sup> March 2018:</p> <table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Designation</th> <th style="text-align: center;">No. of Posts</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Professor</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">Associate professor</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">Assistant professor</td> <td style="text-align: center;">8</td> </tr> </tbody> </table>	Designation	No. of Posts	Professor	2	Associate professor	2	Assistant professor	8
Designation	No. of Posts									
Professor	2									
Associate professor	2									
Assistant professor	8									

Item No.	Particulars
	<p>The School will offer following 4 programmes from the academic year 2018-19:</p> <ol style="list-style-type: none"> <li>1. MSc(Sports Biochemistry) with 10 seats</li> <li>2. MSc (Exercise/Sports Physiology) with 10 seats</li> <li>3. MSc (Sports Nutrition) with 10 seats</li> <li>4. MA (Sport Psychology) with 10 seats.</li> </ol> <p style="text-align: right;">} Intake to be increased in subsequent years.</p> <p>M.Sc. in Sport Biomechanics will also be added in subsequent years. The expenditure to run this programme will be made from the grants sanctioned by Ministry of Youth Affairs and Sports for a duration of 5 years. University will approach UGC for support after 5 years.</p> <p><b>Fee Structure</b> –Fees structure for these programme will be similar to the M.Tech./MBA Programmes of CURAJ and one time development fees of Rs. 5000/-.</p> <p>Executive Council has approved the proposal in principle in 31<sup>st</sup> Meeting held on 28<sup>th</sup> March 2018</p> <p>Placed before the Academic Council for consideration</p> <p><b>Resolution: Academic Council approved the proposal of establishment of School of Sports Sciences, Education and Research (Ministry of Youth Affairs and Sports), with three Departments consisting of 19 positions ( 12 positions sanctioned from the Ministry of Youth Affairs and Sports and 7 positions (1 Professor, 2 Associate Professor and 4 Assistant Professor) from UGC) :</b></p> <ul style="list-style-type: none"> <li>• Department of Sports Bioscience,</li> <li>• Department of Sports Psychology and</li> <li>• Department of Sports Biomechanics.</li> </ul> <p>Following courses will be started from the Academic year 2018-19 with fee structure similar to the M.Tech./MBA Programmes of CURAJ and one time development fees of Rs. 5000/-</p> <ol style="list-style-type: none"> <li>1. MSc(Sports Biochemistry) with 10 seats</li> <li>2. MSc (Exercise/Sports Physiology) with 10 seats</li> <li>3. MSc (Sports Nutrition) with 10 seats</li> <li>4. MA (Sport Psychology) with 10 seats.</li> </ol> <p>Academic Council also resolved that courses run by the School of Sports Science are also considered as professional courses with the minimum passing marks of 45%.</p>
17-7.0	New Departments
17-7.1	<p><b>Establishment of Department of Society – Technology Interface</b></p> <p>The proposed department will be established in the School of Social Sciences. The department will offer initially two programmes of studies:</p> <ul style="list-style-type: none"> <li>• M.Sc. Digital Society</li> <li>• PG Diploma in Cultural Informatics</li> </ul> <p>7 Teaching positions, as specified by UGC (1 Professor, 2 Associate Professor and 4 Assistant Professor) will be allotted to this newly formed department. The School Board will identify the specialization of faculty positions such that both the programmes are properly started.</p> <p><b>Research</b> – The department will carry out research in all aspects of Societal applications of IT collaborating with existing departments like Department of Social Work, Department of Economics, Department of Culture and Media Studies, Department of Public Policy, Law and Governance of School of Social Sciences. It will also offer PhD Programme.</p>

Item No.	Particulars
	<p>1. M.Sc. Digital Society</p> <p>This programme will be offered in collaboration with IITB Bangalore (IITB). MoU has been signed between two institutions for such collaboration. Students of Central University of Rajasthan (CURaj) can attend courses offered by IITB in latter's Bangalore Campus with no additional fees by students. The grade assigned by IITB will be accepted as final grade, with adequate rescaling if required by CURaj. Initially, the students of CURaj will attend the first semester at IITB. Hostel facility will be arranged by IITB on payment basis. The students will be made clear before the admission about the requirement of their presence at Bangalore for the entire semester. The final semester internship will be arranged by IITB.</p> <p><b>Admission</b> – Admission to this programme will be from two sources –</p> <ul style="list-style-type: none"> <li>• Through CUCET Examination</li> <li>• Candidates recommended by IITB from the merit list of IITB entrance test</li> </ul> <p><b>Fee Structure</b> – Fee Structure for this programme will be similar to the M.Tech./MBA Programmes of CURAJ and one time development fees of Rs. 5000/-.</p> <p>2. PG Diploma in Cultural Informatics</p> <p>This programme will be offered in collaboration with IGNC A Delhi (IGNC A). MoU has been signed between two institutions for such collaboration. Course syllabus and detailed mode of collaboration is being worked-out.</p> <p><b>Fee Structure</b> – Fee Structure for this programme will be similar to the M.Tech./MBA Programmes of CURAJ and one time development fees of Rs. 5000/-.</p> <p>School Board of School of Social Sciences has approved and recommended for consideration of Academic Council in its meeting held on 3<sup>rd</sup> May, 2018.</p> <p>Placed before the academic Council for consideration</p> <p><b>Resolution: Academic Council approved the proposal of establishment of Department of Society – Technology Interface with 7 positions (1 Professor, 2 Associate Professor and 4 Assistant Professor) and courses to be offered by the Department with fee structure similar to the M.Tech./MBA Programmes of CURAJ and one time development fees of Rs. 5000/-. Academic Council also resolved that the minimum passing marks for M.Sc in Digital Society will be 45% and for PG Diploma in Cultural Informatics will be 35%.</b></p>
17-7.2	<p><b>Establishment of Department of Data Science and Analytics</b></p> <p>The proposed department will be established in the School of Mathematics, Statistics and Computational Sciences. The department is initially offering the following programme of study</p> <ul style="list-style-type: none"> <li>• M.Sc. Big Data Analytics</li> </ul> <p>7 Teaching positions, as specified by UGC (1 Professor, 2 Associate Professor and 4 Assistant Professor) will be allotted to this newly formed department. The School Board will identify the specialization of faculty positions.</p> <p>The department will carry out research in the area of Data Science and Analytics – Basic Research in Big Data Analytics, Big Data Analytics in Climate Science, Big Data Analytics in Bio and Health Science and Big Data Analytics in Economics and Finance collaborating with existing department of Atmospheric Science, Department of Economics, Department of Computer Science, Department of Mathematics, Department of Statistics, School of Life Sciences, School of Chemical Sciences and Pharmacy and School of Earth Sciences.</p> <p>(1) M.Sc. Big Data Analytics</p> <p>The M.Sc. Big Data Analytics programme is being offered in collaboration with TCS. TCS, under the agreement, provides the following:</p>

Item No.	Particulars				
	<ul style="list-style-type: none"> <li>• Big Data Analytics lab with Video Conferencing provision</li> <li>• Cloud Computing Environment of TCS</li> <li>• Support for Salary of faculty</li> <li>• Teaching / Internship Support</li> </ul> <p><b>Admission</b> – Admission to this programme will be through CUCET Examination.</p> <p>TCS grant money is being utilized for establishment of Big Data Analytics Laboratories and also to meet the expenses of the faculty positions. University will continue to provide utilization certificate indicating the Salary expenses of regular/guest faculty of the university.</p> <p><b>Fee Structure</b> – Fee Structure for this programme will be similar to the M.Tech./MBA Programmes of CURAJ and one time development fees of Rs. 5000/-.</p> <p>Course Structure and Syllabus is included in recommendation of School Board of School of Mathematics, Statistics and Computational Sciences.</p> <p>Deans' Committee and Executive Council has approved the matter in principle and recommended to place before Academic Council.</p> <p>Placed before the academic Council for consideration</p> <p><b>Resolution: Academic Council approved the proposal of establishment of Department of Data Science and Analytics with 7 positions (1 Professor, 2 Associate Professor and 4 Assistant Professor) and course to be offered by the Department with fee structure similar to the M.Tech./MBA Programmes of CURAJ and one time development fees of Rs. 5000/-. Academic Council also resolved that the minimum passing marks for this course will be 45%. The Academic Council advised to adjust the amount received from TCS against UC submitted to TCS.</b></p>				
17-8.0	<p><b>New programme of studies, its Course Structure and syllabi</b></p> <tr> <td>17-8.1</td> <td> <p><b>To Start 2 Yr M.Ed. and B.Ed. programme in School of Education</b></p> <p>UGC has sanctioned six positions to start M.Ed. Programme and B.Ed. Programme in the School of Education. University plans to start these programmes at the earliest with prior approval of NCTE. It is proposed to fill these positions at the earliest and to apply to NCTE for approval. Thus, the programmes can be started from Academic Year 2019-20. However, in order to enable the university to apply to NCTE, approval of Academic Council is sought to start M.Ed. and B.Ed. Programme from Academic Year 2019-20.</p> <p><b>Placed before the Academic Council for consideration.</b></p> <p><b>Resolution: Academic Council approved the proposal.</b></p> </td> </tr> <tr> <td>17-8.2</td> <td> <p><b>To start B.Tech. in Bio-engineering under School of Engineering &amp; Technology.</b></p> <p>It is proposed to start B.Tech. in Bio-engineering under School of Engineering &amp; Technology from the Academic Year i.e. 2018-19. The course structure for the same can be prepared in consultation with the various stake holders, IITs and NITs.</p> <p>The matter was put up before 31<sup>st</sup> Executive Council Meeting. Executive Council in-principle approved the proposal. It was also recommended that the matter may be placed before the Academic Council. Course structure approved by School Board of School of Engineering and Technology is placed at <b>Annexure-3 [Page No. : 43-47 ]</b></p> <p>Placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the start of B.Tech. in Bio-engineering under School of Engineering &amp; Technology from Academic Session 2019-20. Further depending on the infrastructure, possibility of starting in 2018-19 can be explored.</b></p> </td> </tr>	17-8.1	<p><b>To Start 2 Yr M.Ed. and B.Ed. programme in School of Education</b></p> <p>UGC has sanctioned six positions to start M.Ed. Programme and B.Ed. Programme in the School of Education. University plans to start these programmes at the earliest with prior approval of NCTE. It is proposed to fill these positions at the earliest and to apply to NCTE for approval. Thus, the programmes can be started from Academic Year 2019-20. However, in order to enable the university to apply to NCTE, approval of Academic Council is sought to start M.Ed. and B.Ed. Programme from Academic Year 2019-20.</p> <p><b>Placed before the Academic Council for consideration.</b></p> <p><b>Resolution: Academic Council approved the proposal.</b></p>	17-8.2	<p><b>To start B.Tech. in Bio-engineering under School of Engineering &amp; Technology.</b></p> <p>It is proposed to start B.Tech. in Bio-engineering under School of Engineering &amp; Technology from the Academic Year i.e. 2018-19. The course structure for the same can be prepared in consultation with the various stake holders, IITs and NITs.</p> <p>The matter was put up before 31<sup>st</sup> Executive Council Meeting. Executive Council in-principle approved the proposal. It was also recommended that the matter may be placed before the Academic Council. Course structure approved by School Board of School of Engineering and Technology is placed at <b>Annexure-3 [Page No. : 43-47 ]</b></p> <p>Placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the start of B.Tech. in Bio-engineering under School of Engineering &amp; Technology from Academic Session 2019-20. Further depending on the infrastructure, possibility of starting in 2018-19 can be explored.</b></p>
17-8.1	<p><b>To Start 2 Yr M.Ed. and B.Ed. programme in School of Education</b></p> <p>UGC has sanctioned six positions to start M.Ed. Programme and B.Ed. Programme in the School of Education. University plans to start these programmes at the earliest with prior approval of NCTE. It is proposed to fill these positions at the earliest and to apply to NCTE for approval. Thus, the programmes can be started from Academic Year 2019-20. However, in order to enable the university to apply to NCTE, approval of Academic Council is sought to start M.Ed. and B.Ed. Programme from Academic Year 2019-20.</p> <p><b>Placed before the Academic Council for consideration.</b></p> <p><b>Resolution: Academic Council approved the proposal.</b></p>				
17-8.2	<p><b>To start B.Tech. in Bio-engineering under School of Engineering &amp; Technology.</b></p> <p>It is proposed to start B.Tech. in Bio-engineering under School of Engineering &amp; Technology from the Academic Year i.e. 2018-19. The course structure for the same can be prepared in consultation with the various stake holders, IITs and NITs.</p> <p>The matter was put up before 31<sup>st</sup> Executive Council Meeting. Executive Council in-principle approved the proposal. It was also recommended that the matter may be placed before the Academic Council. Course structure approved by School Board of School of Engineering and Technology is placed at <b>Annexure-3 [Page No. : 43-47 ]</b></p> <p>Placed before the Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the start of B.Tech. in Bio-engineering under School of Engineering &amp; Technology from Academic Session 2019-20. Further depending on the infrastructure, possibility of starting in 2018-19 can be explored.</b></p>				

Item No.	Particulars																			
17-9.0	Existing programme of studies, Course Structure (New Courses)																			
17-9.1	<p><b>Inclusion of new elective course “Cloud Computing” to the M. Tech CSE curriculum from the semester Jan-May, 2018.</b></p> <p>A new elective course “ Cloud Computing” , course code CSIS-348 of 4 credits to be started from Jan-May 2018 semester, was proposed by the Department in its Departmental Meeting held on 19th December, 2017. The draft syllabus for the said course was circulated to School Board members through email for their inputs/suggestion/modifications. Final syllabus of course “Cloud Computing” after incorporating suggestions form Departmental faculty, School Board Members, Prof. S.K Ghosh, was approved by the Competent Authority. <b>Annexure-4 [Page No. : 48 ]</b></p> <p>Placed before the Academic Council for ratification</p> <p><b>Resolution: Academic Council ratified the Inclusion of new elective course “Cloud Computing” to the M. Tech CSE curriculum from the semester Jan-May, 2018.</b></p>																			
17-9.2	<p><b>Elective Courses for M.Sc. Chemistry Programmes</b></p> <p>Department of Chemistry has proposed to offer elective courses of 3/4 credits in 3<sup>rd</sup> Semester for M.Sc (2Yr), 9<sup>th</sup> Semester for Int. M.Sc. (5Yr) and 4<sup>th</sup> &amp; 6<sup>th</sup> Semester for Int. M.Sc. B.Ed. (3Yr). School Board has approved that syllabus of elective courses as such for the current batch and suggested some changes for future batches.</p> <table border="0"> <thead> <tr> <th style="text-align: center;">Course</th> <th style="text-align: center;">Credits</th> </tr> </thead> <tbody> <tr> <td>• Bioinorganic Chemistry</td> <td style="text-align: center;">3/4</td> </tr> <tr> <td>• Physical Organic Chemistry</td> <td style="text-align: center;">3/4</td> </tr> <tr> <td>• Natural Products</td> <td style="text-align: center;">3/4</td> </tr> <tr> <td>• Advanced Computational Chemistry</td> <td style="text-align: center;">3/4</td> </tr> <tr> <td>• Supramolecular Chemistry</td> <td style="text-align: center;">3/4</td> </tr> <tr> <td>• Medicinal Chemistry</td> <td style="text-align: center;">3/4</td> </tr> <tr> <td>• Polymer Chemistry</td> <td style="text-align: center;">4</td> </tr> <tr> <td>• The Organic Chemistry of Biomolecules</td> <td style="text-align: center;">4</td> </tr> </tbody> </table> <p>Detailed syllabus after incorporation of suggestions of School Board is placed at <b>Annexure-5 [Page No. : 49-67]</b></p> <p>Placed before the Academic Council for consideration</p> <p><b>Resolution: Academic Council asked to modify the title of the elective courses with respect to the credits and insisted to provide more flexibility for the students to attend elective courses.</b></p>		Course	Credits	• Bioinorganic Chemistry	3/4	• Physical Organic Chemistry	3/4	• Natural Products	3/4	• Advanced Computational Chemistry	3/4	• Supramolecular Chemistry	3/4	• Medicinal Chemistry	3/4	• Polymer Chemistry	4	• The Organic Chemistry of Biomolecules	4
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• The Organic Chemistry of Biomolecules	4																			
17-9.3	<p><b>Elective Courses for M.Sc. Physics Programme</b></p> <p>Department of Physics has proposed to offer new elective courses with 3 credits each approved by the School Board of School of Physical Sciences.</p> <ul style="list-style-type: none"> <li>• Magnetic and Superconducting Properties of Solid (PHY 411)</li> <li>• Introduction to Fourier Optics PHY (412)-</li> <li>• Monte Carlo- Theory and Practice (PHY 413)</li> </ul> <p>Detailed syllabus is placed at <b>Annexure-6 [Page No. : 68-71]</b></p> <p>Placed before the Academic Council for consideration</p> <p><b>Resolution: Academic Council approved the proposed Elective Courses for M.Sc. Physics Programme.</b></p>																			

Item No.	Particulars	
17-9.4	<p><b>Courses for Winter Semester 2018- MOOCS and Electives</b></p> <p>Proposal for registering the MOOCs and elective courses for the winter semester programme</p> <p>The matter was put up before 50<sup>th</sup> Deans' Committee Meeting. Deans' Committee approved the proposal and it was resolved that two hours per week (4:00 PM to 6:00 PM) in a particular day in all the departments can be kept for elective and open elective to enable the students to move from one department to other department without any hindrance. All the Deans/HODs are requested to keep more elective courses/ MOOCs for the student's choice. Yoga and foreign language courses can also be considered as electives.</p> <p>The matter is placed before Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the Courses for Winter Semester 2018- MOOCS and Electives.</b></p>	
17-9.5	<p><b>M.A. Hindi (2 Yr)</b></p> <p>Revised course structure for M.A Hindi programme approved by School Board of School of Humanities and Languages is placed for approval of Academic Council.</p> <p>Annexure-7 [Page No. : 72-73]</p> <p><b>Resolution: Academic Council approved the revised course structure for M.A. Hindi programme.</b></p>	
17-9.6	<p><b>M.A. English (2 Yr)</b></p> <p>Revised course structure for M.A English programme approved by School Board of School of Humanities and Languages is placed for approval of Academic Council.</p> <p><b>Annexure- 8 [Page No. : 74-75]</b></p> <p><b>Resolution: Academic Council approved the revised course structure for M.A. English programme.</b></p>	
17-9.7	<p><b>Shifting of courses of three Year Integrated M.Sc. B.Ed from one Semester to another</b></p> <p>Deans' Committee vide agenda item no 53-5.2 recommended shifting of Internship (08 credits), Internship &amp; Teaching practices (12 credits) to 5th semester from 6th semester, Course named "Classroom Organization and Management" to 4th Semester from 6th Semester and Project/Dissertation in 6th Semester. <b>Annexure-9 [Page No. : 76-82]</b></p> <p>The Recommendation of Deans' Committee is placed before the Academic Council for approval.</p> <p><b>Resolution: Academic Council approved the recommendation of Deans' Committee for shifting of courses of three Year Integrated M.Sc. B.Ed from one Semester to another.</b></p>	
17-9.8	<p><b>M. Arch. (Sustainable Architecture) (2Yr)</b></p> <p>Revised Course Curriculum and Program Structure for the M.Arch. (Sustainable Architecture) Programme and new electives courses with syllabus approved by the School Board of School of Architecture is placed for approval of Academic Council.</p> <p><b>Annexure-10 [Page No. : 83-85]</b></p> <p><b>Resolution: Academic Council approved ther revised Course Curriculum and program structure for the M.Arch. (Sustainable Architecture).</b></p>	
17-10.0	Existing programme of studies, revision of syllabi	
17-10.1	Minor Change in course title/credit hours in the scheme of M.S(2Yr) and	



Item No.	Particulars	
	<p><b>Integrated M.Sc (5Yr) Chemistry Programmes</b></p> <p>Minor change in course title/credit hours in the scheme of M.Sc. Programmes approved by School Board of School of Chemical Sciences and Pharmacy with credit distribution is placed for approval. These changes are applicable to current batches of M.Sc.(2Yr) and Integrated M.Sc.(5Yr) programme <b>Annexure-11 [Page No. : 86-87]</b></p>	
17-10.2	<p><b>M.Sc Environmental Science (2Yr)</b></p> <p>Revised syllabus of M.Sc Environmental Science with credit distribution approved by School Board of School of Earth Sciences is placed for approval of Academic Council. <b>Annexure-12 [Page No. : 88-89]</b></p>	
17-10.3	<p><b>M.Sc Atmospheric Science (2Yr)</b></p> <p>Revised syllabus of M.Sc Atmospheric Science with credit distribution approved by School Board of School of Earth Sciences is placed for approval of Academic Council. <b>Annexure-13 [Page No. : 90-91]</b></p>	
17-10.4	<p><b>Ph.D Environmental Science</b></p> <p>Revised syllabus of Ph.D. Environmental Science with credit distribution approved by School Board of School of Earth Sciences is placed for approval of Academic Council. <b>Annexure-14 [Page No. : 92]</b></p>	
17-10.5	<p><b>M.Sc Biotechnology (2 Yr)</b></p> <p>Change in course content of MSBT 302(Plant Molecular Biology and Plant Biotechnology) approved by School Board of School of Life Sciences is placed for approval of Academic Council. <b>Annexure-15 [Page No. : 93]</b></p>	
17-10.6	<p><b>M.Sc Mathematics (2Yr) and Int M.Sc. Mathematics (5Yr)</b></p> <p>Revised syllabus of M.Sc Mathematics (2Yr) and Int M.Sc. Mathematics (5Yr) with credit distribution approved by School Board of School of School of Mathematics, Statistics and Computational Sciences is placed for approval of Academic Council. <b>Annexure-16 [Page No. : 94-99]</b></p>	
10-10.7	<p><b>Int M.Sc B.Ed Mathematics (3Yr)</b></p> <p>Revised syllabus of Int M.Sc B.Ed Mathematics (3Yr) with credit distribution approved by School Board of School of School of Mathematics, Statistics and Computational Sciences is placed for approval of Academic Council. <b>Annexure-17 [Page No. : 100-101]</b></p>	
17-10.8	<p><b>Ph.D Mathematics</b></p> <p>Revised syllabus of Ph.D Mathematics with credit distribution approved by School Board of School of School of Mathematics, Statistics and Computational Sciences is placed for approval of Academic Council. <b>Annexure-18[Page No. : 102]</b></p>	
17-10.9	<p><b>M.Sc. Statistics (2Yr) and Int. M.Sc. Statistics (5Yr)</b></p> <p>Revised syllabus of M.Sc Statistics with credit distribution approved by School Board of School of School of Mathematics, Statistics and Computational Sciences is placed for approval of Academic Council. <b>Annexure-19 [Page No. : 103-105]</b></p>	
17-10.10	<p><b>Ph.D Statistics</b></p> <p>Revised syllabus of Ph.D Statistics with credit distribution approved by School Board of School of School of Mathematics, Statistics and Computational Sciences is placed for approval of Academic Council. <b>Annexure-20 [Page No. : 106]</b></p>	
17.10.11	<p><b>M.Tech Computer Science- Cyber Physical System (2Yr)</b></p> <p>Revised syllabus of M.Tech Computer Science- Cyber Physical System with credit distribution approved by School Board of School of School of Mathematics, Statistics and Computational Sciences is placed for approval of Academic Council. <b>Annexure-21 [Page No. : 107]</b></p>	
17-10.12	<p><b>M.Sc. Computer Science (2Yr)</b></p> <p>Revised syllabus of M.Sc. Computer Science with credit distribution approved by</p>	

Item No.	Particulars
	School Board of School of School of Mathematics, Statistics and Computational Sciences is placed for approval of Academic Council. (Annexure-22) [Page No. : 108-109]
17-10.13	M.Sc. Computer Science – Big Data Analytics Revised syllabus of M.Sc. Computer Science– Big Data Analytics with credit distribution approved by School Board of School of School of Mathematics, Statistics and Computational Sciences is placed for approval of Academic Council. (Annexure-23) [Page No. 110]
17-10.14	Ph.D. Computer Science Revised syllabus of Ph.D. Computer Science with credit distribution approved by School Board of School of School of Mathematics, Statistics and Computational Sciences is placed for approval of Academic Council. (Annexure-24) [Page No. 111]
17-10.15	M.Sc. Physics(2Yr) Modification of the syllabus/title of following courses effective from AY 2018-19, approved by the School Board of School of Physical Sciences is placed herewith Annexure-25 [Page No. 112-114] <ul style="list-style-type: none"> <li>• Classical Electrodynamics PHY (405)</li> <li>• Fiber optics: Fundamentals and applications (PHY 402)</li> <li>• Concepts of Lasers and Fiber Optics (PHY 506)</li> </ul> Placed before the Academic Council for Approval
17-10.16	M.Com (2 Yr) Change in course content of MC-III.4 (Direct and Indirect Tax Laws) due to change in the Indirect tax System as Good and Service Tax is placed for approval of Academic Council. Annexure-26 [Page No. : 115-116]
	<b>Resolution:</b> Academic Council approved revision of syllabi as recommended by School Board of the concerned School.
17-11.0	<b>Policy Matters</b>
17-11.1	<p><b>Proposal for considering the equivalence of the training programs, organized by TLC@CURaj, (under PMMMNMTT) to orientation and refresher courses of UGC-HRDC as well as for promotion under CAS and for API score.</b></p> <p>Teaching Learning Centre (under PMMMNMTT) at CURaj is organizing four weeks Induction Training Program for faculty of higher educational institutions (HEIs) from 1st to 26th May 2018 (24 working days and minimum 144 working hours). In order to ensure the motivation amongst the faculty members to get quality training, the following is proposed:</p> <ol style="list-style-type: none"> <li>1) The above four weeks Induction Training Program conducted by TLC@CURaj from 1st to 26th May 2018 (24 working days and minimum 144 working hours) or any other Centres under PMMMNMTT scheme can be considered equivalent to the orientation program, conducted by different UGC-HRDC, as well to be considered for API score for promotion.</li> <li>2) All such short term and long term courses conducted by TLC@CURaj or any other Centres under PMMMNMTT scheme shall be considered at par with the UGC orientation and refresher course as well to be considered for API score for promotion.</li> </ol> <p>The matter was placed before the 54<sup>th</sup> Deans' committee for consideration and Deans' Committee approved the same.</p> <p>The matter was placed before Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the proposal.</b></p>

Item No.	Particulars																																												
17-12.0	Other Matters																																												
17-12.1	<p><b>Admission-2018</b></p> <p><b>Admission to following courses which are to be offered in 2018-19 but not included in CUCET-2018 are to be conducted separately. Minimum Eligibility is being worked out by respective faculty in charge.</b></p> <ol style="list-style-type: none"> <li>1. MSc(Sports Biochemistry) with 10 seats</li> <li>2. MSc (Exercise/Sports Physiology) with 10 seats</li> <li>3. MSc (Sports Nutrition) with 10 seats</li> <li>4. M.A (Sport Psychology) with 10 seats.</li> <li>5. B. Voc with 50 Seats</li> <li>6. PG diploma in Cultural Informatics</li> </ol> <p>Placed before Academic Council for consideration</p> <p><b>Resolution: as resolved at 17-4.6</b></p>																																												
17-12.2	<p><b>Fee Structure for various existing programmes/new programmes being run in the University for Academic Session 2018-19</b></p> <p>As per the resolution passed in 10th Academic Council Meeting vide item No. 10-4.1, a revision of the fee @ 10% increase in all the components every year (fee structure) has to be made with regards to MHRD Letter No. F.5-9/2011-Desk U dated 28th March 2013. Accordingly, 10% increase has been incorporated in Admission Fee for Ph.D. Course Work, Research Fee, Thesis Evaluation Fee, Miscellaneous Campus Amenities Fee (for Ph.D. Programmes only), Admission Fee, Tuition Fee, Lab Fee, Library Fee, Exam Fee, Internet Charges, Student Welfare Fund, Medical Fee, Student Aid Fund, Other Fee, Annual Cashless Insurance, Deposit, Mess Security Deposit, and Hostel Fee (for all programmes).</p> <p>For Example, Fee Structure for Year 2017-18 for Category-A PG Courses was Rs. 15985/- which has now been increased to Rs. 17604/-.</p> <table border="1"> <thead> <tr> <th></th> <th colspan="3">Ph.D</th> <th colspan="2">PG</th> <th>B.Voc</th> <th>M.Sc./M.A. in Digital Society and M.Tech in CS (CPS)</th> <th>PG Diploma in Cultural Informatics, M.Sc. in (Sports Biochemistry), (Sports Physiology) (Sports Nutrition) and (Sports Psychology)</th> </tr> <tr> <th>Category</th> <th>A</th> <th>B</th> <th>C</th> <th>A</th> <th>B</th> <th>-</th> <th>-</th> <th>-</th> </tr> </thead> <tbody> <tr> <td>New Students</td> <td>33749</td> <td>31594</td> <td>43414</td> <td>17604</td> <td>25095</td> <td>17604</td> <td>30095</td> <td>30095</td> </tr> <tr> <td>Old Students</td> <td>30650</td> <td>28690</td> <td>39435</td> <td>15985</td> <td>22795</td> <td>15985</td> <td>27795</td> <td>-</td> </tr> </tbody> </table> <p>For the new courses, MSc in Sport Biochemistry, M.Sc in Sports Physiology, M.Sc. in Sport Nutrition, M.Sc in Sport Psychology, PG diploma in Cultural Informatics will follow the same fee structure as MTech Computer Science and Engineering/MBA and one time development fees of Rs. 5000/- on the same line as approved earlier for M.Sc/M.A Digital Society, M.Sc. Computer Science-Cyber physical System, M.Sc. Big Data analytics and M.Pharma (Pharmaceutics).</p> <p>The revised fee structure for various programmes being run in the University for Academic Session 2018-19 and new programmes to be started from Academic Session</p>										Ph.D			PG		B.Voc	M.Sc./M.A. in Digital Society and M.Tech in CS (CPS)	PG Diploma in Cultural Informatics, M.Sc. in (Sports Biochemistry), (Sports Physiology) (Sports Nutrition) and (Sports Psychology)	Category	A	B	C	A	B	-	-	-	New Students	33749	31594	43414	17604	25095	17604	30095	30095	Old Students	30650	28690	39435	15985	22795	15985	27795	-
	Ph.D			PG		B.Voc	M.Sc./M.A. in Digital Society and M.Tech in CS (CPS)	PG Diploma in Cultural Informatics, M.Sc. in (Sports Biochemistry), (Sports Physiology) (Sports Nutrition) and (Sports Psychology)																																					
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Item No.	Particulars
	<p>2018-19 is placed <span style="float: right;"><b>Annexure- 27 [Page No. 117-126]</b></span></p> <p>Placed before the Academic Council for Approval.</p> <p><b>Academic Council approved the fee structure for 2018-19.</b></p>
17-12.3	<p><b>Alumni contribution to be charged from each student from Academic Year 2018-19</b></p> <p>A meeting of the Committee duly constituted to frame the rules and regulations for the creation of Corpus Fund and its Utilization etc. was held on 17.04.2018. The Committee recommended that at the time of admissions, <b>a sum of Rs. 1000/- may be charged from each student as Alumni contribution from Academic Year 2018-19</b> and the same may be distributed to Alumni Fund and Corpus Fund in the ratio of 50:50.</p> <p>The matter was placed before the 54<sup>th</sup> Deans' committee for consideration and the he Deans' Committee recommended to Academic Council for consideration.</p> <p>The matter was placed before Academic Council for consideration.</p> <p><b>Resolution: Academic Council approved the alumni contribution of Rs. 1000 to be charged from each student from Academic Year 2018-19.</b></p>
17-12.4	<p><b>Approval for Dr. Sanjeev Vidhyarthi as Joint supervisor for Ms. Swagatika Mishra, PhD scholar, Dept. of Architecture.</b></p> <p>Looking at the requirement of the research work and with the intent to ensure quality output it is proposed to consider Dr. Sanjeev Vidyarthi, Associate Professor of Urban Planning and Policy, Senior fellow of the Great Cities Institute at the University of Illinois, Chicago to be the Joint Supervisor for Ms. Swagatika Mishra, PhD Scholar, Dept. of Architecture.</p> <p>This was placed for the consideration and approval of Academic Council.</p> <p><b>Resolution: Academic Council resolved that Dr. Sanjeev Vidyarthi can be taken as as co-supervisor, however the process of recognition of Dr. Sanjeev Vidyarthi to supervise Doctoral Students can be initiated as per University norms.</b></p>
17-13.0	<p><b>Any other item(s) with permission of the Chair.</b></p>
17-13.1	<p><b>Ph.D. Course work for Ph.D. in Dept. of Education</b></p> <p>Dept. of Education is going to start Ph.D. progammme from Academic Session 2018-19. The final syllabus of Ph.D. Course work prepared by faculty of Education and evaluated by two subject experts is placed before Academic Council for consideration.</p> <p style="text-align: right;"><b>Annexure-28 [Page No. 127]</b></p> <p><b>Resolution: Academic Council approved the proposal of Ph.D. Course work for Ph.D. in Dept. of Education.</b></p>
17-13.2	<p><b>Adoption of MOOCs through SWAYAM Platform at Central University of Rajasthan.</b></p> <p>As per the directions received from UGC, University needs to adopt Various MOOCs through SWAYAM Platform. Also, each Faculty members/Department/ School is required to choose at least one MOOCs in the forthcoming Academic Session from the available list of courses as per the link provided by UGC. The Courses Chosen by the University are also need to be intimated to UGC.</p> <p>Further, the University needs to upload the link for the TV Channels and Radio Jingles on the University website to popularize the MOOCs among students and faculty members.</p> <p><b>The matter was placed before Academic Council for consideration.</b></p> <p><b>Resolution: Academic Council approved the Adoption of MOOCs through SWAYAM Platform at Central University of Rajasthan and uploading the link for the TV Channels and Radio Jingles on the University website to popularize the MOOCs among students and faculty members.</b></p>
17-13.3	<p><b>To start undergraduate programmes and Integrated Dual Degree in Engineering from Academic Session 2018.</b></p> <p>School of Engineering and Technology has proposed to start B.Tech Programme in</p>

Item No.	Particulars
	<p>Computer Science and Engineering, Electrical and Electronics Engineering and Bio-engineering with an intake of 30 for each undergraduate programme and Integrated Dual Degree (IDD) in Computer Science with an Intake of 10 from Academic Session 2018.</p> <p>In this regard, Course Structure duly recommended by a Committee through brainstorming session held on May 8, 2018 for the above said undergraduate engineering programmes and Integrated Dual Degree programme is placed before Academic Council for Consideration and approval.</p> <p style="text-align: right;"><b>Annexure-29 [Page No. 128-159]</b></p> <p><b>Resolution: Academic Council approved the starting of Undergraduate Programmes and Integrated Dual Degree in Engineering from Academic Session 2019-20, with an intake of 30 seats for each programme. University is asked to also explore the possibility to start these programmes from Academic Session 2018-19.</b></p>
17-13.4	<p><b>Approval for Dr. Srinivasa Gopalan Sampathkumar as Co-supervisor for Mr. Shubham Parashar, PhD Scholar, Dept. of Pharmacy.</b></p> <p>Looking at the requirement of the research work and with the intent to ensure quality output, Board of Studies, Dept. of Pharmacy has assigned Dr. Srinivasa Gopalan Sampathkumar, Staff Scientist-V, National Institute of Immunology as Co-Supervisor for Mr. Shubham Parashar, PhD scholar, Dept. of Pharmacy along with Dr. Kaisar Raza, Assistant Professor, Dept. of Pharmacy as Supervisor.</p> <p>This was placed for the Academic Council for ratification.</p> <p><b>Resolution: School Board recommended outside Experts can be considered as Guide/Co-Guide with the condition that the External Guide should get approval as recognized Guide as per CURaj norms.</b></p>
17-13.5	<p><b>Course Structure for Int. M.Sc. - 5 Yr. Programme.</b></p> <p>Revised Course Structure for Int. M.Sc.-5 Yr. programme for the first two semesters is placed before Academic Council for Consideration and approval.</p> <p style="text-align: right;"><b>Annexure-30 [Page No. 160-161]</b></p> <p><b>Resolution: The recommendation of the Committee to revise the Course Structure of Integrated M.Sc. 5 Year programme was considered and revised structure as recommended by the committee for first two semesters is approved.</b></p>
17-13.6	<p><b>Revised syllabi/new course syllabi offered by the School of Social Sciences.</b></p> <p>Revised syllabi/new course syllabi of following programs offered by the School of Social Sciences as approved in its School Board is placed before Academic Council for consideration and approval:</p> <p style="text-align: right;"><b>Annexure-31[Page No. 162-174]</b></p> <ol style="list-style-type: none"> <li>1. Integrated M.Sc. Economics</li> <li>2. M. A. Economics</li> <li>3. M.Sc B Ed. Economics</li> <li>4. PG Diploma in cultural informatics-New Course Syllabus</li> <li>5. M.A/ MSc Digital Society</li> <li>6. M.A Public Policy</li> <li>7. Masters of Social Work</li> <li>8. Ph.D. Course Work Curriculum in Social Work</li> </ol> <p><b>Resolution: Academic Council approved the revised syllabi/new course syllabi of above mentioned programmes as proposed. For integrated programme as already resolved at 17-3.5.</b></p>
17-13.7	<p><b>Appropriate Grade Conversion between IIT-Bangalore and Central University of Rajasthan</b></p> <p>IIT-Bangalore follows the Four 4 Point Grade Scale System and Central University of Rajasthan follows 10 Points Grade System. Coordinator, Digital Society Programme has submitted that the first Semester Students of M.Sc/M.A in Digital Society Programme will</p>

Item No.	Particulars
	<p>be given the opportunity to study in IIIT-Bangalore. The COE of the Central University may be authorized for appropriate conversion of the Grade received from IIIT-Bangalore in sync with Grading System of Central University of Rajasthan.</p> <p>It was placed before Academic Council for consideration and approval.</p> <p><b>Resolution: Academic council approved the conversion of grade between IIIT-Bangalore and Central University of Rajasthan and authorized Controller of Examination for the same.</b></p>
17-13.7	<p><b>Registration of Research Scholar for Academic Session 2016-17</b></p> <p>Registration of Research Scholar for Academic Session 2016-17 is placed before Academic Council for approval. <b>Annexure-32 [Page No. 175]</b></p> <p><b>Resolution: Academic Council approved the Registration of Research Scholar of Academic Session 2016-17.</b></p>
17-13.8	<p><b>To start a course of Studies on India's Intellectual Tradition</b></p> <p>Professor Chandarkala Padia external member suggested that University should start course of Studies on India's Intellectual Tradition.</p> <p><b>Resolution: Academic council welcomed the proposal and resolved to start a course on India Intellectual Tradition as an open elective course. A three member committee with Prof. Neeraj Gupta as Chairman and two more members to be opted by him may design the course structure and syllabus etc.</b></p>

Meeting ended with thanks to the Chair

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# CENTRAL UNIVERSITY OF RAJASTHAN FIFTH CONVOCATION

02<sup>nd</sup> November, 2018 Friday, 11.00 AM

## **1. Academic Procession (Starts at 10.55 AM)**

### **1.1 Assemblance of the Members of the Academic Procession**

The Chancellor, The Chief Guest, The Vice-Chancellor, the Registrar, the Controller of Examinations, the Finance Officer, the Deans of Schools and the members of the University Authorities shall assemble at 10:55 AM and shall walk in procession in the following order to the Convocation Hall:

The **Controller of Examinations** with the Convocation Flag

#### **Members of the authorities**

The Academic Council  
The Executive Council  
The Boards of Schools  
The Deans of Faculties  
The Finance Officer  
The Registrar  
The Chief Guest  
The Vice Chancellor  
The Chancellor

**Anchor:** “The Academic Procession is entering the auditorium. All are requested to rise and keep standing till the dignitaries take their seats.”

1.2 The Academic Procession enters the auditorium with the Army Band in front playing light music.

1.3 The Chief Guest, the Chancellor, the Vice Chancellor and the Registrar, shall take their seats in front row reserved for them. The Controller of Examinations, the Deans, the Finance Officer and the members of the University Authorities shall take their seats in next row(s) reserved for them.

## **2. Announcement Regarding National Anthem**

**Anchor:** All present in the auditorium to please rise for the National Anthem.

2.1 National Anthem is played by the Army Band.

**Anchor:** Audience to be seated.

### **3. Opening of Convocation**

**Anchor:** “I request the Registrar to seek the permission to begin the Convocation Ceremony.”

3.1 The Registrar will request permission of the Chancellor to declare the convocation open in following words:

**Registrar** “I request the Chancellor to grant permission to begin the Convocation Proceedings”.

The Chancellor will grant permission in the following words:

**Chancellor** “Permission Granted”.

3.2 The Registrar will then announce:

**Registrar** “Now the Convocation Ceremony Begins”.

**Anchor:** “I request the Vice Chancellor to present the report.”

### **4. Presentation of Report by the Vice Chancellor Prof. Arun K Pujari.**

**Anchor:** “Thank You sir.

**Anchor:** Now I request the Chancellor for Elicitation of promises from the New Graduates

### **5. Elicitation of Promises from the New Graduates**

**Chancellor** The Chancellor while addressing the graduates for degrees shall say:

“Will all the candidates for the degrees of the Central University of Rajasthan kindly stand?”



All the candidates shall then rise. **Chancellor** shall put to the candidates standing, the following questions, to which they shall answer, ‘I do Promise’ after each question.

**Chancellor:** “Do you solemnly and sincerely promise and declare that, if admitted to the degrees for which you have qualified, you will, in your daily life and conversation, conduct yourselves as become members of the University?”

**(Appear on the screen)**

**Answer:** “I do Promise”

**Chancellor:** “Do you solemnly and sincerely promise and declare that, to the utmost of your opportunity and ability, you will use your power for the promotion of true learning and in the service of your fellowmen?”

**(Appear on the screen)**

**Answer:** “I do Promise”

**Chancellor:** “Do you solemnly and sincerely promise that you will faithfully and diligently fulfill the duties of the profession to which you will eventually belong and that you will, on all occasions, maintain its purity and reputation?”

**(Appear on the screen)**

**Answer:** “I do Promise”

**Chancellor** will then say

**Chancellor** “All the candidates may now resume their seats.”

**Anchor:** “Thank You Sir.”

**Anchor:** I request the Chancellor to grant permission for “**Presentation of Degrees**”

## **6. Presentation of Degrees**

**Chancellor** will say: “**Let the candidates for the degrees be presented by the Deans**”

The Deans will present the degree recipients for the award of degrees in the following order:

**Anchor:** “I now invite the Dean, Ar. Ritu B. Rai, School of Architecture to present the degree recipients.

**6.1 Ar. Ritu B. Rai, Dean, School of Architecture will present the degree recipients:**

**6.1.1 The Dean, Ar. Ritu B. Rai, presents the degree recipients of M. Arch. (Sustainable Architecture):**

- “Chancellor Sir, I present to you degree recipients of M. Arch. (Sustainable Architecture). The list is placed on record”

**Anchor:** “The degree recipients for M.Arch. (Sustainable Architecture) to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

**6.1.2 The Dean, Ar. Ritu B. Rai, presents the degree recipients of Bachelor of Vocation (Interior Design):**

- “Chancellor Sir, I present to you degree recipients of Bachelor of Vocation (Interior Design). The list is placed on record”

**Anchor:** “The degree recipients for Bachelor of Vocation (Interior Design) to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

The Dean, Ar. Ritu B. Rai now prays:

**Pursuant to the decision of the Executive Council to accept the recommendation made by the Academic Council to confer the degree, I pray that these candidates may be admitted to the respective degrees. I also pray that the candidates who have been permitted to receive their degrees ‘in absentia’ may also be admitted to the respective degrees.**

**Chancellor** will grant the request in the following words: -

**"In my capacity as the Chancellor of this University, I hereby grant the request made by the Dean to confer upon the**

**graduates M.Arch. and B.Voc. degrees in Person and in Absentia".**

**Anchor:** “The degree recipients may please take their seats.”  
(The degree recipients now sit down.)

**Anchor:** “I now invite the Dean, Prof. Vipin Kumar, School of Chemical Sciences and Pharmacy to present the degree recipients.

**6.2 Prof. Vipin Kumar, Dean, School of Chemical Sciences and Pharmacy will present the degree recipients:**

6.2.1 The Dean, Prof. Vipin Kumar presents the degree recipients of Doctor of Philosophy in the following words:

- “Chancellor Sir, I present to you degree recipients of Doctor of Philosophy, under the School of Chemical Sciences and Pharmacy. The list is placed on record.”

**Anchor:** “The degree recipients for Doctor of Philosophy under the School of Chemical Sciences and Pharmacy to please rise”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.2.2. The Dean, Prof. Vipin Kumar presents the degree recipients of M.Sc. Chemistry in the following words:

- “Chancellor Sir, I present to you degree recipients of M.Sc. Chemistry. The list is placed on record”

**Anchor:** “The degree recipients for M.Sc. Chemistry to please rise.”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.2.3 The Dean, Prof. Vipin Kumar presents the degree recipients of 5 years Integrated M.Sc. Chemistry in the following words:

- “Chancellor Sir, I present to you degree recipients of 5 years Integrated M.Sc. Chemistry, under the School of Chemical Sciences and Pharmacy. The list is placed on record”

**Anchor:** “The degree recipients for 5 years Integrated M.Sc. Chemistry under the School of Chemical Sciences and Pharmacy to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.2.4 The Dean, Prof. Vipin Kumar presents the degree recipients of 3 years Integrated M.Sc. B.Ed. Chemistry in the following words:

- “Chancellor Sir, I present to you degree recipients of 3 years Integrated M.Sc. B.Ed. Chemistry, under the School of Chemical Sciences and Pharmacy. The list is placed on record”

**Anchor:** “The degree recipients for 3 years Integrated M.Sc. B.Ed. Chemistry under the School of Chemical Sciences and Pharmacy to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.2.5. The Dean, Prof. Vipin Kumar, will now present the degree recipients of M. Pharm (Pharmaceutical Chemistry):

- “Chancellor Sir, I present to you degree recipients of M. Pharm (Pharmaceutical Chemistry). The list is placed on record”

**Anchor:** “The degree recipients for M. Pharm (Pharmaceutical Chemistry) to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.2.6. The Dean, Prof. Vipin Kumar, presents the degree recipients of B.Sc. in following words:

- “Chancellor Sir, I present to you degree recipients of Bachelor of Science. The list is placed on record”

**Anchor:** “The degree recipients for Bachelor of Science to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

The Dean, Prof. Vipin Kumar now prays:

**Pursuant to the decision of the Executive Council to accept the recommendation made by the Academic Council to confer the degree, I pray that these candidates may be admitted to the respective degrees. I also pray that the candidates who have been permitted to receive their degrees 'in absentia' may also be admitted to the respective degrees.**

**Chancellor** will grant the request in the following words: -

**"In my capacity as the Chancellor of this University, I hereby grant the request made by the Dean to confer upon the graduates Ph.D., M.Sc. Chemistry, 5 years Integrated M.Sc. Chemistry, 3 years Integrated M.Sc. B.Ed. Chemistry, M.Pharm and B.Sc. in Person and in Absentia".**

**Anchor:** "The degree recipients may please take their seats."  
(The degree recipients now sit down.)

**Anchor:** "I now invite the Dean, Dr. Praveen Sahu, School of Commerce and Management to present the degree recipients.

**6.3 Dr. Praveen Sahu, Dean, School of Commerce and Management will present the degree recipients:**

6.3.1. The Dean, Dr. Praveen Sahu presents the degree recipients of Doctor of Philosophy in the following words:

- "Chancellor Sir, I present to you degree recipients of Doctor of Philosophy. The list is placed on record."

**Anchor:** "The degree recipients for Doctor of Philosophy to please rise."  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

**6.3.2. Dr. Praveen Sahu, Dean, School of Commerce and Management will present the degree recipients:**

6.3.3. The Dean, Dr. Praveen Sahu presents the degree recipients of MBA in the following words:

- “Chancellor Sir, I present to you degree recipients of MBA. The list is placed on record.”

**Anchor:** “The degree recipients for MBA to please rise.”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.3.4. **The Dean, Dr. Praveen Sahu, will now present the degree recipients of M.Com. :**

- “Chancellor Sir, I present to you degree recipients of M.Com. The list is placed on record.”

**Anchor:** “The degree recipients for M.Com. to please rise.”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

The Dean, Dr. Praveen Sahu now prays:

**Pursuant to the decision of the Executive Council to accept the recommendation made by the Academic Council to confer the degree, I pray that these candidates may be admitted to the respective degrees. I also pray that the candidates who have been permitted to receive their degrees ‘in absentia’ may also be admitted to the respective degrees.**

**Chancellor** will grant the request in the following words: -

**"In my capacity as the Chancellor of this University, I hereby grant the request made by the Dean to confer upon the graduates Ph.D., MBA and M.Com. degrees in Person and in Absentia".**

**Anchor:** “The degree recipients may please take their seats.”  
(The degree recipients now sit down.)

**Anchor:** “I now invite the Dean, Dr. L.K. Sharma, School of Earth Sciences to present the degree recipients.

**6.4 Dr. L.K. Sharma, Dean, School of Earth Sciences, will present the degree recipients:**

6.4.1. The Dean, Dr. L.K. Sharma presents the degree recipients of M.Sc. Environmental Science in the following words:

- “Chancellor Sir, I present to you degree recipients of M.Sc. Environmental Science. The list is placed on record”

**Anchor:** “The degree recipients for M.Sc. Environmental Science to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.4.2. The Dean, Dr. L.K. Sharma presents the degree recipients of 5 years Integrated M.Sc. Environmental Science in the following words:

- “Chancellor Sir, I present to you degree recipients of 5 years Integrated M.Sc. Environmental Science. The list is placed on record”

**Anchor:** “The degree recipients for 5 years Integrated M.Sc. Environmental Science to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.4.3. The Dean, Dr. L.K. Sharma presents the degree recipients of M.Sc. Atmospheric Science in the following words:

- “Chancellor Sir, I present to you degree recipients of M.Sc. Atmospheric Science. The list is placed on record”

**Anchor:** “The degree recipients for M.Sc. Atmospheric Science to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.4.4. The Dean, Dr. L.K. Sharma, presents the degree recipients of B.Sc. in following words:

- “Chancellor Sir, I present to you degree recipients of Bachelor of Science. The list is placed on record”

**Anchor:** “The degree recipients for Bachelor of Science to please rise”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

The Dean, Dr. L.K. Sharma now prays:

**Pursuant to the decision of the Executive Council to accept the recommendation made by the Academic Council to confer the degree, I pray that these candidates may be admitted to the respective degrees. I also pray that the candidates who have been permitted to receive their degrees ‘in absentia’ may also be admitted to the respective degrees.**

**Chancellor** will grant the request in the following words: -

**"In my capacity as the Chancellor of this University, I hereby grant the request made by the Dean to confer upon the graduates M.Sc. Environmental Science, 5 years Integrated M.Sc. Environmental Science, M.Sc. Atmospheric Science and B.Sc. degrees in Person and in Absentia".**

**Anchor:** “The degree recipients may please take their seats.”  
(The degree recipients now sit down.)

**Anchor:** “I now invite the Dean, Prof. Manish Dev Shrimali, School of Engineering & Technology to present the degree recipients.

**6.5 Prof. Manish Dev Shrimali, Dean, School of Engineering & Technology will present the degree recipients:**

6.5.1 The Dean, Prof. Manish Dev Shrimali, presents the degree recipients of M.Tech. Computer Science & Engineering in the following words:

- “Chancellor Sir, I present to you degree recipients of M.Tech. Computer Science & Engineering. The list is placed on record.”



**Anchor:** “The degree recipients for M.Tech. Computer Science & Engineering to please rise.”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

The Dean, Prof. Manish Dev Shrimali now prays:

**Pursuant to the decision of the Executive Council to accept the recommendation made by the Academic Council to confer the degree, I pray that these candidates may be admitted to the respective degrees. I also pray that the candidates who have been permitted to receive their degrees ‘in absentia’ may also be admitted to the respective degrees.**

**Chancellor** will grant the request in the following words: -

**"In my capacity as the Chancellor of this University, I hereby grant the request made by the Dean to confer upon the graduates M.Tech. Computer Science & Engineering degree in Person and in Absentia".**

**Anchor:** “The degree recipients may please take their seats.”  
(The degree recipients now sit down.)

**Anchor:** “I now invite the Dean, Dr. Ajit Patra, School of Physical Sciences to present the degree recipients.

**6.6. Dr. Ajit Patra, Dean, School of Physical Sciences, will now present the degree recipients**

**6.6.1. The Dean, Dr. Ajit Patra, presents the degree recipients of M.Sc. Physics in the following words:**

- “Chancellor Sir, I present to you degree recipients of M.Sc. Physics. The list is placed on record”

**Anchor:** “The degree recipients for M.Sc. Physics to please rise”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.6.2. The Dean, Dr. Ajit Patra, presents the degree recipients of 5 years Integrated M.Sc. Physics in the following words:

- “Chancellor Sir, I present to you degree recipients of 5 years Integrated M.Sc. Physics. The list is placed on record”

**Anchor:** “The degree recipients for 5 years Integrated M.Sc. Physics to please rise”  
**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.6.3. The Dean, Dr. Ajit Patra, presents the degree recipients of 3 years Integrated M.Sc. B.Ed. Physics in the following words:

- “Chancellor Sir, I present to you degree recipients of 3 years Integrated M.Sc. B.Ed. Physics. The list is placed on record”

**Anchor:** “The degree recipients for 3 years Integrated M.Sc. B.Ed. Physics to please rise”  
**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.6.4. The Dean, Dr. Ajit Patra, presents the degree recipients of B.Sc. in following words:

- “Chancellor Sir, I present to you degree recipients of Bachelor of Science. The list is placed on record”

**Anchor:** “The degree recipients for Bachelor of Science to please rise”  
**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

The Dean, Dr. Ajit Patra now prays:

**Pursuant to the decision of the Executive Council to accept the recommendation made by the Academic Council to confer the degree, I pray that these candidates may be admitted to the respective degrees. I also pray that the candidates who have**

been permitted to receive their degrees 'in absentia' may also be admitted to the respective degrees.

**Chancellor** will grant the request in the following words: -

**"In my capacity as the Chancellor of this University, I hereby grant the request made by the Dean to confer upon the graduates M.Sc. Physics, 5 years Integrated M.Sc. Physics, 3 years Integrated M.Sc. B.Ed. Physics and B.Sc. degrees in Person and in Absentia".**

**Anchor:** "The degree recipients may please take their seats."  
(The degree recipients now sit down.)

**Anchor:** "I now invite the Dean, Prof. Lakshmi Aiyar, School of Humanities and Languages to present the degree recipients.

**6.7 Prof. Lakshmi Aiyar, Dean, School of Humanities and Languages will present the degree recipients:**

6.7.1. The Dean, Prof. Lakshmi Aiyar presents the degree recipients of Doctor of Philosophy in the following words:

- "Chancellor Sir, I present to you degree recipients of Doctor of Philosophy, under the School of Humanities and Languages. The list is placed on record."

**Anchor:** "The degree recipients for Doctor of Philosophy under the School of Humanities and Languages to please rise"  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.7.2. The Dean, Prof. Lakshmi Aiyar presents the degree recipients of M.A. English in the following words:

- "Chancellor Sir, I present to you degree recipients of M.A. English. The list is placed on record."

**Anchor:** "The degree recipients for M.A. English to please rise."  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.7.3. The Dean, Prof. Lakshmi Aiyar, will now present the degree recipients of M.A. Hindi:

- “Chancellor Sir, I present to you degree recipients of M.A. Hindi. The list is placed on record.”

**Anchor:** “The degree recipients for M.A. Hindi to please rise.”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

The Dean, Prof. Lakshmi Aiyar now prays:

**Pursuant to the decision of the Executive Council to accept the recommendation made by the Academic Council to confer the degree, I pray that these candidates may be admitted to the respective degrees. I also pray that the candidates who have been permitted to receive their degrees ‘in absentia’ may also be admitted to the respective degrees.**

**Chancellor** will grant the request in the following words: -

**"In my capacity as the Chancellor of this University, I hereby grant the request made by the Dean to confer upon the graduates Ph.D., M.A. in English and M.A. in Hindi degrees in Person and in Absentia".**

**Anchor:** “The degree recipients may please take their seats.”  
(The degree recipients now sit down.)

**Anchor:** “I now invite the Dean, Prof. Pradeep Verma, School of Life Sciences to present the degree recipients.

**6.8 Prof. Pradeep Verma, Dean, School of Life Sciences will present the degree recipients:**

6.8.1. The Dean, Prof. Pradeep Verma presents the degree recipients of Doctor of Philosophy in the following words:

- “Chancellor Sir, I present to you degree recipients of Doctor of Philosophy under the School of Life Sciences. The list is placed on record.”

**Anchor:** “The degree recipients for Doctor of Philosophy to please rise.”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.8.2. The Dean, Prof. Pradeep Verma presents the degree recipients of M.Sc. Biotechnology in the following words:

- “Chancellor Sir, I present to you degree recipients of M.Sc. Biotechnology. The list is placed on record.”

**Anchor:** “The degree recipients for M.Sc. Biotechnology to please rise.”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.8.3. The Dean, Prof. Pradeep Verma presents the degree recipients of 5 years Integrated M.Sc. Biotechnology in the following words:

- “Chancellor Sir, I present to you degree recipients of 5 years Integrated M.Sc. Biotechnology. The list is placed on record.”

**Anchor:** “The degree recipients for 5 years Integrated M.Sc. Biotechnology to please rise.”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.8.4. The Dean, Prof. Pradeep Verma, will now present the degree recipients of M.Sc. Biochemistry:

- “Chancellor Sir, I present to you degree recipients of M.Sc. Biochemistry. The list is placed on record.”

**Anchor:** “The degree recipients for M.Sc. Biochemistry to please rise.”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.8.5. The Dean, Prof. Pradeep Verma, will now present the degree recipients of 5 years Integrated M.Sc. Biochemistry:

- “Chancellor Sir, I present to you degree recipients of 5 years Integrated M.Sc. Biochemistry. The list is placed on record.”

**Anchor:** “The degree recipients for 5 years Integrated M.Sc. Biochemistry to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.8.6. The Dean, Prof. Pradeep Verma, will now present the degree recipients of M.Sc. Microbiology:

- “Chancellor Sir, I present to you degree recipients of M.Sc. Microbiology. The list is placed on record.”

**Anchor:** “The degree recipients for M.Sc. Microbiology to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.8.7. The Dean, Prof. Pradeep Verma, will now present the degree recipients of 5 years Integrated M.Sc. Microbiology:

- “Chancellor Sir, I present to you degree recipients of 5 years Integrated M.Sc. Microbiology. The list is placed on record.”

**Anchor:** “The degree recipients for 5 years Integrated M.Sc. Microbiology to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.8.8. The Dean, Prof. Pradeep Verma, presents the degree recipients of B.Sc. in following words:

- “Chancellor Sir, I present to you degree recipients of Bachelor of Science. The list is placed on record.”

**Anchor:** “The degree recipients for Bachelor of Science to please rise.”  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

The Dean, Prof. Pradeep Verma now prays:

**Pursuant to the decision of the Executive Council to accept the recommendation made by the Academic Council to confer the degree, I pray that these candidates may be admitted to the respective degrees. I also pray that the candidates who have been permitted to receive their degrees ‘in absentia’ may also be admitted to the respective degrees.**

**Chancellor** will grant the request in the following words: -

**"In my capacity as the Chancellor of this University, I hereby grant the request made by the Dean to confer upon the graduates Ph.D., M.Sc. Biotechnology, 5 years Integrated M.Sc. Biotechnology, M.Sc. Biochemistry, 5 years Integrated M.Sc. Biochemistry, M.Sc. Microbiology, 5 years Integrated M.Sc. Microbiology and B.Sc. degrees in Person and in Absentia".**

**Anchor:** “The degree recipients may please take their seats.”  
(The degree recipients now sit down.)

**Anchor:** “I now invite the Dean, Prof. D. C. Sharma, School of Mathematics, Statistics and Computational Sciences to present the degree recipients.

**6.9 Prof. D. C. Sharma, Dean, School of Mathematics, Statistics and Computational Sciences will present the degree recipients:**

**6.9.1 Prof. D.C. Sharma presents the degree recipients of Doctor of Philosophy in following words:**

- “Chancellor Sir, I present to you degree recipients of Doctor of Philosophy, under the School of Mathematics, Statistics and Computational Sciences. The list is placed on record.”

**Anchor:** “The degree recipients for Doctor of Philosophy under the School of Mathematics, Statistics and Computational Sciences to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.9.2 Prof. D.C. Sharma presents the degree recipients of M.Sc. Tech. Mathematics in following words:

- “Chancellor Sir, I present to you the degree recipients of M.Sc. Tech. Mathematics. The list is placed on record”

**Anchor:** “The degree recipients for M.Sc. Tech. Mathematics to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.9.3. Prof. D.C. Sharma presents the degree recipients of M.Sc. Mathematics in following words:

- “Chancellor Sir, I present to you the degree recipients of M.Sc. Mathematics. The list is placed on record.”

**Anchor:** “The degree recipients for M.Sc. Mathematics to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.9.4. Prof. D.C. Sharma presents the degree recipients of 5 years Integrated M.Sc. Mathematics in following words:

- “Chancellor Sir, I present to you the degree recipients of 5 years Integrated M.Sc. Mathematics. The list is placed on record.”

**Anchor:** “The degree recipients for 5 years Integrated M.Sc. Mathematics to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.



6.9.5. Prof. D.C. Sharma presents the degree recipients of 3 years Integrated M.Sc. B.Ed. Mathematics in following words:

- “Chancellor Sir, I present to you the degree recipients of 3 years Integrated M.Sc. B.Ed. Mathematics. The list is placed on record.”

**Anchor:** “The degree recipients for 3 years Integrated M.Sc. B.Ed. Mathematics to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.9.6. The Dean, Prof. D.C. Sharma, will now present the degree recipients of M.Sc. Statistics in following words:

- “Chancellor Sir, I present to you degree recipients of M.Sc. Statistics. The list is placed on record.”

**Anchor:** “The degree recipients for M.Sc. Statistics to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.9.7. The Dean, Prof. D.C. Sharma, will now present the degree recipients of 5 years Integrated M.Sc. Statistics in following words:

- “Chancellor Sir, I present to you degree recipients of 5 years Integrated M.Sc. Statistics. The list is placed on record.”

**Anchor:** “The degree recipients for 5 years Integrated M.Sc. Statistics to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.9.8. The Dean, Prof. D.C. Sharma, will now present the degree recipients of M.Sc. Computer Science in following words:

- “Chancellor Sir, I present to you degree recipients of M.Sc. Computer Science. The list is placed on record.”

**Anchor:** “The degree recipients for M.Sc. Computer Science to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.9.9. The Dean, Prof. D.C. Sharma, will now present the degree recipients of M.Sc. Computer Science (Big Data Analytics) in following words:

- “Chancellor Sir, I present to you degree recipients of M.Sc. Computer Science (Big Data Analytics). The list is placed on record”

**Anchor:** “The degree recipients for M.Sc. Computer Science (Big Data Analytics) to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.9.10. The Dean, Prof. D.C. Sharma, will now present the degree recipients of 5 years Integrated M.Sc. Computer Science in following words:

- “Chancellor Sir, I present to you degree recipients of 5 years Integrated M.Sc. Computer Science. The list is placed on record.”

**Anchor:** “The degree recipients for 5 years Integrated M.Sc. Computer Science to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.9.11. The Dean, Prof. D.C. Sharma, presents the degree recipients of B.Sc. in following words:

- “Chancellor Sir, I present to you degree recipients of Bachelor of Science. The list is placed on record.”

**Anchor:** “The degree recipients for Bachelor of Science to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

The Dean, Prof. D C Sharma now prays:

Pursuant to the decision of the Executive Council to accept the recommendation made by the Academic Council to confer the degree, I pray that these candidates may be admitted to the respective degrees. I also pray that the candidates who have been permitted to receive their degrees 'in absentia' may also be admitted to the respective degrees.

**Chancellor** will grant the request in the following words: -

**"In my capacity as the Chancellor of this University, I hereby grant the request made by the Dean to confer upon the graduates Ph.D., M.Sc. Tech. Mathematics, M.Sc. Mathematics, 5 years Integrated M.Sc. Mathematics, 3 years Integrated M.Sc. B.Ed. Mathematics, M.Sc. Statistics, 5 years Integrated M.Sc. Statistics, M.Sc. Computer Science, M.Sc. Computer Science (Big Data Analytics), 5 years Integrated M.Sc. Computer Science and B.Sc. degrees in Person and in Absentia".**

**Anchor:** "The degree recipients may please take their seats."  
(The degree recipients now sit down.)

**Anchor:** "I now invite the Dean Prof. S. N. Ambedkar, School of Social Sciences to present the degree recipients.

**6.10 Prof. S.N. Ambedkar, Dean, School of Social Sciences will present the degree recipients:**

6.10.1 The Dean, Prof. S.N. Ambedkar presents the degree recipients of Doctor of Philosophy in the following words:

"Chancellor Sir, I present to you degree recipients of Doctor of Philosophy, under the School of Social Sciences. The list is placed on record."

**Anchor:** "The degree recipients for Doctor of Philosophy under the School of Social Sciences to please rise"  
(The names of the degree recipients appear on the screen)

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.10.2 The Dean, Prof. S.N. Ambedkar presents the degree recipients of M.A. Culture and Media Studies in the following words:

- “Chancellor Sir, I present to you degree recipients of M.A. Culture and Media Studies. The list is placed on record.”

**Anchor:** “The degree recipients for M.A. Culture and Media Studies to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.10.3. The Dean, Prof. S.N. Ambedkar, will now present the degree recipients of M.A. Social Work:

- “Chancellor Sir, I present to you degree recipients of M.A. Social Work. The list is placed on record.”

**Anchor:** “The degree recipients for M.A. Social Work to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.10.4. The Dean, Prof. S.N. Ambedkar, will now present the degree recipients of M.A. Public Policy, Law & Governance:

- “Chancellor Sir, I present to you degree recipients of M.A. Public Policy, Law & Governance. The list is placed on record.”

**Anchor:** “The degree recipients for M.A. Public Policy, Law & Governance to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.10.5. The Dean, Prof. S.N. Ambedkar, will now present the degree recipients of M.A. Economics:

- “Chancellor Sir, I present to you degree recipients of M.A. Economics. The list is placed on record.”

**Anchor:** “The degree recipients for M.A. Economics to please rise.”

---

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.10.6. The Dean, Prof. S.N. Ambedkar, will now present the degree recipients of 5 years Integrated M.Sc. Economics:

- “Chancellor Sir, I present to you degree recipients of 5 years Integrated M.Sc. Economics. The list is placed on record.”

**Anchor:** “The degree recipients for 5 years Integrated M.Sc. Economics to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.10.7. The Dean, Prof. S.N. Ambedkar, will now present the degree recipients of 3 years Integrated M.Sc. B.Ed. Economics:

- “Chancellor Sir, I present to you degree recipients of 3 years Integrated M.Sc. B.Ed. Economics. The list is placed on record.”

**Anchor:** “The degree recipients for 3 years Integrated M.Sc. B.Ed. Economics to please rise.”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

6.10.8. The Dean, Prof. S.N. Ambedkar, presents the degree recipients of B.Sc. in following words:

- “Chancellor Sir, I present to you degree recipients of Bachelor of Science. The list is placed on record.”

**Anchor:** “The degree recipients for Bachelor of Science to please rise”

**(The names of the degree recipients appear on the screen)**

The degree recipients will rise near their seats and will keep standing till the degree is conferred on them by the Chancellor.

The Dean, Prof. S.N. Ambedkar now prays:

Pursuant to the decision of the Executive Council to accept the recommendation made by the Academic Council to confer the degree, I pray that these candidates may be admitted to the respective degrees. I also pray that the candidates who have been permitted to receive their degrees 'in absentia' may also be admitted to the respective degrees.

**Chancellor** will grant the request in the following words: -

"In my capacity as the Chancellor of this University, I hereby grant the request made by the Dean to confer upon the graduates Ph.D., M.A. Culture and Media Studies, M.A. Social Work, M.A. Public Policy, Law & Governance, M.A. Economics, 5 years Integrated M.Sc. Economics, 3 years Integrated M.Sc. B.Ed. Economics and B.Sc. degrees in Person and in Absentia".

Anchor: "The degree recipients may please take their seats."  
(The degree recipients now sit down.)

### 6.11 Presentation of Ph.D. degrees

Anchor: "I now request the Chancellor to present Ph.D. degrees.

Anchor: "The Ph.D. degree recipients to please move towards the dais to receive their Ph.D. degrees. **"The Ph.D. degree recipients are..."**"

S.No.	Name of Student	Department
1.	Anju Yadav	Computer Science
2.	Anuradha Agarwal	Management
3.	Heena Inani	Chemistry
4.	Ahamad Musfar PM	English
5.	Ajeet Kumar Patel	Hindi
6.	Richa Mathur	Management
7.	Vinod Kumar Saroj	Public Policy, Law & Governance
8.	Nisikant Nayak	Public Policy, Law & Governance
9.	Akhilesh Kumar Sharma	Hindi
10.	Shivani Sharma	Chemistry
11.	Ankit Sharma	Biochemistry
12.	Pakhuri Mehta	Pharmacy

Anchor: "Thank You Sir."

Anchor: “The Ph.D. degree recipients may please take their seats.”  
(The Ph.D. degree recipients now sit down.)

**6.11.1 Presentation of University Gold Medal to the toppers in respective programmes and Endowment Medal by the Chief Guest**

Anchor: Chief Guest **Shri Bibek Debroy** to present University Gold Medal to the toppers in respective programs and Endowment Medal.

Anchor: “The University Gold Medalists to please move towards the dais to receive their Gold Medal.”  
“The University Gold Medalists of Masters programme batch 2016-18 are.....”

S.No.	Name	Programme	Department
1.	Sojo James	M.Arch.	Architecture
2.	Shruti Panwar	M.Sc. Biochemistry	Biochemistry
3.	Khushboo Rani	M.Sc. Biotechnology	Biotechnology
4.	Kajol Yadav	M.Sc. Chemistry	Chemistry
5.	Komal Jangid	M.Com	Commerce
6.	Kiran Scaria	M.Sc. Computer Science	Computer Science
7.	Tinamunam Sahoo	M.Sc. CS (Big Data Analytics)	Computer Science
8.	Dasharath Singh	M.A. Culture and Media Studies	Culture and Media Studies
9.	Isha Sharma	M.A. Economics	Economics
10.	Nirmal Joseph	M.A. English	English
11.	Siddhartha Sarkar	M.Sc. Environmental Science	Environmental Science
12.	Pradeep Attri	M.Sc. Atmospheric Science	Atmospheric Science
13.	Tarachand Kumawat	M.A. Hindi	Hindi
14.	Kanika Runwal	MBA	Management
15.	Priyanka	M.Sc. Microbiology	Microbiology
16.	Harsha P J	M.Pharm	Pharmacy
17.	Premashis Kumar	M.Sc. Physics	Physics
18.	Deepika Kumari Meena	M.A. Public Policy, Law & Governance	Public Policy, Law & Governance
19.	Hamzah Hassan Motta	M.A. Social Work	Social Work
20.	Mareeswaran M.	M.Sc. Statistics	Statistics

**“The University Gold Medalists of Vocational programme batch 2015-18 are.....”**

S.No.	Name	Programme	Department
1	Monu Jangid	B.Voc. (Interior Design)	Architecture
2	Surbhi Maheshwari	B.Voc. (Interior Design)	Architecture

**“The University Gold Medalists of Integrated M.Sc. programme batch 2013-18 are.....”**

S.No.	Name	Programme	Department
1	Ashita Gadwal	Integrated M.Sc. Biotechnology	Biotechnology
2	Bal Krishna Sharma	Integrated M.Sc. Chemistry	Chemistry
3	Vidhi	Integrated M.Sc. Computer Science	Computer Science
4	Shobhana Sikhawal	Integrated M.Sc. Economics	Economics
5	Rakhi Giri	Integrated M.Sc. Environmental Science	Environmental Science
6	Priyanka Gehlot	Integrated M.Sc. Microbiology	Microbiology
7	Komal Shekhawat	Integrated M.Sc. Statistics	Statistics
8	Bindu Chaudhary	Integrated M.Sc. Mathematics	Mathematics

**“The University Gold Medalists of Integrated M.Sc. B.Ed. programme batch 2015-18 are.....”**

S.No.	Name	Programme	Department
1	Jyoteshna Kharb	Integrated M.Sc. B.Ed. Chemistry	Chemistry
2	Chandan Kumari Dubey	Integrated M.Sc. B.Ed. Economics	Economics
3	Preeti Meena	Integrated M.Sc. B.Ed. Mathematics	Mathematics

(Anchor monitors the pace of movement of the candidates and calls names slowly one by one. Text is modified by the Anchor as per need and attendance of the recipients. )

(As the names announced, the respective Ph.D. degrees/ University gold medalists / Endowment Medal will go on the dais and receive the Ph.D. degrees/ University Gold Medal / Endowment Medal from the Chief Guest.)



**Anchor: Presentation of Endowment Medal**

- (A) CURAJ-Armstrong Gold Medal for excellence in Vocational Education, Certificate and a cheque of Rs. 11000/- each.

**Anchor:** I request Ms. Anjali Mata and Ms. Surbhi Maheshwari to come on stage and receive the awards.

S.No.	Name	Programme	Department
1	Anjali Mata	B.Voc.	Architecture
2	Surbhi Maheshwari	B.Voc.	Architecture

- (B) CURAJ-Armstrong Silver Medal for excellence in Vocational Education, Certificate and a cheque of Rs. 5100/- each.

**Anchor:** I request Ms. Hema Khorwal; Ms. Anamika Ajmera to come on stage and receive the awards.

S.No.	Name	Programme	Department
1	Hema Khorwal	B.Voc.	Architecture
2	Anamika Ajmera	B.Voc.	Architecture

**Anchor:** "Thank you Sir. On behalf of the University, I thank the Chief Guest for doing the honor.

**6.12 Exhortation by the Chancellor:**

**Anchor:** "All the degree recipients are requested to please stand up for the exhortation by the Chancellor."

**Chancellor** will grant the request in the following words:

**"By virtue of the powers vested in me as the Chancellor of the Central University of Rajasthan, I admit you to the respective degrees and I charge you that ever in your life and conversation you show yourselves worthy of the same".**

**Anchor:** "The degree recipients may please take their seats."

**Anchor:** I now request the **Controller of Examinations** to present the Degree Award Register for signatures of the Chancellor.

**Chancellor** signs the Degree Award Register.

Anchor: “Thank you Sir.”

Anchor: I now request the Chief Guest **Shri Bibek Debroy** to deliver the Convocation Address.

### 7. Convocation Address by the Chief Guest

Anchor: “Thank You Sir.”

### 8. Presenting Chancellor’s Award for Best Faculty.

Anchor: The University announces the institution of Chancellor’s Award for Best Faculty. The award aims to recognize outstanding contribution of a faculty member towards research, teaching and community outreach. Its goal is to encourage and support younger members of faculty in becoming inspirational leaders in their areas of research and teaching.

Anchor: I now request the Chancellor to present Chancellor’s Award for Best Faculty.

Anchor: The Chancellor’s Award for Best Faculty goes to.....

Anchor: .....will come to the dais and receive Chancellor’s Award for Best Faculty from the Chancellor.

Anchor: I now request the Chancellor **Dr. K. Kasturirangan** to deliver the Convocation Remarks.

### 9. Convocation Remarks by the Chancellor

Anchor: “Thank you Sir.”

Anchor: As this Convocation Ceremony comes to close, I request Shri K.V.S. Kameswara Rao, the Registrar, to propose Vote of Thanks.”

### 10. Vote of Thanks by the Registrar / Closure of Convocation Ceremony

The Registrar proposes brief Vote of Thanks.

The Registrar then seeks the permission of the Chancellor by saying:

Registrar “Sir, I now request you to grant permission to close the convocation ceremony”.

Chancellor says:

**“Permission granted”**

The Registrar then, declares the Convocation Ceremony closed in the following words:–

Registrar “Now I declare the Convocation Ceremony “closed”.

Anchor: I now request Vice Chancellor to present a memento to the Chancellor.

Vice Chancellor presents a memento to the Chancellor.

Anchor: I now request Vice Chancellor to present a memento to the Chief Guest.

Vice Chancellor presents a memento to the Chief Guest.

Anchor: I now request all to kindly stand up for the National Anthem.

## **11. National Anthem**

Anchor: I request all in the auditorium to keep standing till the procession leaves the auditorium.

## **12. The Procession will leave the Auditorium.**

Anchor: All University Gold Medalists are requested to stay back for the photo session with the Chancellor, Chief Guest and other dignitaries.

The procession will then leave the Convocation Hall in the same order as that in which it entered, the graduates and the audience standing.

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**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M. Tech Computer Science & Engineering**

Batch: 2016

Name of School : **School of Engineering & Technology**

Department : **Computer Science & Engineering**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MTCSE009	Yashna Bharti	8.67	
2	2016MTCSE008	Tulsi Swami	8.50	
3	2016MTCSE005	Komal	8.13	
4	2016MTCSE006	Lalit Kumar Chachlani	8.08	
5	2016MTCSE004	Gulshan Kumar Singh	8.00	
6	2016MTCSE002	Ashish Kumar	7.71	
7	2016MTCSE001	Abdul Malik Ansari	7.63	
8	2016MTCSE003	Bhushan Kumar	7.08	

Prepared and Checked by:-

Head of the Department

Controller of Examinations

# Central University of Rajasthan

Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

## DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL

**YEAR OF AWARD: 2018**

Name of the Programme: **M.A. Public Policy, Law & Governance**

Batch: 2016

Name of School : **School of Social Sciences**

Department : **Public Policy, Law & Governance**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MPPLG004	Deepika Kumari Meena	8.04	<b>Gold Medalist</b>
2	2016MPPLG009	Swadesh Kumar	7.96	
3	2016MPPLG007	Rahul Kumar	7.92	
4	2016MPPLG006	Poonam Saini	7.63	
5	2016MPPLG002	Avinash Mishra	7.50	
6	2016MPPLG001	Ankur Pratap Singh	7.38	
7	2015MPPLG012	Sandeep Kumar	7.04	

Prepared and Checked by:-

  
Head of the Department

  
Controller of Examinations

**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.A. Culture & Media Studies**

Batch: 2016


Name of School : **School of Social Sciences**

Department : **Culture & Media Studies**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MACMS003	Dasharath Singh	8.25	<b>Gold Medalist</b>
2	2016MACMS004	Gunjan Jain	8.25	
3	2016MACMS005	M V Satyanarayan Reddy	8.00	
4	2016MACMS007	Sangeeta Choudhary	7.96	
5	2016MACMS001	Abhijeet Kumar	7.21	

Prepared and Checked by:-

  
Head of the Department

  
Controller of Examinations

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.A. Economics**

Batch: 2016

Name of School : **School of Social Sciences**

Department : **Economics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MAE003	Isha Sharma	7.75	<b>Gold Medalist</b>
2	2016MAE004	Kundan Kumar	7.46	
3	2016MAE005	Madhuri Kumari	7.46	
4	2016MAE010	Surbhi Sharma	7.38	
5	2016MAE002	Diksha Jha	7.17	
6	2016MAE006	Praveen Kumar	7.13	
7	2016MAE009	Sakshi Saini	6.92	
8	2016MAE011	Vishal Thakuriya	6.88	
9	2015MAE004 ®	Ayushi Nahar	7.29	
10	2015MAE015 ®	Regulagadda Veeresh	5.58	
11	2015MAE013 ®	Nitesh Meena	5.50	
12	2011MAE021 ®	Tribhuvan Meena	5.08	

Prepared and Checked by:-



Head of the Department



Controller of Examinations

**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Integrated M.Sc. Economics**

Batch: 2013

Name of School : **School of Social Sciences**


Department : **Economics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2013IMSBEC019	Shobhba Sikhwal	5.08	<b>Gold Medalist</b>
2	2013IMSBEC013	Mansi Baheti	4.88	
3	2013IMSBEC011	Keshav Soni	4.64	
4	2013IMSBEC021	Shubham Soni	3.77	
5	2013IMSBEC002	Ankit Sharma	3.32	

Prepared and Checked by:-

  
Head of the Department


  
Controller of Examinations



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Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Integrated M.Sc. B.Ed. Economics**

Batch: 2015


Name of School : **School of Social Sciences**

Department : **Economics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSBEC002	Chandan Kumari Dubey	7.91	<b>Gold Medalist</b>
2	2015IMSBEC004	Mamta Kumari	6.67	

Prepared and Checked by:-

  
Head of the Department

  
Controller of Examinations

**Central University of Rajasthan**  
Bandarsindri, Jaipur - Ajmer Highway, NH-08, Dist. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **B.Sc.**

Batch: **2015**

Name of School : **School of Social Sciences**

Department : **Economics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSEC001	Aaradhya Dave	8.92	
2	2015IMSEC006	Anusuiya Sharma	8.54	
3	2015IMSEC020	Shuchismita Mishra	7.99	
4	2015IMSEC010	Gayathri B	7.89	
5	2015IMSEC024	Vemula Dhanusha	7.78	
6	2015IMSEC011	Haribala Muraleedharan	7.68	
7	2015IMSEC012	Jai D Tahilyani	7.66	
8	2015IMSEC017	Ranjan Sahani	7.40	
9	2015IMSEC022	Surendra Kumar	7.28	
10	2015IMSEC014	N Ashish	7.13	
11	2015IMSEC008	Deepanshu Lakhwan	7.09	
12	2015IMSEC015	Navneet Nischal	6.84	
13	2015IMSEC021	Sumit Kulhari	6.84	
14	2015IMSEC002	Aman Verma	6.75	
15	2015IMSEC018	Rupesh Lal Bhagat	6.50	
16	2014IMSEC011 ®	Himanshu Gehlot	3.48	7 Point Scale

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**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.A. Social Work**

Batch: 2016


Name of School : **School of Social Sciences**

Department : **Social Work**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MSW008	Hamzah Hassan Motta	7.71	Gold Medalist
2	2016MSW011	Komal Babani	7.63	
3	2016MSW019	Ummushahla	7.56	
4	2016MSW004	Anoopraj	7.44	
5	2016MSW002	Anie James	7.42	
6	2016MSW010	Jayaprakash P R	7.33	
7	2016MSW020	Varsha	7.25	
8	2016MSW005	Ansum Mishra	7.23	
9	2016MSW016	Prerna Ojha	7.21	
10	2016MSW009	Iftikhar Hussain	7.13	
11	2016MSW007	Bipasa Kumari	7.10	
12	2016MSW018	Mukesh Sidh	7.10	
13	2016MSW001	Albin Sunny	7.08	
14	2016MSW006	Atul Purty	7.08	
15	2016MSW012	Nikhil Yadav	7.00	
16	2016MSW013	Om Prakash Choudhary	6.92	
17	2016MSW014	Pragati Kumari	6.52	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.A. Hindi**

Batch: 2016

Name of School : **School of Humanities and Languages**

Department : **Hindi**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MAH015	Tarachand Kumawat	7.96	<b>Gold Medalist</b>
2	2016MAH005	Manohar Kanwar	7.83	
3	2016MAH001	Bhagavati Soni	7.75	
4	2016MAH011	Shiwani Choudhary	7.75	
5	2016MAH008	Preeti Pareek	7.50	
6	2016MAH007	Prakash Chand Verma	7.38	
7	2016MAH012	Suman Kumari	7.29	
8	2016MAH006	Naveen Kumar Joshi	7.25	
9	2016MAH009	Rakesh Kumar Kumawat	7.25	
10	2016MAH010	Sapna Das	7.17	
11	2016MAH002	Harendra Kumawat	7.13	
12	2016MAH004	Manju Kumari	7.13	
13	2016MAH013	Suraj Mal Kumhar	7.13	

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For.

  
22/9/18

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Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.A. English**

Batch: 2016

Name of School : **School of Humanities and Languages**

Department : **English**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MAEN013	Nirmal Joseph	8.00	<b>Gold Medalist</b>
2	2016MAEN001	Ahmed Mahmoud Saad Mahmoud	7.96	
3	2016MAEN015	Stuti Beri	7.88	
4	2016MAEN010	Megha Manju Promodu	7.67	
5	2016MAEN014	Nivedita Roy	7.54	
6	2016MAEN002	Ankit Kumar Sharma	7.38	
7	2016MAEN008	Kajal Bisht	7.29	
8	2016MAEN009	Mamta Mehrania	7.13	
9	2016MAEN007	Garima Bhaskar	6.96	
10	2016MAEN011	Nandini Jagrawal	6.79	
11	2016MAEN003	Ankita Choudhary	6.67	
12	2016MAEN012	Neeraj Kumar Gothwal	6.33	
13	2016MAEN004	Ankita Udaiwal	6.29	

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Head of the Department IC

*Bhuvika Sharma*

*Wahman*  
Controller of Examinations

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **MBA**


Batch: 2016

Name of School : **School of Commerce and Management**  
Department : **Management**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MBA010	Kanika Runwal	8.91	Gold Medalist
2	2016MBA025	Tanvi Jain	8.84	
3	2016MBA002	Akshay Soni	8.59	
4	2016MBA013	Khushboo Joshi	8.50	
5	2016MBA022	Pooja Lakhotiya	8.50	
6	2016MBA004	Arushi Garg	8.47	
7	2016MBA027	Vanshika Kanwar Parihar	8.47	
8	2016MBA028	Vishal Singh	8.28	
9	2016MBA021	Nupur Kumawat	8.25	
10	2016MBA006	Deepika Agarwal	8.03	
11	2016MBA014	Krishna	8.00	
12	2016MBA003	Amisha Das	7.94	
13	2016MBA020	Neha Jha	7.84	
14	2016MBA017	Nalinakshya Panda	7.66	
15	2016MBA019	Neha	7.47	
16	2016MBA007	Devanshu Solanki	7.44	
17	2016MBA001	Abhijeet Bhaskar Gupta	7.38	
18	2016MBA008	Himanshu Mudgal	7.28	
19	2016MBA009	Kanhaiya Lal Tailor	7.28	
20	2016MBA023	Sandeep Shourabh	7.16	
21	2016MBA015	Lokesh Baswal	7.13	
22	2016MBA018	Narendra Meena	7.13	
23	2016MBA011	Karan Choudhary	7.09	
24	2016MBA026	Thota Lakshmaiah	7.03	
25	2016MBA016	Madhukar Jangir	7.00	
26	2016MBA029	Vishram Bairwa	6.91	
27	2016MBA012	Kavita	6.81	
28	2016MBA005	Avinash Jangid	6.56	
29	2016MBA024	Sushant Baudh	6.34	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Com**

Batch: 2016

Name of School : **School of Commerce and Management**

Department : **Commerce**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MCOM004	Komal Jangid	9.13	<b>Gold Medalist</b>
2	2016MCOM005	Lata Paliwal	8.67	
3	2016MCOM010	Parthvi Rastogi	8.63	
4	2016MCOM016	Varsha Rustagi	8.63	
5	2016MCOM003	Kiran Meena	8.54	
6	2016MCOM011	Pragya Jain	8.21	
7	2016MCOM012	Priyanka	8.21	
8	2016MCOM007	Mantri Sai Naresh	8.08	
9	2016MCOM009	Neetu Yadav	8.00	
10	2016MCOM008	Navneet Singh	7.71	
11	2016MCOM013	Rahul Kajla	7.71	
12	2016MCOM015	Satyender Yadav	7.67	
13	2016MCOM014	Sapna	7.63	
14	2016MCOM017	Vikas Kumar	7.58	
15	2016MCOM002	Arjun Khateek	7.04	
16	2016MCOM001	Anusuya Naik	6.92	
17	2015MCOM004 ®	Bhanwar Singh	6.79	
18	2015MCOM017 ®	Sabindra Kumar	5.21	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Sc. Physics**

Batch: 2016


Name of School : **School of Physical Sciences**

Department : **Physics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MSPH005	Premashis Kumar	8.08	<b>Gold Medalist</b>
2	2016MSPH009	Sudipta Kumar Dash	7.46	
3	2016MSPH003	Gunjan Sharma	7.42	
4	2016MSPH001	Abhaya Prasada Mohapatra	7.38	
5	2016MSPH008	Sauvik Sen	7.21	
6	2016MSPH002	Abhishek Agrawal	6.96	
7	2016MSPH004	Pradeep Kumar	6.96	
8	2016MSPH007	Sandhya Singh	6.71	
9	2016MSPH010	Vinay Kumar	6.71	
10	2016MSPH006	Ram Kalyan	6.58	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **B.Sc.**

Batch: **2015**

Name of School : **School of Physical Sciences**

Department : **Physics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSPH013	Pankaj Choudhary	8.35	
2	2015IMSPH021	Sandeep Jangir	8.31	
3	2015IMSPH014	Pawan Kumar Sharma	7.70	
4	2015IMSPH023	Shubham Rai	7.58	
5	2015IMSPH010	Navneet Kumar	7.50	
6	2015IMSPH008	Mahesh Kumar Didwariya	7.49	
7	2015IMSPH001	Ankit Patel	7.30	
8	2015IMSPH005	Kiran Choudhary	7.23	
9	2015IMSPH017	Pukhraj Sen	7.10	
10	2015IMSPH009	Manisha Meena	7.04	
11	2015IMSPH006	Koduri Vishnuvardhan	6.63	
12	2015IMSPH019	Rishi Pal	6.22	
13	2015IMSPH007	Mahaveer Parsad Tard	6.00	
14	2014IMSPH017 ®	Ramwatar Meena	3.18	7 Point Scale

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**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**


Name of the Programme: **Integratd M.Sc. Physics**

Batch: 2013

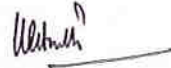
Name of School : **School of Physical Sciences**

Department : **Physics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2013IMSBPH011	Hemant Kumar	4.53	
2	2013IMSBPH005	Apoorv	3.64	
3	2013IMSBPH020	Raveena	3.73	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Integratd M.Sc. B.Ed. Physics**

Batch: 2015

Name of School : **School of Physical Sciences**

Department : **Physics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSBPH022	Vartika Khandelwal	7.95	
2	2015IMSBPH002	Aswathi B Nair	7.94	
3	2015IMSBPH023	Yagya Dev Bhardwaj	7.88	
4	2015IMSBPH010	Komal Agnihotri	7.81	
5	2015IMSBPH003	Athira Paul	7.79	
6	2015IMSBPH018	Shambik Ghosh	7.73	
7	2015IMSBPH013	Pinki Yadav	7.65	
8	2015IMSBPH001	Arpan Bairagi	7.54	
9	2015IMSBPH009	Kiran	7.54	
10	2015IMSBPH016	Sapna	7.37	
11	2015IMSBPH008	Jayanta Kumar Bera	7.20	
12	2015IMSBPH012	Om Prakash Yadav	7.18	
13	2015IMSBPH020	Suman Saini	7.17	
14	2015IMSBPH015	Rohit Kumar	7.14	
15	2015IMSBPH006	Deepika Singariya	7.11	
16	2015IMSBPH004	Avinash Yadav	7.04	
17	2015IMSBPH019	Shri Ram Yadav	7.04	
18	2015IMSBPH007	Dhan Singh Meena	6.72	
19	2015IMSBPH017	Seema	6.64	
20	2015IMSBPH005	Balram Meena	6.61	
21	2015IMSBPH021	Surendra Kumar Rathore	6.19	

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**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Sc. Environmental Science**


Batch: 2016

Name of School : **School of Earth Sciences**

Department : **Environmental Science**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MSES009	Siddhartha Sarkar	8.64	<b>Gold Medalist</b>
2	2016MSES002	Amandeep Ruhela	8.40	
3	2016MSES008	Piyush Tripathi	8.38	
4	2016MSES001	A Krishnan	8.24	
5	2016MSES003	Bhavna Choudhary	8.17	
6	2016MSES005	Kanchan Lakra	8.05	
7	2016MSES004	Deepak Kumar	6.82	

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**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Sc. Atmospheric Science**

Batch: 2016

Name of School : **School of Earth Sciences**


Department : **Atmospheric Science**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MSATS004	Pradeep Attri	8.09	<b>Gold Medalist</b>
2	2016MSATS003	Ganesan M	7.77	
3	2016MSATS001	Archana Tripathy	7.75	

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**Central University of Rajasthan**  
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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Integrated M.Sc. Environmental Science**

Batch: 2013

Name of School : **School of Earth Sciences**

Department : **Environmental Science**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2013IMSES021	Rakhi Giri	5.24	<b>Gold Medalist</b>
2	2013IMSES009	Deepali Malik	5.19	
3	2013IMSES016	Medhavi Srivastava	4.98	
4	2013IMSES011	Dinesh Singh Bhati	4.66	
5	2013IMSES006	Archana Rajput	4.44	
6	2013IMSES002	Aayushi Gour	4.41	
7	2013IMSES017	Meena Choudhary	4.08	
8	2013IMSES023	Sahil Alwaria	4.01	

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**Central University of Rajasthan**  
Bandarsindri, Jaipur - Ajmer Highway, NH-08, Dist. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **B.Sc.**

Batch: **2015**

Name of School : **School of Earth Sciences**

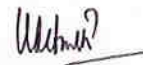
Department : **Enviornmental Science**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSES009	Khyati Mynam	7.21	
2	2015IMSES019	Sakshi Tiwari	6.98	
3	2014IMSES25 ®	Yogesh Jangir	3.55	7 Point Scale

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Head of the Department



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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Arch. (Sustainable Architecture)**

Batch: 2016

Name of School : **School of Architecture**

Department : **Architecture**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MARCH003	Sojo James	8.90	<b>Gold Medalist</b>
2	2016MARCH002	Rachana Pandey	8.80	
3	2016MARCH005	Anjali Paliwal	8.51	
4	2016MARCH012	Poonam Sharma	8.39	
5	2016MARCH010	Nithin.M	8.11	
6	2016MARCH009	Krishn Mathur	7.68	
7	2016MARCH013	Rajshree Dafe	7.61	
8	2016MARCH011	Mukul Swami	7.46	
9	2016MARCH014	Ritesh Kumar Agrawal	7.30	
10	2016MARCH007	Atiksha Kundu	7.19	
11	2016MARCH006	Ankit Varshney	6.97	
12	2016MARCH008	Jitendra Barala	6.95	
13	2016MARCH015	Shlok Dua	6.22	
14	2016MARCH016	Yoganshu Girdhar	6.13	
15	2015MARCH006 ®	Nazia Kathat	7.45	
16	2015MARCH015 ®	Vivek Singh	6.48	
17	2015MARCH007 ®	Nitesh Kumar	6.04	

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Head of the Department

  
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Central University of Rajasthan  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817


5th Convocation

**CURAJ-ARMSTRONG - AWARD FOR GIRL STUDENTS FOR EXCELLENCE IN VOCATIONAL EDUCATION**

S.No.	Enrolment No.	Names	Batch	Programme	Department	CGPA	Signature of Head In-Charge
1	2015ADID001	Anjali Mata	2015 (JAN)	B.Voc. (Interior Design)	Architecture	5.41	
2	2015ADID007	Hema Khorwal	2015 (JAN)	B.Voc. (Interior Design)	Architecture	4.48	
3	2015ADID047	Surbhi Maheshwari	2015 (JULY)	B.Voc. (Interior Design)	Architecture	8.66	
4	2015ADID028	Anamika Ajmera	2015 (JULY)	B.Voc. (Interior Design)	Architecture	8.50	

Prepared and Checked by:-



  
Controller of Examinations

**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **B.Voc. (Interior Design)**


Batch: **Jan 2015**

Name of School : **School of Architecture**  
Department : **Architecture**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015ADID011	Monu Jangid	5.66	<b>Gold Medalist</b>
2	2015ADID001	Anjali Mata	5.41	
3	2015ADID006	Harish Jangid	4.96	
4	2015ADID002	Amit Goutam	4.73	
5	2015ADID007	Hema Khorwal	4.48	
6	2015ADID016	Priya Agarwal	4.42	
7	2015ADID010	Manvendra Singh Rathore	4.29	
8	2015ADID018	Rashmi Meena	4.23	

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Head of the Department

  
Controller of Examinations

**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **B.Voc. (Interior Design)**

Batch: **July 2015**

Name of School : **School of Architecture**

Department : **Architecture**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015ADID047	Surbhi Maheshwari	8.66	<b>Gold Medalist</b>
2	2015ADID028	Anamika Ajmera	8.50	
3	2015ADID046	Sonal Bairwa	8.04	
4	2015ADID037	Kishore Kumar	7.74	
5	2015ADID025	Aishwarya Dagra	7.63	
6	2015ADID034	Hajari Lal	7.56	
7	2015ADID027	Ambika Jonwal	7.54	
8	2015ADID043	Rakesh Sharma	7.53	
9	2015ADID039	Maya Devi	7.53	
10	2015ADID042	Pradeep Suthar	7.49	
11	2015ADID036	Jyoti Malakar	7.46	
12	2015ADID030	Asmita Sharma	7.42	
13	2015ADID029	Ashish Kumar	7.37	
14	2015ADID031	Deepak	7.33	
15	2015ADID038	Krishan Kumar Sablaniya	7.26	
16	2015ADID026	Akshima Jain	6.92	
17	2015ADID048	Yogesh Solanki	6.77	
18	2015ADID035	Hrishikesh Pohiya	6.76	
19	2015ADID040	Nirdosh Verma	6.43	

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Head of the Department

  
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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Sc. CS (Big Data Analytics)**

Batch: 2016

Name of School : **School of Mathematics, Statistics and Computational Sciences**

Department : **Computer Science**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MSBDA018	Tinamunam Sahoo	8.08	<b>Gold Medalist</b>
2	2016MSBDA016	Sonu Kumar	7.92	
3	2016MSBDA001	Andlapoori Srinu	7.71	
4	2016MSBDA008	Kalpana	7.71	
5	2016MSBDA005	Avani Sharma	7.67	
6	2016MSBDA014	Rishabh Agrawal	7.54	
7	2016MSBDA004	Arpit Sharma	7.33	
8	2016MSBDA007	Garima Chaudhary	7.17	
9	2016MSBDA010	Mohit Kumar Jetwal	6.92	
10	2016MSBDA009	Madan Lal Jat	6.83	
11	2016MSBDA006	Dinesh Godara	6.42	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Sc. Computer Science**

Batch: 2016

Name of School : **School of Mathematics, Statistics and Computational Sciences**

Department : **Computer Science**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MSCS008	Kiran Scaria	9.57	<b>Gold Medalist</b>
2	2016MSCS012	Patel Rahulkumar Dahyabhai	8.48	
3	2016MSCS010	Mukesh Kumar Jangir	7.73	
4	2016MSCS003	Amanpreet Kaur	7.29	
5	2016MSCS001	Aishwarya Prakash	7.05	
6	2016MSCS007	Jubin Sharma	6.81	
7	2016MSCS014	Vishakha Kalal	6.32	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Integrated M.Sc. Computer Science**

Batch: 2013

Name of School : **School of Mathematics, Statistics and Computational Sciences**

Department : **Computer Science**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2013IMSCS024	Vidhi Goel	5.22	<b>Gold Medalist</b>
2	2013IMSCS001	Amrit Raj	5.16	
3	2013IMSCS005	Deepanjali Sharma	4.92	
4	2013IMSCS012	Napur Somani	4.88	
5	2013IMSCS004	Deepak Kumar	4.57	
6	2013IMSCS022	Sunit Bhattacharya	4.52	
7	2013IMSCS003	Anudeepti Sharma	4.45	
8	2013IMSCS014	Prashitha	4.43	
9	2013IMSCS008	Hitesh Choudhary	4.38	
10	2013IMSCS016	Rishi Raj	4.32	
11	2013IMSCS017	Shilpi Rai	4.32	
12	2013IMSCS009	Laxmi Chandolia	4.30	
13	2013IMSCS002	Anita Chaudhary	4.07	
14	2013IMSCS011	Matil Sandu	4.00	
15	2013IMSCS006	Ganesh Gurjar	3.83	
16	2013IMSCS010	Mahima Rajput	3.80	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**


Name of the Programme: **B.Sc.**

Batch: **2015**


Name of School : **School of Mathematics, Statistics and Computational Sciences**

Department : **Computer Science**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSCS025	Vikas Choudhary	8.87	
2	2015IMSCS014	Priyanshu Kumari	8.63	
3	2015IMSCS005	Ipsita Patnaik	8.51	
4	2015IMSCS012	Pravin Choudhary	8.49	
5	2015IMSCS010	Nitesh Sukhwani	8.36	
6	2015IMSCS021	Suman Saurav	7.78	
7	2015IMSCS026	Vivek Shukla	7.73	
8	2015IMSCS022	Sunil Kumar Meena	7.00	
9	2015IMSCS009	Manish Kumar Choumiyan	6.95	
10	2015IMSCS019	Shyam Sundar Saini	6.51	
11	2015IMSCS024	Varinder Kumar	6.31	
12	2015IMSCS016	Rajendra Choudhary	6.19	
13	2014IMSCS021 ®	Praveen Kumar Prashant	4.10	7 Point Scale
14	2014IMSCS013 ®	Ganesh Narayan Parsoya	3.73	7 Point Scale

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Sc. Statistics**

Batch: 2016

Name of School : **School of Mathematics, Statistics and Computational Sciences**  
Department : **Statistics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MSTA005	Mareeswaran M.	7.58	<b>Gold Medalist</b>
2	2016MSTA004	Hemant Singh Gurjar	7.04	
3	2016MSTA002	Daliparthy Venkata Pavan Sasikanth	6.83	
4	2016MSTA003	Darshan Kailas Ahire	6.83	
5	2016MSTA008	Shaik Shakeer	6.50	
6	2016MSTA009	Yamarthi Adi Jnana Manikantha	6.38	
7	2015MSTA003	Deepti Soni	7.04	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **B.Sc.**

Batch: **2015**

Name of School : **School of Mathematics, Statistics and Computational Sciences**

Department : **Statistics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSST019	Shradha Gupta	9.00	
2	2015IMSST018	Shivani Singh Soni	8.27	
3	2015IMSST005	Alok Kumar	8.04	
4	2015IMSST024	Yogesh Katariya	7.81	
5	2015IMSST010	Mohd. Saif Ali	7.61	
6	2015IMSST003	Chigurupati Abhijith	7.21	
7	2015IMSST012	Ramkaran Sain	7.14	
8	2015IMSST017	Satnam Singh	7.01	
9	2015IMSST020	Vikas Chahar	6.93	
10	2015IMSST016	Saryu	6.49	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Inegrated M.Sc. Statistics**

Batch: 2013


Name of School : **School of Mathematics, Statistics and Computational Sciences**

Department : **Statistics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2013IMSST012	Komal Shekhawat	5.35	<b>Gold Medalist</b>
2	2013IMSST023	Urvashi Sharma	5.16	
3	2013IMSST006	Arpit Katiyar	5.02	
4	2013IMSST022	Somya Jain	4.84	
5	2013IMSST003	Abhishek Anand	4.81	
6	2013IMSST015	Pragya Gupta	4.56	
7	2013IMSST011	Kapil	4.39	
8	2013IMSST019	Sarita Vaishnav	4.28	
9	2013IMSST001	Aarti Sahu	4.23	
10	2013IMSST024	Utpala Chouhan	4.14	
11	2013IMSST009	Hansraj Bagariya	3.83	
12	2013IMSST021	Shruti Chalia	3.81	
13	2013IMSST018	Sangeeta Choudhary	3.14	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Integrated M.Sc. B.Ed. Mathematics**

Batch: 2015

Name of School : **School of Mathematics, Statistics and Computational Sciences**

Department : **Mathematics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSBMT018	Preeti Meena	8.66	<b>GOLD MEDALIST</b>
2	2015IMSBMT008	Kavita Kumari	8.51	
3	2015IMSBMT007	Kavita Burdak	8.40	
4	2015IMSBMT015	Nisha	8.30	
5	2015IMSBMT012	Meethu Bidasar	7.59	
6	2015IMSBMT021	Rupa Ram Kansaniya	7.57	
7	2015IMSBMT004	Harendra	7.57	
8	2015IMSBMT013	Mukesh Saini	7.53	
9	2015IMSBMT019	Rajesh Kumar Kumawat	7.48	
10	2015IMSBMT003	Gopal Singh Rawat	7.43	
11	2015IMSBMT014	Neetu Meena	7.43	
12	2015IMSBMT016	Neesha Saini	7.32	
13	2015IMSBMT011	Meenu	7.08	
14	2015IMSBMT006	Kapil Sankhla	7.03	
15	2015IMSBMT005	Jitesh Jhuria	6.98	
16	2015IMSBMT020	Ramniwas Thalor	6.94	
17	2015IMSBMT017	Prashant Kumar	6.92	
18	2015IMSBMT023	Vimala Meghwal	6.83	
19	2015IMSBMT022	Vandana Kumari Jangir	6.76	
20	2015IMSBMT002	Ankit	6.58	
21	2015IMSBMT010	Manjeet Singh	6.45	
22	2015IMSBMT001	Anil Kumar Kantiwal	6.43	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Sc. Mathematics**

Batch: 2016




Name of School : **School of Mathematics, Statistics and Computational Sciences**

Department : **Mathematics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MSTM008	Manoj Kumar	8.01	
2	2016MSTM007	Manish Kumar Yadav	6.53	
3	2015MSTM018	Ranvver Sinwar	7.07	
4	2015MSTM022	Shailendra Singh Chauhan	6.60	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Sc. Tech Mathematics**

Batch: **2015**

Name of School : **School of Mathematics, Statistics and Computational Sciences**

Department : **Mathematics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015MSTM007	Deepika Dhewa	6.34	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Integrated M.Sc. Mathematics**

Batch: 2013

Name of School : **School of Mathematics, Statistics and Computational Sci**  
Department : **Mathematics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2013IMSBMT007	Bindu Choudhary	5.52	<b>Gold Medalist</b>
2	2013IMSBMT001	Akanksha	4.13	
3	2013IMSBMT025	Tarun Dattatrey	4.00	
4	2013IMSBMT005	Atul Jakhar	3.89	
5	2013IMSBMT008	Devraj Meena	3.76	
6	2013IMSBMT024	Suresh Godara	3.59	
7	2013IMSBMT003	Ankit Singh	3.36	
8	2013IMSBMT009	Ganesh Meghwanshi	3.23	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **B.Sc.**

Batch: **2015**

Name of School : **School of Mathematics, Statistics and Computational Sciences**

Department : **Mathematics**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSMT025	Saurabh Bansal	9.13	
2	2015IMSMT018	Nitin Kumar Jha	8.36	
3	2015IMSMT022	Rahul Choudhary	8.31	
4	2015IMSMT024	Ravi Prakash Rar	7.93	
5	2015IMSMT019	Prashant Kumar Dattatrey	7.78	
6	2015IMSMT004	Amit Kumar Hinoniya	7.62	
7	2015IMSMT028	Utkarsh Mangal	7.57	
8	2015IMSMT011	Kamlesh Meena	7.12	
9	2015IMSMT005	Anooj Kumar	7.10	
10	2015IMSMT017	Mohit Yadav	7.07	
11	2015IMSMT023	Rajni Choudhary	7.05	
12	2015IMSMT026	Shankar Lal Choudhary	6.64	
13	2015IMSMT010	Jitendra Kumar Yadav	6.63	
14	2015IMSMT013	Kunwar Singh Gurjar	6.27	
15	2014IMSMT010 ®	Jitendra Burdak	4.17	7 Point Scale
16	2014IMSMT025 ®	Vikas Poonia	3.33	7 Point Scale
17	2013IMSBMT006 ®	Bhim Singh	3.28	7 Point Scale
18	2013IMSBMT019 ®	Rakesh Meena	3.25	7 Point Scale

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Sc. Biochemistry**

Batch: 2016

Name of School : **School of Life Sciences**

Department : **Biochemistry**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MSBC008	Shruti Panwar	8.69	<b>Gold Medalist</b>
2	2016MSBC010	Surbhi Dahiya	8.41	
3	2016MSBC007	Shruti Gupta	8.38	
4	2016MSBC005	Raj Nandani	8.28	
5	2016MSBC003	Hitaishi Sihag	8.19	
6	2016MSBC002	Diwakar Sharma	8.03	
7	2016MSBC009	Sumit Jamwal	7.50	
8	2016MSBC001	Anita	6.16	
9	2015MSBC017 ®	Rakesh Kumar Dabariya	6.29	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Integrated M.Sc. Biochemistry**

Batch: 2013

Name of School : **School of Life Sciences**

Department : **Biochemistry**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2013IMSBC025	Vikramaditya Singh	5.15	
2	2013IMSBC004	Divya Sharma	4.99	
3	2013IMSBC021	Shashank Arora	4.90	
4	2013IMSBC018	Rahul Shobhawat	4.86	
5	2013IMSBC011	Nina Chatterjee	4.79	
6	2013IMSBC022	Shivani Jain	4.54	
7	2013IMSBC020	Saroj Prajapat	4.45	
8	2013IMSBC007	Krishna Singh	4.34	
9	2013IMSBC001	Akanksha Kotidar	4.16	
10	2013IMSBC010	Mukut Pratap	3.91	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **B.Sc.**

Batch: **2015**

Name of School : **School of Life Sciences**

Department : **Biochemistry**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSBC011	Nikhil Sunny	8.01	
2	2015IMSBC025	Yashwant Singh Panwar	7.72	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Sc. Biotechnology**

Batch: 2016

Name of School : **School of Life Sciences**

Department : **Biotechnology**

Sl.No	Enrollment No.	Student Name	CGPA	Remarks
1	2016MSBT004	Khushboo Rani	8.59	<b>Gold Medalist</b>
2	2016MSBT002	Anshika Bansal	8.28	
3	2016MSBT003	Deepti Yadav	8.22	
4	2016MSBT001	Ajay Kumar	6.56	
5	2015MSBT013 ®	Pushpa Kumari	6.14	
6	2015MSBT015 ®	Renu Kumari	5.93	
7	2015MSBT010 ®	Monika	5.88	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **B.Sc.**

Batch: **2015**

Name of School : **School of Life Sciences**

Department : **Biotechnology**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSBT026	Yesheswini Rajendran	8.13	
2	2015IMSBT007	Bodhisatwa Nandi	7.98	
3	2015IMSBT009	Garima Kushwaha	7.97	
4	2015IMSBT025	Yashpal Singh	6.16	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Integrated M.Sc. Biotechnology**

Batch: 2013

Name of School : **School of Life Sciences**

Department : **Biotechnology**

Sl.No	Enrollment No.	Student Name	CGPA	Remarks
1	2013IMSBT006	Ashita Gadwal	5.35	Gold Medalist
2	2013IMSBT010	Mahendra Singh	5.33	
3	2013IMSBT019	Shubham Garg	5.13	
4	2013IMSBT005	Apoorva Shrivastav	4.58	
5	2013IMSBT020	Shubhi Jain	4.39	
6	2013IMSBT024	Simangka Borsaikia	4.39	
7	2013IMSBT014	Nida Hashami	4.06	
8	2013IMSBT017	Shailesh Kumar	4.04	
9	2013IMSBT001	Aishwarya Ajmera	3.95	
10	2013IMSBT011	Muskan Sanskriti	3.88	
11	2013IMSBT013	Neha Patni	3.69	
12	2013IMSBT004	Anshu Kumari	3.59	
13	2013IMSBT003	Annu Kumari	3.38	
14	2013IMSBT025	Suman Teli	3.32	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Sc.Microbiology**

Batch: 2016

Name of School : **School of Life Sciences**

Department : **Microbiology**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MSMB009	Priyanka	8.78	Gold Medalist
2	2016MSMB006	Pragati Dangayach	8.66	
3	2016MSMB001	Ajeena Mol A	7.72	
4	2016MSMB003	Himanshi Sharma	7.59	
5	2016MSMB010	Shweta Maurya	7.38	
6	2016MSMB002	Anjana Jharwal	7.19	
7	2016MSMB005	Monika	7.00	
8	2016MSMB004	Keshav Kumar Meghwanshi	6.78	
9	2016MSMB007	Prakash Pooniyan	6.63	
10	2016MSMB008	Prakriti Mahria	6.38	
11	2015MSMB020	Vikram Kumar	6.36	
12	2015MSMB018 ®	Sumangala Kumari	6.16	
13	2014MSMB001 ®	Afajal Husain	5.44	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Integrated M.Sc.Microbiology**

Batch: 2013

Name of School : **School of Life Sciences**

Department : **Microbiology**

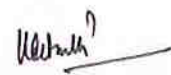
Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2013IMSMB014	Priyanka Gehlot	5.50	<b>Gold Medalist</b>
2	2013IMSMB004	Khushboo Mehta	5.39	
3	2013IMSMB012	Nitesh Kansara	4.93	
4	2013IMSMB002	Ashish Sahu	4.89	
5	2013IMSMB005	Komal Jain	4.87	
6	2013IMSMB008	Meenakshi Dhaka	4.69	
7	2013IMSMB017	Saket Kashyap	4.64	
8	2013IMSMB003	Harshvardhan	4.55	
9	2013IMSMB006	Manoj Kumari	4.36	
10	2013IMSMB016	Rupali Raj Agarwal	4.21	
11	2013IMSMB010	Nassen Bano	3.79	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **B.Sc.**

Batch: **2015**

Name of School : **School of Life Sciences**

Department : **Microbiology**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSMB017	Rubina Sheikh	7.57	
2	2013IMSMB018 ®	Santosh Kumari	3.20	7 Point Scale

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Pharm**

Batch: 2016

Name of School : **School of Chemical Sciences and Pharmacy**  
Department : **Pharmacy**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MPHARM004	Harsha P J	7.98	<b>Gold Medalist</b>
2	2016MPHARM005	Kunal Dadhich	7.97	
3	2016MPHARM001	Gajendra Singh Thakur	7.10	
4	2016MPHARM006	Sudhakar Rajoria	7.09	
5	2016MPHARM003	Goloo Giri	6.88	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **M.Sc. Chemistry**

Batch: 2016





Name of School : **School of Chemical Sciences and Pharmacy**

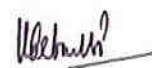
Department : **Chemistry**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2016MSC004	Kajol Yadav	8.22	<b>Gold Medalist</b>
2	2016MSC007	Rohit Thakur	8.06	
3	2016MSC006	Piyush Kumar Barnwal	7.72	
4	2016MSC002	Divyadeepika	7.63	
5	2016MSC005	Parveen Kumar	7.44	
6	2016MSC001	Ashok Kumar Raigar	7.19	
7	2015MSCH011 ®	Dinesh Kumar Shersiya	6.06	

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **B.Sc.**

Batch: **2015**

Name of School : **School of Chemical Sciences and Pharmacy**

Department : **Chemistry**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSCH001	Aditi Saraswat	8.94	
2	2015IMSCH022	Turban Bera	8.20	
3	2015IMSCH007	Gunjan Sharma	8.12	
4	2015IMSCH012	Kuldeep Acharya	8.03	
5	2015IMSCH017	Ramprasad Choudhary	7.98	
6	2015IMSCH013	Mohit Kumar	7.38	

Prepared & Checked by :-

Head of the Department



Controller of Examinations



**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Integrated M.Sc. Chemistry**

Batch: 2013

Name of School : **School of Chemical Sciences and Pharmacy**

Department : **Chemistry**

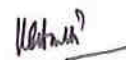
Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2013IMSBCH004	Bal Krishna Sharma	5.08	<b>Gold Medalist</b>
2	2013IMSBCH011	Manish Kumar Verma	5.05	
3	2013IMSBCH013	Mukesh Dhaker	4.56	
4	2013IMSBCH001	Aditya Jarera	4.51	
5	2013IMSBCH008	Lata Sharma	4.28	
6	2013IMSBCH023	Srishti Gaur	4.18	

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Head of the Department



Controller of Examinations



**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

Name of the Programme: **Integrated M.Sc. B.Ed. Chemistry**

Batch: 2015

Name of School : **School of Chemical Sciences and Pharmacy**

Department : **Chemistry**

Sl.No.	Enrollment No.	Student Name	CGPA	Remarks
1	2015IMSBCH006	Jyoteshna Kharb	8.76	<b>Gold Medalist</b>
2	2015IMSBCH022	Rohit Kumar Jain	8.43	
3	2015IMSBCH017	Pooja Sharma	8.22	
4	2015IMSBCH025	Vinay Kumar	8.02	
5	2015IMSBCH001	Ankita Devra	7.96	
6	2015IMSBCH023	Roopendra Singh Madhukar	7.81	
7	2015IMSBCH018	Priyanka Gupta	7.77	
8	2015IMSBCH016	Pooja Agrawal	7.67	
9	2015IMSBCH014	Neetu Kanwar Rathore	7.65	
10	2015IMSBCH012	Manish Murawtiya	7.51	
11	2015IMSBCH011	Mahesh Kumar	7.15	
12	2015IMSBCH003	Hemant Malawat	7.12	
13	2015IMSBCH007	Jyoti Saini	7.09	
14	2015IMSBCH005	Ihthisham K	6.93	
15	2015IMSBCH013	Ambika Meena	6.91	
16	2015IMSBCH019	Raj Kumar	6.78	
17	2015IMSBCH002	Hansraj Gurjar	6.58	

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Head of the Department



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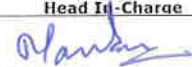
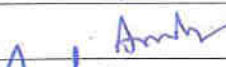
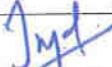


**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**GOLD MEDALISTS'LIST FOR APPROVAL BY ACADEMIC COUNCIL**


**5th Convocation**

**Integrated M.Sc. B.Ed. Programme Batch - 2015**

S.No.	Enrolment No.	Names	Batch	Programme	Department	CGPA	Signature of Head In-Charge
1	2015SIMSBCH006	Jyoteshna Kharb ✓	2015 ✓	Integrated M.Sc. B.Ed. Chemistry ✓	Chemistry ✓	8.76 ✓	
2	2015SIMSBEC002	Chandan Kumari Dubey ✓	2015 ✓	Integrated M.Sc. B.Ed. Economics ✓	Economics ✓	7.91 ✓	
3	2015SIMSBMT018	Preeti Meena ✓	2015 ✓	Integrated M.Sc. B.Ed. Mathematics ✓	Mathematics ✓	8.66 ✓	

Prepared by:- 

Checked by:- 

 11.09.2018

Controller of Examinations

**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Distt. Ajmer 305817

**GOLD MEDALISTS' LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**5th Convocation**  
**Integrated M.Sc. Programme Batch-2013**

S.No.	Enrolment No.	Names	Batch	Programme	Department	CGPA	Signature of Head In-Charge
1	2013IMSBT006	ASHITA GADWAL ✓	2013 ✓	Integrated M.Sc. Biotechnology ✓	Biotechnology ✓	5.35 ✓	
2	2013IMSBCH004	BAL KRISHNA SHARMA ✓	2013 ✓	Integrated M.Sc. Chemistry ✓	Chemistry ✓	5.08 ✓	
3	2013IMSCS024	VIDHI ✓	2013 ✓	Integrated M.Sc. Computer Science ✓	Computer Science ✓	5.22 ✓	
4	2013IMSBEC019	SHOBHANA SIKHAWAL ✓	2013 ✓	Integrated M.Sc. Economics ✓	Economics ✓	5.08 ✓	
5	2013IMSES021	RAKHI GIRI ✓	2013 ✓	Integrated M.Sc. Environmental Science ✓	Environmental Science ✓	5.24 ✓	
6	2013IMSB014	PRIYANKA GEHLOT ✓	2013 ✓	Integrated M.Sc. Microbiology ✓	Microbiology ✓	5.50 ✓	
7	2013IMSST012	KOMAL SHEKHAWAT ✓	2013 ✓	Integrated M.Sc. Statistics ✓	Statistics ✓	5.35 ✓	
8	2013IMSBMT007	BINDU CHAUDHARY ✓	2013 ✓	Integrated M.Sc. Mathematics ✓	Mathematics ✓	5.52 ✓	

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Checked by:-

11.09.2018  
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**GOLD MEDALISTS' LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**5th Convocation**

S.No.	Enrolment No.	Names	Batch	Programme	Department	CGPA	Signature of Head In-Charge
1	2016MARCH003	Sojo James ✓	2016 ✓	M.Arch. ✓	Architecture ✓	8.90 ✓	<i>[Signature]</i>
2	2015ADID011	Monu Jangid	2015 (JAN)	B.Voc. (Interior Design)	Architecture	5.66	<i>[Signature]</i>
3	2015ADID047	Surbhi Maheshwari	2015 (JULY)	B.Voc. (Interior Design)	Architecture	8.66	<i>[Signature]</i>
4	2016MSBC008	Shruti Panwar ✓	2016 ✓	M.Sc. Biochemistry	Biochemistry ✓	8.69 ✓	<i>[Signature]</i>
5	2016MSBT004	Khushboo Rani ✓	2016 ✓	M.Sc. Biotechnology	Biotechnology ✓	8.59 ✓	<i>[Signature]</i>
6	2016MSC004	Kajol Yadav ✓	2016 ✓	M.Sc. Chemistry	Chemistry ✓	8.22 ✓	<i>[Signature]</i>
7	2016MCOM004	Komal Jangid ✓	2016 ✓	M.Com ✓	Commerce ✓	9.13 ✓	<i>[Signature]</i> (Head i/c)
8	2016MSCS008	Kiran Scaria ✓	2016 ✓	M.Sc. Computer Science	Computer Science ✓	9.57 ✓	<i>[Signature]</i>
9	2016MSBDA018	Tinamunam Sahoo ✓	2016 ✓	M.Sc. CS (Big Data Analytics)	Computer Science ✓	8.08 ✓	<i>[Signature]</i>
10	2016MACMS003	Dasharath Singh ✓	2016 ✓	M.A. Culture and Media Studies	Culture and Media Studies ✓	8.25 ✓	<i>[Signature]</i>
11	2016MAE003	Isha Sharma ✓	2016 ✓	M.A. Economics	Economics ✓	7.75 ✓	<i>[Signature]</i>
12	2016MAEN013	Nirmal Joseph ✓	2016 ✓	M.A. English	English ✓	8.00 ✓	<i>[Signature]</i>
13	2016MSES009	Siddhartha Sarkar ✓	2016 ✓	M.Sc. Environmental Science	Environmental Science	8.64 ✓	<i>[Signature]</i>
14	2016MSATS004	Pradeep Attri ✓	2016 ✓	M.Sc. Atmospheric Science	Atmospheric Science ✓	8.09 ✓	<i>[Signature]</i>
15	2016MAH015	Tarachand Kumawat ✓	2016 ✓	M.A. Hindi	Hindi ✓	7.96 ✓	<i>[Signature]</i> 12/9/18 12 PM
16	2016MBA010	Kanika Runwal ✓	2016 ✓	MBA	Management ✓	8.91 ✓	<i>[Signature]</i>
17	2016MSMB009	Priyanka ✓	2016 ✓	M.Sc. Microbiology	Microbiology ✓	8.78 ✓	<i>[Signature]</i>
18	2016MPHARM004	Harsha P J ✓	2016 ✓	M.Pharm	Pharmacy ✓	7.98 ✓	<i>[Signature]</i>
19	2016MSPH005	Premashis Kumar ✓	2016 ✓	M.Sc. Physics	Physics ✓	8.08 ✓	<i>[Signature]</i>
20	2016MPPLG004	Deepika Kumari Meena ✓	2016 ✓	M.A. Public Policy, Law & Governance	Public Policy, Law & Governance ✓	8.04 ✓	<i>[Signature]</i>
21	2016MSW008	Hamzah Hassan Motta ✓	2016 ✓	M.A. Social Work	Social Work ✓	7.71 ✓	<i>[Signature]</i>
22	2016MSTA005	Mareeswaran M. ✓	2016 ✓	M.Sc. Statistics	Statistics ✓	7.58 ✓	<i>[Signature]</i>

Prepared by:- *[Signature]*

Checked by:- *[Signature]*

*[Signature]* 11.09.2018

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**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Dist. Ajmer- 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

**Doctor of Philosophy (Ph.D.)**

Name of School : **School of Life Sciences**

Department : **Biochemistry**

Sl.No.	Enrollment No.	Student Name	Date of Viva-Voce
1	2012PHDBC01	Ankit Sharma	12/10/2018

Prepared and Checked by:- 



Head of the Department





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**Central University of Rajasthan**  
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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

**Doctor of Philosophy (Ph.D.)**


Name of School : **School of Chemical Sciences and Pharmacy**

Department : **Chemistry**

Sl.No.	Enrollment No.	Student Name	Date of Viva-Voce
1	2012PHDCH01	Heena Inani	19/02/2018
2	2013PHDCH07	Shivani Sharma	24/08/2018

Prepared and Checked by:- Ashtomy

  
Head of the Department

  
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**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Dist. Ajmer- 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**


**YEAR OF AWARD: 2018**

**Doctor of Philosophy (Ph.D.)**

Name of School : **School of Mathematics, Statistics and Computational Sciences**

Department : **Computer Science**

Sl.No.	Enrollment No.	Student Name	Date of Viva-Voce
1	2012PHDCS01	Anju Yadav	07/12/2017

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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

**Doctor of Philosophy (Ph.D.)**

Name of School : **School of Humanities and Languages**

Department : **English**

Sl.No.	Enrollment No.	Student Name	Date of Viva-Voce
1	2012PHDEN01	Ahamad Musfar PM	20/02/2018

Prepared and Checked by:- Ashtwan

Head of the Department

S. Agarwal  
29/10/18

U. K. Sharma  
Controller of Examinations

**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Dist. Ajmer- 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

**Doctor of Philosophy (Ph.D.)**

Name of School : **School of Humanities and Languages**

Department : **Hindi**

Sl.No.	Enrollment No.	Student Name	Date of Viva-Voce
1	2013PHDHINDI01	Ajeet Kumar Patel	04/04/2018
2	2012PHDHINDI01	Akhilesh Kumar Sharma	23/07/2018

Prepared and Checked by:- ASHMA

Dr. Ashma  
Head of the Department  
29-10-18.

Umesh  
Controller of Examinations

**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Dist. Ajmer- 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

**Doctor of Philosophy (Ph.D.)**

Name of School : **School of Commerce and Management**

Department : **Management**

Sl.No.	Enrollment No.	Student Name	Date of Viva-Voce
1	2012PHDMBA01	Anuradha Agarwal	23/02/2018
2	2012PHDMBA05	Richa Mathur	17/05/2018

Prepared and Checked by:- 

Head of the Department

  
(M.R.P. Singh)

  
Controller of Examinations

**Central University of Rajasthan**  
Bandarsindri, Jaipur-Ajmer Highway, NH-08, Dist. Ajmer- 305817

**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

**Doctor of Philosophy (Ph.D.)**

Name of School : **School of Chemical Sciences and Pharmacy**

Department : **Pharmacy**

Sl.No.	Enrollment No.	Student Name	Date of Viva-Voce
1	2012PHDPHARM01	Pakhuri Mehta	03-10-18

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Head of the Department

  
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**DEGREE AWARD LIST FOR APPROVAL BY ACADEMIC COUNCIL**

**YEAR OF AWARD: 2018**

**Doctor of Philosophy (Ph.D.)**

Name of School : **School of Social Sciences**


Department : **Public Policy, Law & Governance**

Sl.No.	Enrollment No.	Student Name	Date of Viva-Voce
1	2014PHDPPLG004	Vinod Kumar Saroj	24/05/2018
2	2014PHDPPLG002	Nisikant Nayak	25/07/2018

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Controller of Examinations



elective courses prescribed for the programme as per approved scheme of examination and syllabus offered at the beginning of the programme.

**21.3.** The Board of Studies with approval of the School board and keeping in view the CBCS shall do the distribution of credits for different programmes. As a guideline following distribution will be considered:

- a. Core Courses: 60% of total minimum credits for the Programme (These are courses that are essential for the Programme of study and may include foundational courses and general education courses)
- b. Discipline Specific Electives: 20% of total minimum credits for the Programme (These will be chosen by the students from the 'basket' of electives to be offered by the Department)
- c. Generic Electives: 10% (Electives from department / schools or other related schools as may be listed by the BoS of the respective schools)
- d. Ability Enhancement Courses: 10% (These may be courses directed towards enhancing life skills and/or employability skills and may be offered across all schools)

## **22. Ranking of Students and Award of Gold Medal**

**22.1.** The first ~~two~~ ranks in every Programme of Studies shall be decided on the basis of Final Grade Point Average calculated for award of the certificate / degree.

**22.2.** One Student in each Programme of Studies shall be awarded the Gold Medal and Certificate of Merit, provide the student

- a. should have first position with minimum 61% marks in aggregate of all courses i.e FGPA of 7 or more; and
- b. should have passed all the Semesters of a Programme of Study without any break; and
- c. should have passed all the Courses in a Programme of Study without any back log meaning thereby that he/she has not been awarded 'F' or 'Dt' grade in any course; and
- d. should have exhibited good conduct and character during the period of a Programme of Study. and
- e. should not have faced any censure / punishment for any indiscipline during the programme of studies.

## **23. Examination and Other Fees**

**23.1.** The CoE shall with approval of the Vice Chancellor, notify the fees payable by the students for various examinations, revaluation, transcripts, duplicate documents, and various certificates etc.

**23.2.** A student who has not paid the prescribed fees prior to examinations shall not ordinarily be eligible to appear in the examination.

**23.3.** The Vice-Chancellor may at his/her discretion, allow in certain cases of genuine hardship, an extension in the last date of payment of fees with or without fine. The result of such students shall, however, be withheld till all the dues are cleared.

## **24. Unfair Means**

**24.1.** The University may deal with the cases of unfair-means or indiscipline as per

- topic in a refereed Journal
- The scholar has made two paper presentations in conference/seminar.
- The scholar shall produce evidence in support of publication/ presentation in the form of a reprint or a letter of acceptance of the paper.
- Plagiarism Test. The scholar shall furnish the report generated by anti-plagiarism software, duly endorsed by the supervisor.

On the recommendation of DRC for submission of the thesis, the supervisor shall submit a panel of examiners (as specified below) and a synopsis (prepared by the candidate not exceeding 10 pages) along with DRC recommendation to the Dean (Research) for further processing. In order to expedite the process of evaluation, the panel will be placed to the Vice Chancellor for nominating the examiners. The process of obtaining the consent of the examiners shall be initiated at this stage, even before the submission of the thesis.

## SUBMISSION OF THESIS

A scholar shall submit five <sup>hard</sup> ~~spin~~ bound copies of his/her thesis along with one in electronic form. *The language of thesis shall be in English except in cases of research in Languages.* The thesis must be prepared and bound as per the templates which will be available on the university's website.

A Ph.D. thesis must contain original contribution by the scholar; it may incorporate the text of any work which the candidate may have published on the subject. A scholar should not be allowed to submit in his/her thesis any work for which a Degree / Diploma has already been conferred upon him/her by this or any other university.

The supervisor shall satisfy himself/herself before submission of the thesis that it is a piece of research work characterized either by discovery of new facts or by fresh interpretation of facts or theories. In either case, it should provide evidence of the candidate's capacity for critical examination, original thinking and judgement. The thesis shall also be satisfactory as regards to clarity and correctness of language.

The Scholar shall furnish an undertaking that the thesis is free from plagiarism and Copy Rights. The Supervisor shall also certify, after verification using appropriate software, that the contents of the thesis are free of plagiarism and copyright regulations.

The thesis shall include a certificate from the supervisor with a declaration that the thesis incorporates the student's bonafide research and that the findings have not been submitted for award of any degree / diploma in this or any other university or institute of learning.

The application for submission of thesis shall be countersigned by the Head of the concerned department. The Head of the department through Dean of the School shall then forward the thesis to the Dean (Research) for further necessary action.

## PANEL OF EXAMINERS

Supervisors: (sole supervisor/joint supervisor/co-supervisor, if any) *by default* shall be examiners of the thesis.

In addition, there shall be two examiners appointed by the Vice Chancellor (as Chairman, Academic council) from panel of examiners submitted by the supervisor.

A Supervisor shall submit a panel of at least eight names of examiners not in the employment of CURAJ but from the concerned area of research along with their specialisations, preferably eminent Professors from reputed institutions, in the

**CENTRAL UNIVERSITY OF RAJASTHAN***(Established by an Act of Parliament, the Central Universities Act 2009)**http://www.curaj.ac.in*

**School of Architecture**  
**Department of Architecture**  
**M.Arch. (Sustainable Architecture)**  
**III Semester Exam**

S. No.AA

Name of the Student:

Mother's Name:

Father's Name:

Enrol.No.

2016MARCH016

S. No.	Course Code	Course Title	Credits	Grade	Remarks
1.					
2.					
3.					
4.					
5.					
6.					
7.	DSA(M*)-1	Landscape Architecture & Site Planning Basic Fundamentals	2	A	NPTEL IIT Kharagpur

**Result:** Completed the semester requirements

CURRENT SEMESTER RECORD			CUMULATIVE SEMESTER RECORD		
Credits	Grade Points	SGPA	Credits	Grade Points	CGPA
29	200	6.90	75		

Note: Grades and grade points awarded on ten point scale.

\*M stands for MOOC course

Month and Year of Exam: Nov-Dec, 2017

Result Declared on: 05/01/2018

Prepared by: \_\_\_\_\_

Checked by: \_\_\_\_\_

Controller of Examinations

## SSS 320: Syllabus for Elective Course: Governance and Social Accountability

### CURAJ and Public Affairs Centre

#### **Nature of the Course: Open Elective**

Credit Hours (4 Credits)

Instructors: Faculty of CURAJ and Public Affairs Centre

Teaching Methods: Lectures, Workshops, Assignments

Evaluation Methods: Written Examination, Assignments, Classroom Participation

**About the Course:** Central University of Rajasthan in collaboration with Public Affairs Centre (PAC)-Bangalore intends to introduce this practical oriented syllabus to the students of the School of Social Sciences mainly the Department of PPLG, Economics and Social Works. This syllabus is designed to help the students to understand social accountability tools which are used by many Research Institutes, Think-tanks and NGOS and evaluation groups to critically examine the outcomes of programmatic interventions of the Governments at all levels- Districts, State and Central Government.

**Objectives:** The objective of the course is to help the students to get hands-on training of the advanced tools of social accountability which are in practice in social action research, policy research and economic analysis.

#### **Course outline:**

<p><b>Unit-I: Indian Government and Constitution</b></p> <ul style="list-style-type: none"> <li>• Government: its structure and function. Judiciary, the executive and the legislature structure functions of the representative government from grass-roots levels to state and central Government.</li> <li>• The constitution, apex institutions, statutory. Governor, information commissioner, lokayukta, opposition party leader, privileges and discretion of MP/MLA/MLCs.</li> <li>• Public finance, sources of revenue, main expenditure heads, Budgetary Management and Reforms (revenue /fiscal deficit, loan burden, etc); understanding planning commission, Niti Ayog and process of policy formation.</li> <li>• DPDC (District Planning Development Council) and its functions</li> </ul>
<p><b>Unit-II: Social Accountability, Social Audit Social Compliance</b></p> <ul style="list-style-type: none"> <li>• Social Accountability: The Concept, theory and practice; its political economy; role in global development debate. Social audit methods, process and principles.</li> <li>• Social compliance in difference sectors of programming; Education, health care, rural-urban development, development of marginalised sections</li> <li>• Participatory approaches, stakeholders engagement, Stakeholders analysis, Budget analysis, Gender Mapping,</li> </ul>
<p><b>Unit-III: Social Accountability of Government programme</b></p> <ul style="list-style-type: none"> <li>• Participatory Governance: Opportunities and Threats; The last mile problem – Awareness, Advocacy and Action;</li> <li>• Social Accountability Tools used for assessing Government Programme- the types (e.g., Citizen Report Cards, CRC+, Community Score Cards, Climate Change Score Cards, Community Led Environmental Impact Assessment, and so on; their usage; evidence from the field;</li> <li>• Measuring Governance - Role of data and indices</li> </ul>

#### Unit-IV: Social Accountability in Industrial Sector

- The Global Reporting Initiative and Corporate Sustainability Reporting Guidelines. Social Accountability International's SA8000 standard. Accountability's AA1000 standard, (based on John Elkington's triple bottom line (3BL) reporting.
- ISO 14001 environmental management Standard Social Life Cycle Assessment UNEP Guidelines. Impact Assessment
- Corporate governance, Corporate social responsibility (CSR) and accountability, transparency
- Concept of ethical trade and fair trade, Standards, conventions and recommendations under International Labor Organization (on human rights, labour, environment), Accountability models and strategies at national, state, local levels.

#### Unit-V: Social Accountability for Civil Society Organizations

- Requisite, norms and standards for civil society organizations and Business house towards social accountability.
- Stakeholder, Budgeting, planning effective governance and financial management
- Internal procedure, administrative and programme expenses
- Social Accountability Standards (SAS), Fundamental documents, Trustees and Board members, meetings and resolutions, accounting policies, staff policies, appointment of independent auditor, ratio analysis, linking programme with finance, social accountability report

#### Essential Reading Lists:

##### Social Accountability

1. Paul, Samuel, 2002, **Holding the State to Account: Citizen Monitoring in Action**, Books for Change, Delhi.
2. Governance, Social Accountability and the Civil Society by Raza Ahmad (<http://controlatugobierno.com/archivos/bibliografia/ahmad.pdf> )

##### Citizen Report Cards

1. Improving local governance and pro-poor service delivery: Citizen Report Card e-learning toolkit ([www.citizenreportcard.com](http://www.citizenreportcard.com) )
2. Citizen Report Card surveys: A note on the concept and methodology (Swarnim Waglé, Janmejy Singh and Parmesh Shah), 2004 (<https://openknowledge.worldbank.org/handle/10986/11277> )
3. How-to notes: Citizen Report Cards - monitoring citizen perspectives to improve service delivery (Sanjay Agarwal, David Post, Varsha Venugopal), 2013 (<http://documents.worldbank.org/curated/en/2013/01/18114593/dealing-governance-corruption-risks-project-lending-citizen-report-cardsmonitoring-citizen-perspectives-improve-service-delivery>)
4. Social Audit of Public Service Delivery in Karnataka (<http://www.pacindia.org/reports/social-audit-of-public-service-delivery-in-karnataka> )
5. An Assessment of the Services of Bangalore Water Supply and Sewerage Board (using the Citizen Report Card approach) - <http://pacindia.org/2018/02/08/bwssb2016/>

## Community Score Cards

1. Note on Community Score Cards - <https://siteresources.worldbank.org/INTPCENG/1143333-1116505690049/20509286/comscorecardsnote.pdf>
2. The role of Community Score Cards in improving service delivery - <http://siteresources.worldbank.org/EXTSOCIALDEVELOPMENT/Resources/244362-1193949504055/4348035-1296838689014/7712311-1298494972121/Rapid-Feedback.pdf>

## Additional Reading Lists

1. Ablo, Emmanuel and Ritva, Reinikka (1993): "Do Budgets Matter? Evidence from public spending on education and health in Uganda", Policy Research Working Paper no.1926, World Bank Development Research Group, Washington, D.C.
2. Aiyar, Yamini and Amitabh, Behar (2005): "Budget Work in India", Economic and Political Weekly, January 8.
3. Aiyar, Yamini and Vivek, Ram Kumar (2008): "Country Report: India", International Budget Partnership, Washington.
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# **School of Sports Sciences**

## **Department of Sports Biosciences**



### **Proposed Syllabus for**

## **M.A. / M.Sc. in Sports Psychology**

Central University of Rajasthan  
NH-8, Bandar Sindri, Kishangarh-305817  
Dist. – Ajmer (Rajasthan)



**M.A. / M.Sc. Sports Psychology****SEMESTER I (Total credits: 24)**

Code	Title of Course	Type of Course	Credits
MSSPY 101	Human Anatomy and Physiology	Core	3
MSSPY 102	Biomolecules and Metabolism	Core	3
MSSPY 103	Kinesiology	Core	3
MSSPY 104	Psychological and Social Aspects of Sports	Core	3
MSSPY 105	Biomechanics and Motor Learning	Core	3
MSSPY 106	Elective I <ul style="list-style-type: none"> <li>• Elective from any other Department</li> <li>• Sports First Aid &amp; Emergencies</li> <li>• History of Physical Education and Sports</li> <li>• Physiological Aspects of Ageing</li> </ul>	Elective	3
MSSPY 107	Laboratory I	Core	3
MSSPY 108	Laboratory II	Core	3

**SEMESTER II (Total credits: 24)**

Code	Title of Course	Type of Course	Credits
MSSPY 201	Principles and Methods of Sports Training	Core	3
MSSPY 202	Exercise Physiology and Metabolism	Core	3
MSSPY 203	Fatigue, Injuries and Rehabilitation	Core	3
MSSPY 204	Food and Nutrition	Core	3
MSSPY 205	Statistics for Sports Science	Core	3
MSSPY 206	Elective II <ul style="list-style-type: none"> <li>• Elective from any other Department</li> <li>• Kinanthropometry in Sports</li> <li>• Health Fitness and Wellness</li> <li>• Adaptations to Exercise and Training</li> </ul>	Elective	3
MSSPY 207	Laboratory III	Core	3
MSSPY 208	Laboratory IV	Core	3

**SEMESTER III (Total credits: 24)**

Code	Title of Course	Type of Course	Credits
MSSPY 301	Cognitive Psychology in Sports	Core	3
MSSPY 302	Psychology of Athletes, Coaching and Officiating	Core	3
MSSPY 303	Psychometric and Psycho Diagnostic in Sports	Core	3
MSSPY 304	Team Cohesion Dynamics	Core	3
MSSPY 305	Professional Practices in Sports Psychology	Core	3
MSSPY 306	Elective III <ul style="list-style-type: none"> <li>• Elective from any other Department</li> <li>• Developmental Psychology and Motor Skill Acquisition</li> <li>• Yoga and Mental Health</li> <li>• Psychology of Women and Special Population</li> </ul>	Elective	3
MSSPY 307	Laboratory V	Core	3
MSSPY 308	Laboratory VI	Core	3

**SEMESTER IV (Total credits: 24)**

Code	Title of Course	Type of Course	Credits
MSSPY 401	Research Methodology	Core	3
MSSPY 402	Journal Club Presentation	Presentation	3
MSSPY 403	Major Project	Tutorial/Laboratory	18

## SEMESTER-I

### MSSPY 101

### Human Anatomy and Physiology

Credit 3

#### Unit-I

Anatomy and Physiology of: Blood, Cardiovascular System: Heart and Blood vessels, Lymphatic System, Integumentary System and Respiratory System

#### Unit-II

Anatomy and Physiology of: Nervous System, Special Senses, Endocrine System, Skeletal System, Joints and Muscular System

#### Unit-III

Anatomy and Physiology of: Digestive System, Immune System, Urinary System, Fluid and Electrolyte Balance, Reproductive System, Pregnancy and Human Development

#### Recommended Books:

- ⌋ Human Anatomy and Physiology (10<sup>th</sup> edition) by Elaine N Marieb, Katja N Hoehn.
- ⌋ Introduction to Human Body- The Essentials of Anatomy and Physiology by Gerard J. Tortora
- ⌋ Textbook of Anatomy with Coloured Atlas by Inderbir Singh
- ⌋ Textbook of Medical Physiology by Arthur C. Guyton
- ⌋ Principle of Human Anatomy (10<sup>th</sup> Edition) by Gerard J. Tortora.
- Gray's Anatomy: Anatomical Basis of Clinical Practice by Standring, Susan, Borley, Neil R. Gray Henry
- ⌋ Human Physiology by C.C. Chatterjee
- ⌋ Chowdhary Medical Physiology by S K Chowdhary
- Netter's Atlas of Human Anatomy by Frank H. Netter

### MSSPY 102

### Biomolecules and Metabolism

Credit 3

#### Unit I

Foundation of Biochemistry, Properties of Water, Amino Acids, Peptides and Proteins, Structure and Function of Proteins, Enzymes, Sugars, Carbohydrates and Glycobiology, Nucleotides and Nucleic Acids, Fatty Acids, Structure and Functions of Lipids.

#### Unit II

Principles of Bioenergetics, Major Metabolic Pathways in Human and its Relevance with Exercise, Glycolysis, Gluconeogenesis, Pentose Phosphate Pathway, Citric Acid Cycle, Electron Transfer System in Mitochondria, Oxidative Phosphorylation

#### Unit III

Basic Concepts and Design of Metabolism, Metabolic Regulation of Glucose and Glycogen, Biosynthesis of Carbohydrates, Lipid Biosynthesis, Fatty Acids Catabolism, Amino Acids- Biosynthesis, Oxidation and Production of Urea, Metabolism of Lactate, Integration and Regulation of Metabolism

#### Recommended Books:

- ⌋ Principles of Biochemistry- Lehninger Nilson and Cox W.H. Freeman
- ⌋ Principles of Biochemistry- Donald Voet, CW Pratt, JG Voet (2012) Wiley, ISBN:1118092449.
- ⌋ Principles of Exercise Biochemistry Editor(s): Poortmans J.R. (Brussels) Karger Publishers
- ⌋ BiochemistryJM Berg, TL Tymoczko L Stryer W. H. Freeman and Company
- ⌋ West & Todd Text book of Biochemistry. Mac Millan Company London
- ⌋ G.P. Talwar & ID Singh Textbook of Biochemistry & Human Biology - Prentice Hall of India, New Delhi.
- ⌋ Vasudevan Textbook of Biochemistry. Jaypee Brothers Medical publishers (P) Ltd;
- Jain J.L., Jain Sanjay, Jain Nitin, S Fundamentals of Biochemistry –. Chand and Company Ltd, New Delhi.
- ⌋ A.C. Dev. Comprehensive Viva and practical Biochemistry. New Central Book Agency Pvt. LTD.

### MSSPY 103

### Kinesiology

Credit 3

#### Unit-I

Meaning of Kinesiology, Aims and Objectives of Kinesiology, Role of Kinesiology in Sports; Anatomical Position, Principles of Plane and Axis, Various types of movements

#### Unit-II

Bones: Meaning and composition of bone, Kinds of bones (flat, long, short, irregular and sesamoid), Function of bones, Bone fracture and its types; General features of the following bones: Upper Extremities: Clavicle, Scapula, Radius and Ulna, Humorous; Lower Extremities: Femur, Patella, Tibia, Fibula, Pelvic Bones; Joints: Meaning and types of joints, Joint flexibility, Technique to

increase the flexibilities, Structure, function, fundamental movements around the joints; General features, structure and movements of the following joints: Shoulder Complex, Elbow Complex, Hip Complex, Knee joint, Spinal column and Pelvic girdle

#### Unit-III

Introduction to Muscular System: Muscles and Tendons, Classification of muscles, Structure of Skelton muscle, classification of muscles basis of the fiber arrangement, Physiology of muscle contraction, types of muscle contraction, Role of the muscle in the movement, Methods of the studying the action of the muscle. Origin, Insertion and action of major muscle groups of the Body; Nervous System: Overview of Nervous system, Neurons, Motor Unit and Receptors.

#### Recommended Books:

- ⌈ Clinical Mechanics and Kinesiology With Web Resource, Human Kinetics, by Janice Loudon, Robert Manske, Michael Reiman
- Biomechanics and Kinesiology of Exercise – 2013 by Michael Yessis
- ⌈ Cynthia C. Norkin, Pamela K. Levangie : Joint structure & function- A comprehensive analysis 2nd edition,
- ⌈ Brunnstrom - Clinical Kinesiology, F.A. Davis.
- ⌈ Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
- ⌈ Shaw, D., Pedagogic Kinesiology, Khel Sahitya Kendra, 2007.
- ⌈ Thompson, C., Manual of Structural Kinesiology. (10th Ed.), St. Louis: Times Mirror/ Mosby College Publishing, 1995
- ⌈ Shaw, Dhanonjoy, Kinsiology and Biomechanics of Human Motion, Khel Sahitya Kendra, 1998
- ⌈ White and Punjabi - Biomechanics of Spine - Lippincott.
- ⌈ Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
- Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Edi
- ⌈ Basic Biomechanics 4th edition, susan J. Hall, MCGraw Hill.

**MSSPY 104**

**Psychological and Social Aspects of Sports**

**Credit 3**

#### Unit-I

Sports Psychology and role of Psychology in Sports, Methods of Psychology employed in Sports, Motor leaning and Performance, Importance of Sports Psychology for Athletes, Coaches and other related to Sports settings

#### Unit-II

Personality and its role in Sports, Attention and Perception in Sports; Motivation and Goal setting and its role in Sports, Emotions in Sports, Stress and Anxiety in Sports, Biofeedback techniques in Sports

#### Unit-III

Sociology of Sports, Social Factors and Socio-metric techniques in Sports, Group processes, Team cohesiveness and Leadership in sports, Effect of crowd behaviour in Sports, Economics and Politics in Sports

#### Recommended Books:

- ⌈ Weinberg & Gould, Foundations of Sports and Exercise Psychology. Human Kinetics 2016.
- ⌈ Motor Learning and Performance 5th Edition With Web Study Guide From Principles to Application, Human Kinetics by Richard Schmidt, Tim Lee
- ⌈ Morgan and King: Introduction to Psychology - Tata McGraw Hill.
- ⌈ M.L. Kamlesh Psychology in Physical Education and Sports by Publisher Mehopolitan book co. Pvt. Ltd., Netaji Subash Marg, New Delhi 11002.
- ⌈ Sanjeev. P. Sahni Psychology and its application in sports by, Publisher D.V.S. publications, 100, Giri Nagar Kalkaji, New Delhi-110019
- ⌈ Agyajit Singh Psychology of coaching by, Friends Publications, # 101 Ansari Raod Darya Ganj, New Delhi-110002
- ⌈ Jitendra Mohan Recent Advances in Sports psychology, By, Publisher, Friends Publications.
- ⌈ Fundamentals of Sociology of Sport and Physical Activity, Human Kinetics by Katherine M. Jamieson, Maureen M. Smith
- ⌈ Doing Exercise Psychology, Human Kinetics by Mark Andersen, Stephanie Hanrahan
- ⌈ Social Issues in Sport 3rd Edition, Human Kinetics by Ron Woods

**MSSPY 105**

**Biomechanics and Motor Learning**

**Credit 3**

#### Unit-I

Role of Bio–Mechanics in the field of Sports Science, Principles of Biomechanics; Biomechanical Concepts: Motion, Newton's law of angular motion and linear motion and its relationships, Force, Centripetal and centrifugal forces, Equilibrium, Centre of gravity and Stability, Freely falling bodies and Projectile , Momentum, Impulse, Lever and its Classification, Work, power, energy: Relationship of work, power and energy, Friction, Spin, Impact, Elasticity, Rebound, Fluid mechanics, Air resistance and Water resistance

## Unit-II

Determine the simultaneous-sequential nature of a variety of movement skills, Classify motor skills using the classification system presented, .Bio-Mechanical analysis of fundamental skills: Walking, Running, Jumping, Pulling, Pushing, Lifting, Lowering, Throwing.

## Unit-III

Introduction to Gait Analysis, Mechanical Analysis of Sports Skills: Athletics (Running, Jumping, And Throwing), Swimming, Football, Basketball, Volleyball, Cricket; Technological Use and Advances in Biomechanics: Techniques and Tools for Measurement of Biomechanical Variables

### Recommended Books:

- ⌈ Biomechanical Analysis of Fundamental Human Movements by Arthur Chapman, 2008, Human Kinetics
- ⌈ Biomechanics of Sport and Exercise 3rd Edition With Web Resource and MaxTRAQ 2D Educational Software Access- Loose-Leaf Edition, Human Kinetics, By Peter McGinnis
- Biomechanics and Kinesiology of Exercise – 2013 by Michael Yessis
- ⌈ Cynthia C. Norkin, Pamela K. Levangie : Joint structure & function- A comprehensive analysis 2nd edition, F.A. Davis Company Philadelphia
- ⌈ Brunnstrom - Clinical Kinesiology, F.A. Davis.
- ⌈ Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
- ⌈ White and Punjabi - Biomechanics of Spine - Lippincott.
- ⌈ Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
- Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Edi
- ⌈ Basic Biomechanics 4th edition, susan J. Hall, MCGraw Hill.
- ⌈ Joseph Hamill, Kathleen M. Knutzen. Biomechanical Basis of Human Movement

**MSSPY 106**

**Elective I**

**Credit 3**

## **Sports First Aid & Emergencies**

### Unit-I

Introduction to Sports First Aid: Athletic Health Care Team , Sport First Aid Game Plan , First Aid Equipment and Kit, Basic Life Support System: Recovery Position, Head to toe- survey, Artificial Ventilation; Basic Sport First Aid Skills : Anatomy and Sport Injury Terminology , Emergency Action Steps , Physical Assessment and First Aid Techniques , Moving Injured or Sick Athletes

### Unit II

Sport First Aid for Specific Injuries : Unconsciousness: ABC, CPR, AED, Respiratory Emergencies and Illnesses , Shock, Wounds and Bleeding, Head, Spine, and Nerve Injuries , Internal Organ Injuries , Upper Body Musculoskeletal Injuries , Lower Body Musculoskeletal Injuries , Facial and Scalp Injuries , Skin Problems

### Unit-III

Disaster Preparedness and Management: Weather-Related Problems, Environmental Emergencies: Animal Bites and Stings, Allergies, First Aid Protocols, Practical Skills in using: Triangular Bandages, Broad fold, Thin fold, Slings, Collars, Cardiac Emergencies

### Recommended Books:

- ⌈ Sport First Aid-5th Edition by Melinda Flegel, Human Kinetics, 2014
- American Red Cross, First Aid/CPR/AED : PARTICIPANT'S MANUAL
- ⌈ Practical First Aid: British red cross in Association with donning kinder sley
- ⌈ John Morris: First Aid Training Manual, Everyday learning PVT. Ltd
- ⌈ Authorized Manual of St. John Ambulance (India): First Aid
- ⌈ Bradley R.A. Wilson. Timothy E. Glaros : Managing Health Promotion Programs Human Kinetics Publishers.

## **History of Physical Education and Sports**

### Unit 1

What are Play, Game and Sports? Types of sports and recreational activities, Importance of free play and organizational games, Terminology: Sports Science and Physical Education, Health related and Motor performance related fitness, health and wellness (physical, mental, psychological, social and spiritual) and athletics, Sports carriers: Media, Management, Performance, Coaching and other related areas.

### Unit-II

Philosophy its need in Sports and Physical Education, Idealism, Naturalism and Pragmatism in Physical Education, Physical Education in Ancient Greek, Rome, India and Modern India. History of Olympic Games, Asian Games, SAARC Games and SAF games, National Sports Awards, trends and problems in Sports Sciences and Physical Education in 21<sup>st</sup> Century.

### Unit-III

Introduction to general Rules and Regulations of Selected Sports, Introduction to Playfields and Track Specifications, General organizational process of Sports Competitions

#### Recommended Books:

- ⌋ Bucher, C.A.: Foundation of Physical Education, St. Louis: The C.V. Mosby company, 1983
- ⌋ History and Philosophy of Sport and Physical Activity, Human Kinetics by R. Scott Kretchmar, Mark Dyreson, Matthew Liewellyn, John Gleaves, 2017
- ⌋ Synder and Geoh: Professional preparation in Health Education, Physical Education and Recreation..
- ⌋ Barrow, H.M.: Man and Movement: Principles of Physical Education, Philadelphia Lea and Fabiger, 1977.
- ⌋ Joseph, P.M.: Organisation of Physical Education, Kandivila,: Old students Association, T.I.P.E.
- ⌋ Kamlesh, M.L. and Sangral, M.S. : History and Principles of Physical Education, Prakash Brothers, 1983.
- ⌋ Wuest and Bucher: Foundations of Physical Education and Sports, B.I. Publications Pvt. Ltd., New Delhi.
- ⌋ William, H.F.: Physical Education and Sports in Changing Society, Surjeet Publication, Delhi

### Physiological Aspects of Aging

#### Unit-I

Growth and Biologic Maturation: Relevance to Athletic Performance; Muscle Development During Childhood and Adolescence, Relevance to Understanding Effects of Growth on Performance, Growth and Maturation: Methods of Monitoring

#### Unit-II

Theory of aging, Age related changes in different body systems, Cardiovascular Concerns in the Young Athlete, Trainability During Childhood, Aging and muscular strength, aging and joint flexibility

#### Unit-III

Exercise guideline for geriatric populations. Introduction to Masters Sports and the study of older athletes, Aging, performance, and the role of continued involvement, Psychosocial issues in Masters sport, model of lifespan physical activity, health, and performance

#### Recommended Books:

- ⌋ Helge Hebestreit and Oded Bar-Or (2008) The young athlete. Blackwell Publishing Ltd
- ⌋ Joseph Baker, Sean Horton and Patricia Weir ( 2000 ) The masters athlete: understanding the role of exercise in optimizing aging. Routledge

#### MSSPY 107

#### Laboratory I

#### Credits-3

- Introduction to laboratory techniques- pipetting, calculations, introduction to equipment's, sterile techniques and lab safety.
- ⌋ How to Use microscopes.
- ⌋ To study Counting Chambers.
- ⌋ To determine the total Red Blood Corpuscles count.
- ⌋ To determine the total Leucocyte Count in blood.
- ⌋ To make a blood smear and to determine the Differential Leucocyte Count.
- ⌋ To measure the Haemoglobin concentration of blood.
- ⌋ To measure Blood Pressure of a subject in different positions
- ⌋ Assessment of Iron Status of athletes
- ⌋ Calculation of Energy expenditure
- ⌋ Measurement of blood glucose Cholesterol/HDL, Glycerol, Lactate, Triglycerides
- ⌋ Biochemical Assessment of Metabolites of athletes.
- ⌋ Biochemical Assessment of Enzymes of athletes.
- ⌋ Biochemical Assessment of Hormones of athletes.
- ⌋ Estimation of sugars, iron, phosphate, vitamin C and organic acids.
- ⌋ Estimation of protein concentration.

#### MSSPY 108

#### Laboratory II

#### Credits-3

- ⌋ To analyse various planes and axes of the body.
- ⌋ To demonstrate the surface anatomy and muscle attachments of following bones: Clavicle, Scapula, Humerus, Radius, Ulna, Meta Carpals, Phalanges, Femur, Tibia , Fibula , Patella, Tarsals and metatarsals
- ⌋ To demonstrate the following joints including corresponding muscles and movements of Upper Extremity: Acromioclavicular joint, Sternoclavicular joint, Shoulder joint, Elbow joint, Proximal Radioulnar joint, Distal Radioulnar joint, Wrist joint, Radio carpal joint, Thumb joint
- ⌋ To demonstrate the following joints including corresponding muscles and movements of Lower Extremity: Pelvic Girdle, Knee joint, Ankle joint, Tarso- metatarsal joint

- ⌋ Analyze accurately activities based on the center of gravity and base of support of a person
- ⌋ Determination of Human Gait pattern.
- ⌋ Determination of foot pressure

## SEMESTER-II

**MSSPY 201**

**Principles and Methods of Sports Training**

**Credit 3**

### Unit-I

Scientific basis of Sports Training, Importance, Aim and Objectives of Sports Training; Characteristics of Sports Training; Biological Process in Training; Components of Physical Fitness (motor abilities) – Endurance, Strength, Speed, Flexibility, Co-ordination; Agility

### Unit-II

Principles of training - Overload, Specificity, Progression and Reversibility; Meaning and concept of Training load; Adaptation and Recovery, Super Compensation, Training Structure - Volume, Intensity, Frequency, Peaking, Errors in Training, Training, Adaptations to Resistance Training, Adaptations to Aerobic and Anaerobic Training

### Unit-III

Training plan; Need and importance in planning; Types of training plans - short term and long term plans; Training and Competition Cycles (training conception, macro, micro, meso); Periodization – Need, Types; Aims of various phases of Periodization (Preparatory, competition and transition); Competition -Types of Competition Preparation for competition; the number and frequency of competition. Training athletes with disability, Adapted games for Disabled; Special Olympics and Paralympics, General structure of Rules and Regulations of different sports/games

### Recommended Books:

- ⌋ Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
- ⌋ Periodization-6th Edition Theory and Methodology of Training by Tudor Bompa, Carlo Buzzichelli
- ⌋ Physiological Aspects of Sport Training and Performance With Web Resource-2nd Edition, Human Kinetics By Jay Hoffman
- ⌋ Recovery for Performance in Sport by Institut National du Sport de l'Expertise et de la Performance INSEP, Human Kinetics, Christophe Hausswirth, A. Mujika.
- ⌋ Essentials of Sports Training and Conditioning by JB Learning, NASM
- ⌋ Singh, H: Science of Sports training, DVS Publication, New Delhi, 1991.
- ⌋ Matweyev, L.P.: Fundamentals of Sports training, publication Moscow, 1984
- ⌋ Harre, D: Principles of sports training, Sportverlag, Berlin, 1988.
- ⌋ Singh, H: Science of Sports training: General theory and methods, NIS, Patiala, 1984.
- ⌋ Scholisch, M: Circuit training, Sportverlag, Berlin.
- ⌋ Willmore, J.H.: Athletic training and physical fitness, Antro and Becon Inc, Sydney

**MSSPY 202**

**Exercise Physiology and Metabolism**

**Credit 3**

### Unit-I

Introduction to Exercise Physiology: Definitions of terminologies (Work, Power, speed, strength, efficiency etc.); Types of exercise (aerobic and anaerobic) and limiting factors, Exercise intensity and duration, Adaptations to exercise: Physiological and metabolic adaptations to training; Muscle hypertrophy and performance, General principles of training: Exercise response (Modality, Intensity, Duration, categories, response patterns and interpretation); Exercise training (Health and sports related fitness, Dose-response relationship, training principles, periodization); Metabolic training principles and adaptations (specificity, overload, rest/recovery/adaptation, progression, individualization, maintenance, retrogression, warm-up and cool down).

### Unit-II

Adaptation of Respiratory and Cardiovascular Systems to exercise: Respiratory responses during exercise at varying intensities, Cardiovascular responses to exercise

### Unit-III

Metabolic adaptation to exercise, Fluid balance and Thermoregulation: Energy Production; Aerobic metabolism during exercise (oxygen and carbon-di-oxide production, oxygen cost of breathing, RER, Estimation of calorie expenditure, MET, Field estimates of energy expenditure, efficiency and economy), Fluid balance and Thermoregulation: Exercise in environmental stress; Thermal balance; Heat exchange; Exercise in the heat; Cardiovascular demands of exercise in the heat; Exercise in cold; Cold induced injuries; Maintaining fluid balance.

### Unit IV

Adaptation of skeletal muscle, endocrine and immune system in training: Bone development; Factors influencing bone health; Skeletal adaptation to exercise training and detraining; Special applications in osteoporosis; Female athletic triad; Skeletal

injuries. Skeletal muscle and neuromuscular system, Importance of muscle fibre types in athletes; Skeletal muscle force production; Fatigue and muscle soreness;; Neuromuscular aspects of movement; The nervous system (basic structure and activation of nerve cell, neural control of muscle contraction, reflex control of movement, volitional control of movement, flexibility); Physiological response to stretching; Application of training principles to flexibility; Adaptation to flexibility

Recommended Books:

- ⌈ Christopher B. Scott. (2010). A Primer for the Exercise and Nutrition Sciences: Thermodynamics, Bioenergetics, Metabolism. Humana Press.
- ⌈ Raven, P., Wasserman, D., Squires, W., & Murray, T. (2012). Exercise Physiology: An Integrated approach. Nelson Education.
- ⌈ ACSM's Resources for Clinical Exercise Physiology: Musculoskeletal, Neuromuscular, Neoplastic, Immunologic and Hematologic Conditions by American College of Sports Medicine
- ⌈ Powers, S. (2014). Exercise physiology: Theory and application to fitness and performance. McGraw-Hill Higher Education.
- ⌈ Smith, D. L., & Fernhall, B. (2011). Advanced cardiovascular exercise physiology. Human Kinetics.
- ⌈ Farrell, P. A., Joyner, M., & Caiozzo, V. (2011). ACSM's advanced exercise physiology.
- ⌈ Cheung, S. (2010). Advanced environmental exercise physiology. Human Kinetics.
- ⌈ Hale, T. (2005). Exercise physiology: a thematic approach (Vol. 5). John Wiley & Sons.
- ⌈ Ehrman, J. K., Kerrigan, D., & Keteyian, S. (2017). Advanced Exercise Physiology: Essential Concepts and Applications. Human Kinetics.
- ⌈ McArdle, W. D., Katch, F. I., & Katch, V. L. (2015). Exercise physiology: nutrition, energy, and human performance. 8th Edition, Lippincott Williams & Wilkins.

**MSSPY 203**

**Fatigue, Injuries and Rehabilitation**

**Credit 3**

Unit-I

Concept of Overloading, Overtraining, Fatigue and Staleness, Symptoms and Causes of Fatigue, Types of Fatigue, Theories associated with Fatigue, Definition, Types, Symptoms, Findings, Underlying Mechanisms and Frequency of Overtraining and Overtraining Syndrome, Oxygen Debt Theory, recovery oxygen uptake or excess post-exercise oxygen consumption (EPOC), Implications of EPOC for Exercise and Recovery, Optimal Recovery From Steady-Rate Exercise and Non–Steady-Rate Exercise, Intermittent Exercise and Recovery

Unit-II

Sports Injury- Meaning, Classification, Causes, Types, General guidelines for their Prevention, Recovery Time, Introduction and Management of common Sports Injuries (Fracture, Dislocation, Laceration, Abrasion, Sprain and Strain), How to avoid Sports Injuries, Role of Warm-up and Cool Down

Unit-III

Rehabilitation: Meaning, Concepts, Objective and scope of Rehabilitation, Principal of care and Rehabilitation  
Therapeutic Modalities: Electrotherapeutic modalities (Shortwave Diathermy, Ultra Sound, T.E.N.S), Heat and Cold, Soft tissue Massage, Aquatic Rehabilitation Exercise, Therapeutic Exercise, Therapeutic Nutrition, Psychological Rehabilitation

Recommended Books:

- ⌈ Shaun Phillips (2015) Fatigue in Sport and Exercise. Routledge, NY
- ⌈ Therapeutic Modalities for Musculoskeletal Injuries 4th Edition, Human Kinetics by Craig Denegar, Ethan Saliba, Susan Saliba, 2016
- ⌈ Essentials of Athletic injury management 10th edition by William E. Prentice, Human Kinetics.
- ⌈ Clinical Sports Medicine Fifth Edition by Peter Brukner, Karim Khan, McGraw-Hill Education Australia, 2016
- ⌈ Principles and Practice of Therapeutic Massage by Sinha, Jaypee Publishers
- ⌈ Textbook of Electrotherapy by Singh Jagmohan, Jaypee Publishers
- ⌈ Manfred Lehmann, Carl Foster, Uwe Gastmann, Hans Keizer and Jtirgen M. Steinacker(Eds) (1997) Overload, Performance Incompetence and Regeneration In sport. Kluwer Academic / Plenum Publishers, N.

**MSSPY 204**

**Food and Nutrition**

**Credit 3**

Unit-I

Nutrients: Functions and Recommended Intakes, Healthy Eating and Balanced Diet, Fuel Sources for Muscle and Exercise Metabolism, Energy: Food Energy and Expenditure, Gastric Emptying, Digestion, and Absorption.

Unit-II

Nutritional Role and Recommendations for following: Carbohydrate, Fat, Protein and Amino Acids, Water Requirements and Fluid Balance, Vitamins and Minerals, Nutrition Supplements.

Unit-III

Nutrition and Training Adaptations, Nutrition and Immune Function in Athletes, Body Composition and Weight Management, Eating Disorders in Athletes, Personalized Nutrition, Menu Planning (Meal Timing and Spacing)

Recommended Books:

- ⌈ Sport Nutrition 3rd Edition by Asker Jeukendrup, Michael Gleeson, Human Kinetics, 2018.
- ⌈ Nutrition for Sport, Exercise, and Health by Marie Spano, Laura Kruskall, D. Travis Thomas, Human Kinetics.
- ⌈ Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
- ⌈ Exercise Physiology: Nutrition, Energy and Human Performance 8th Edition by William D. McArdle, Frank I. Katch, Victor L. Katch
- Nancy Clark's Sports Nutrition Guidebook by Nancy Clark, Human Kinetics
- NSCA's Guide to Sport and Exercise Nutrition by National Strength Conditioning Association, Human Kinetics
- ⌈ Fundamental of Foods, Nutrition & Diet Therapy 5<sup>th</sup> edition by S.R. Mudambi, M.V. Rajagopal, New Age International Limited, New Delhi.
- ⌈ Applied Nutrition. By R. Rajlaxmi, IBH Publications, New Delhi.
- ⌈ Nutritional Supplements in Sports, Exercise and Health: An A to Z Guide by Linda M. Castell, Samantha J. Stear, Louise M. Burke, Routledge.

**MSSPY 205**

**Statistics for Sports Science**

**Credit 3**

Unit-I

Introduction to Biostatistics, Frequency Distribution, Variable and Attribute, Line-diagram, Bar-diagram, Pie chart, Histogram, Mean, Median and Mode.

Unit-II

Variance, Standard deviation; Standard error of mean, Null hypothesis, Level of significance and Probability; Regression and correlation.

Unit-III

Student's t-test, Fisher's t-test, Chi-square test, Analysis of Variance (ANOVA), ANCOVA, Introduction and Application of Statistical Software

Recommended Books:

- ⌈ A Text book of Biostatistics, by A.K.Sharma, Discovery publishing house
- ⌈ Introduction to Biostatistics, By Dr. Pranab Kumar Banerjee, S. Chand Publishers
- ⌈ Research Methodology: Methods and Techniques Book by C. R. Kothari
- ⌈ Dutta N.K. Fundamentals of Bio-Statistics. 2002; Kanishka Publishers, New Delhi.
- ⌈ Gupta S.P. Statistical Methods. 2004; S. Chand & Sons, New Delhi
- ⌈ Ruud H. Koning and James H. Albert ( 2008) Statistical thinking in sports. Chapman & Hall/CRC

**MSSPY 206**

**Elective II**

**Credit 3**

**Kinanthropometry in Sports**

Unit-I

Introduction, scope and general consideration, i.e. Application of anthropometric data in sports, Body proportions and indices, Sports specific body proportions and indices, Body mass index and its importance in sports'

Unit-II

Anthropometric Measurements and Procedures, Equipment for anthropometric measurements, Gross Body Measurements and procedures, Length of Body Parts, Measurements and procedures, Diameters of Body Parts, Measurements and procedures, Circumferences of Body Parts, Measurements and procedures, Skinfold Thickness, Measurements and procedures.

Unit-III

Physiological Maturation: Decimal Age and concept of Physiological maturity in sports. Assessment of skeletal maturity of athletes, Body Composition: Anthropometric determination, Importance in sports and various methods to estimate body composition, Somatotyping: Introduction, Definition of Somatotyping and Classification

Recommended Books:

- ⌈ Sports Anthropometry by H.S. Sodhi, ANOVA Publication.
- ⌈ Physique and Selection of Sportsmen by H.S. Sodhi and L.S. Sidhu.
- ⌈ Kinanthropometry by S.P. Singh and P. Malhotra, Luna Publication, Patiala.
- ⌈ Kinanthropometry by Roger Eston and Thomas Reilly, E & F.N. SPON, London.
- ⌈ Skeletal Maturity by S.P. Singh, L.S. Sidhu, and J. Singh, Human Biology Publication Society, Punjabi University, Patiala.
- ⌈ Genetic and Anthropological Studies of Olympic Athletes by De Garray, Louis Levine & Cater, Academic Press, London.



## Health Fitness and Wellness

### Unit-I

Introduction to Health: Concept of health, Lifestyle and Disease, Ageing

### Unit-II

Physical Activities & Fitness: Concept to Fitness, Exercise and its Principles, Health Education Recreation & Dance

### Unit-III

Healthy Life Style Approach: Concept of Wellness, Wellbeing, Stress Management

#### Recommended Books:

- ⌈ "Fitness and Wellness" : Warner W. K Hoeger and Sharvon A. Hoeger
- ⌈ "Fitness & Wellness concepts": Charles B. Corbina & Ruth Lindsey
- ⌈ "Lifetime Fitness & Wellness - A personal choice": Melvin H. Williams
- ⌈ Oxford Textbook of Public Health, Helen Liepman.
- ⌈ Sunderlal, Aadarsh, Pankaj, 2007, Textbook of Community Medicine, CBS Publishers & Distributors.
- ⌈ Kirch, Wilhelm, 2008, Encyclopedia of Public Health, Volume 1 & 2, Kluwer Academic Publishers.
- ⌈ Mary -Jane Schneider and Henry Schneider, 2006 (2nd edition), Introduction to Public Health, Jones and Bartlett Publishers.

## Adaptations to Exercise and Training

### Unit-I

Cardiovascular Adaptations to Endurance and Strength Training, Hypertrophy and Cardiomyopathy in Young and Older Athletes, Heart rate training zone, Effects Of High Altitude, Sudden Cardiac Death and Exercise in Healthy Adults

### Unit-II

Respiratory System Adaptations to Endurance and Strength Training, Ventilatory response to exercise and its use in sports, Ventilatory threshold, Effects Of Exercise, response to steady- state exercise, Exercise-Induced Bronchoconstriction, Control of Breathing during exercise; The Respiratory System under Stress, respiratory systems adaptation to long-term exercise, Adaptations to systematic Training, Effects Of High Altitude

### Unit-III

Muscular Mechanisms in Aerobic Endurance Training; Neural Mechanisms in Aerobic Endurance Training, Muscle Molecular Mechanisms in Strength Training, Muscle Property Changes in Strength Training, Neural Mechanisms in Strength Training. Initial responses of the neuromuscular systems to exercise; Training Adaptation of the Neuromuscular System

#### Recommended Books:

- ⌈ Roy J. Shephard and Henry S. Miller, Jr. (1999) Exercise and the Heart in Health and Disease. Marcel Dekker
- ⌈ Shephard, R.J. and Astrand, P.-O. (1992) Endurance in sport. Blackwell Science Ltd, USA
- ⌈ McArdle, W.D., Katch, F.I., Katch, V.L. (2006) Essentials of Exercise Physiology. Lippincott Williams and Wilkins, USA.
- ⌈ Victor F. Froelicher, Jonathan Myers (2006) Exercise and the heart. Elsevier Inc.
- ⌈ Christopher B. Cooper and Thomas W. Storer (2004) Exercise testing and interpretation- A practical approach. Cambridge University Press.
- ⌈ K. Wasserman, J Hansen, D Sue, W Stringer, B Whipp, eds (2004) Principles of Exercise Testing and Interpretation, 4th edn.. Lippincott Williams & Wilkins, Philadelphia, USA.
- ⌈ Christopher Bell. Cardiovascular Physiology in Exercise and Sport . 1st Edition. 2008; Churchill Livingstone
- ⌈ Michael G. Levitzky. Pulmonary Physiology, 8e. 2013; Lange. The McGraw-Hill Companies.
- ⌈ Denise L. Smith and Bo Fernhall (2011) Advanced cardiovascular exercise physiology. Human Kinetics

### MSSPY 207

### Laboratory III

### Credit 3

- ⌈ Techniques of taking various anthropometric measurements
- ⌈ To define and illustrate various body landmarks
- ⌈ Gross body measurements: Body weight (Kg), Stature, sitting height, Height of interior superior Iliac spine, Subischial length.
- ⌈ Diameters or Breadths (cms): Bicristal diameter (Shoulder Breadth), Transverse chest diameter, Antero-posterior chest diameter, Femur bicondylar diameter (knee breadth), Humerus Bicondylar diameter (elbow Breadth)
- ⌈ BMI Estimation with and without software
- ⌈ Assess Energy and Nutrient intake from Diet using suitable Software
- ⌈ Circumferences or Girths of body parts, Calf circumference, Thigh circumference, Waist circumference, Chest circumference
- ⌈ Skinfold measurement and Body Fat Percentage calculations
- ⌈ Training Program: Circuit Training Program, Interval Training Program, Ballistic Training Program, Fertlek Training Program

- ⌈ Aerobic Power Field Assessments: Cooper 1.5-Mile Run/Walk Test and 12-Minute Run/Walk Test, Rockport Fitness Walking Test
- High-Intensity Fitness Testing: Léger 20 m Shuttle Run Test, Yo-Yo Intermittent Recovery Test, 30-15 Intermittent Fitness Test, Sprinting Performance, Jumping Performance, Power Endurance, Anaerobic Cycling Power, Margaria-Kalamen Stair-Climb Test, BROCKPORT test system, AAHPER health related physical fitness test, Philips JCR test for General motor ability testing
- ⌈ Tests for: Speed, Agility, Balance, Coordination, Reaction time, Flexibility
- ⌈ Sports Skill Tests for: Soccer, Basketball, Hockey, Tennis

**SEMESTER III****MSSPY 301****Cognitive Psychology in Sport****Credit 3**

## Unit I

Information Processing System: Meaning, Definition and structure of Cognitive Processes: [Sensation, Perception, Imagination, Memory], Information processing, Decision making and Thought Process

## Unit II

Attentional Process and Concentration: Definition of Attention and Concentration, Theories of Attention, Types of Attention, Role of Attention & Concentration in Sports

## Unit III

Intelligence and Sport: Meaning and Definition of Intelligence, Theories of Intelligence and Models (Charles Spearman - General Intelligence, Louis L. Thurstone - Primary Mental Abilities, Howard Gardner - Multiple Intelligences), Measurement of Intelligence

## Unit IV

Cognitive Process and Sport: Multiple Intelligence and Emotional Intelligence, Factors affecting Intelligence, Intellectual capabilities in Sport, Importance of Sport Psychology and Cognitive processes in Physical Activity and Sports.

## Recommended Books:

- ⌈ Weinberg & Gould, Foundations of Sports and Exercise Psychology. Human Kinetics 2016.
- ⌈ Motor Learning and Performance 5th Edition With Web Study Guide From Principles to Application, Human Kinetics by Richard Schmidt, Tim Lee
- ⌈ Morgan and King: Introduction to Psychology - Tata McGraw Hill.
- ⌈ M.L. Kamlesh Psychology in Physical Education and Sports by Publisher Mehopolitan book co. Pvt. Ltd., Netaji Subash Marg, New Delhi 11002.
- ⌈ Doing Exercise Psychology, Human Kinetics by Mark Andersen, Stephanie Hanrahan

**MSSPY 302****Psychology of Athletes, Coaching and Officiating****Credit 3**

## Unit I

Athletes and Coaching: Types of athletes and coaching approach, Types of coaches and officials, Levels of athletes, coaches and officials.

## Unit I

Coaching Styles: Philosophy of Coaching, The coaching process and the role of a Coach, Coaching as an Inter-personnel relationship, Coaching in its social context.

## Unit III

Officials and Officiating: Psychology of Sport Officials (Psychological qualities of good Officials), Developing good Qualities in Officials, Psychological preparation for Officiating (Pre, During, Post Competition).

## Unit IV

Psychological Preparation: Psychological preparation of athletes (short term and long term) coaches and officials, Psychological skill training and Personnel development skills (communication skills, time management, conflict resolution), Psyching up and psyching down strategies for athletes, coaches and officials.

## Recommended Books:

- ⌈ Berger, B.G., Pargman, D., & Weinberg, R.S. (2006) Foundations of Exercise Psychology, 2nd Ed. Morgantown, WV: Fitness Information Technology.

- ⌋ Gill, Diana L (2008) Psychological Dynamics of Sport & Exercise, 3rd ed. Human Kinetics Publishers, Inc Champaign IL.
- ⌋ Horn, Thelma (2008) Advances in Sport Psychology Human Kinetics Publishers, Inc Champaign IL.
- ⌋ Martens, Rainer (2014) Coaching Guide to Sport Psychology, 10th Ed. Human Kinetics Publishers, Inc Champaign IL.
- ⌋ Murphy, Shane M (2005) Sport Psychology Interventions Human Kinetics Publishers, Inc Champaign IL.

**MSSPY 303**

**Psychometrics & Psycho-diagnostics in Sports**

**Credit 3**

**Unit I**

Measurement and Evaluation in Sport Psychology: Meaning and Definition of Psychometrics and Psycho-diagnosis, Use of Sport Psychology measurement Tools, Administration, Scoring, Interpretation, Reporting and Providing Feedback, Norm and Criteria based measurement, Data-base Development

**Unit II**

Ethics in Psychological Measurement and Evaluation: Measurement and Assessment Limitations in Sport and Exercise Psychology, Use, Misuse and Disuse of Psychometrics.

**Unit III**

Criteria in Quantitative and Qualitative Psychological Measurement, Criteria for Testing : Completeness, Unambiguity, Consistency, Traceability, Practicability, Testability, Criteria for Qualitative Testing, Professional and Ethical Issues in Sport Psychology (Confidentiality, Record Keeping Ethical & Confidentiality in Computer based service provision)

**Unit IV**

Test Construction in Sport Psychology, Different stages of Psycho-Diagnostics, Methods of Behavioural Assessment, Construction of a Psychological Test / Batteries (Personality , Motivation , Emotion, Health and Wellbeing )

**Recommended Books:**

- Nideffer, Robert M. (1987) Athlete's Guide to Mental Training, 2nd ed. Human Kinetics Publishers, Inc Champaign IL.
- ⌋ Tenenbaum, Gershon (2001) The Practice of Sport Psychology Fitness Information Technology, INC, US
- ⌋ Tenenbaum, Gershon and Marcy Driscoll (2005) Methods Of Research In Sport Sciences: Quantitative And Qualitative Approaches Meyer & Meyer Fachverlag Und Buchhandel GmbH
- ⌋ Vealey , Robin.S (2005) Coaching for the Inner Edge Morgantown, WV: Fitness Information Technology
- ⌋ Weinberg, R.S & Gould, Daniel (2015) Foundations of Sport and Exercise Psychology, 6th Ed. Human Kinetics Publishers, Inc Champaign IL.

**MSSPY 304**

**Team Cohesion Dynamics**

**Credit 3**

**Unit I**

Group and Team Dynamics: Difference Between Groups and Teams, Theories of Group, Development, Group Structure, Effective Team Climate, Maximizing Individual Performance in Team Sports, Group Cohesion: Define, Model, Tools for measuring cohesion, Relationship Between Cohesion and Performance, Strategies for Enhancing Cohesion, Guidelines for Building Team Cohesion

**Unit II**

Leadership: Define, Approaches, Leadership Training Interventions, Effective Leadership, The Art of Leadership Communication: Define, Sending and receiving messages effectively, Recognizing Breakdowns, Improving Communication, Confrontation, Delivering Constructive Criticism

**Unit III**

Understanding the Coach- Athlete Relationship: Define, Importance, Recent conceptualizations, Youth Peer Relationships in Sport : Define, Guiding Theoretical Frameworks, Importance, Research on Sport-Based Peer Relationships

**Recommended Books:**

- ⌋ Foundations of Sports and Exercise Psychology: 6th edition, Robert S Weinberg, Daniel Gould.
- ⌋ Social psychology in sports: Sophia jowett, David Lavalley
- ⌋ Sports Psychology: concepts and applications: R.H. Cox
- ⌋ Imagery in Sports : Tony Morris, Michael Spital, P. Watt
- ⌋ Applying Sports Psychology: Four Perspectives - Jim Taylor, Gregory Scotwillson
- ⌋ Understanding Psychological Preparation For Sport: Theory and Practice of Elite Performers-Lew Hardy, Graham Jones, Danieal Gould
- ⌋ Coping with Sports injuries: Psychological strategies for rehabilitation: Jane Crossman

## Unit I

Problem Athletes and Recovering Strategies: Problems and issues working with Individual and Team Sports, Athletes' Burn –out and Drop-out Problems and issues, Psychological Rehabilitation of Injured Athletes, Drug abuse and rehabilitation

## Unit II

Coach and Coaching Dynamics: Coach-Athlete -Psychologist Relationship [Quality and Maintenance], Career Transition in Athletes and Retirement Issues, Developing Life Skills in Athletes

## Unit III

Mental Training and Sport: Need and Importance Mental Training in Sport for Athletes, Relaxation Techniques (PMR, Autogenic Training , Deep Breathing, Guide Imagery), Activation Techniques (Imagery, VMBR ), Concentration Training, Self-confidence and self-efficacy in sports

## Unit IV

Psychological Skill Training: Meaning and Definition Psychological Skill Training (PST methods: (Goal setting, self-talk, mental imagery and mental rehearsal, and relaxation), Monitoring PST in Performance Routine

## Recommended Books:

- Gill, Diana L (2008) Psychological Dynamics of Sport & Exercise, 3rd ed. Human Kinetics Publishers, Inc Champaign IL.
- Horn, Thelma (2008) Advances in Sport Psychology Human Kinetics Publishers, Inc Champaign IL.
- Martens, Rainer (2014) Coaching Guide to Sport Psychology, 10th Ed. Human Kinetics Publishers, Inc Champaign IL.
- Murphy, Shane M (2005) Sport Psychology Interventions Human Kinetics Publishers, Inc Champaign IL.
- Anxiety, Stress and Coping: <http://www.tandf.co.uk/journals/titles/10615806.html>
- Journal of Personality and Social Psychology: <http://www.apa.org/journals/psp.html>

## MSSPY 306

## Elective III

## Credit 3

**Developmental Psychology and Motor Skill Acquisition**

## Unit I

Stages of Development: Development during Infancy (Physical, Cognitive, Emotional and Social Changes), Development during Childhood (Physical, Cognitive, Emotional and Social Changes), Development during Adolescence (Physical, Cognitive, Emotional and Social Changes), Development during adulthood (Physical, Cognitive, Emotional and Social Changes), Role of Physical Activity and Sport during various stages of Development

## Unit II

Motor Learning: Meaning and Definition of Motor Learning, Activity and Skill, Theories of Motor Learning (Adams Closed Loop Theory, Schmidt's Schema Theory), Motor Learning and Development relationship

## Unit III

Motor Skill Acquisition: Principles of motor skill acquisition, Differentiation and classification of Motor Skills and Sport Skills, Developmental Considerations in Motor Skill Acquisition.

## Unit IV

Motor Learning and Performance: Stages of Motor Learning (Cognitive, Associative , Autonomus), Plateau effect in Motor Learning, Neuropsychological Approach in Motor Learning, Motor Learning in Sport

## Recommended Books:

- Anshel, M.H.(2002 ). Sport Psychology: From Theory to Practice. Scottsolale, AZ: Gorsuch Scarbrick.
- Burton , Damon , Thomas D. Raedeke (2008) Sport Psychology For Coaches Human Kinetics Publishers, Chaampaign Illinois.
- Cox, Richard H (2006) Sport Psychology Concept and Application, 3rd ed Wm.C. Brown Publishers.
- Gill, Diana L (1986) Psychological Dynamics of Sport. Human Kinetics Publishers, Inc Champaign IL.
- Horn, Thelma (2008) Advances in Sport Psychology Human Kinetics Publishers, Inc Champaign IL.
- Kamlesh, M.L. (2011) Psychology in Physical Education and Sport, 3rd ed. Metropolitan Book Co.Pvt.Ltd Delhi.
- Nideffer, Robert M. (1987) Athlete's Guide to Mental Training, 2nd ed. Human Kinetics Publishers, Inc Champaign IL.
- Tenenbaum, Gershon (2001)The Practice of Sport Psychology Fitness Information Technology, INC,US
- Weinberg, R.S & Gould, Daniel (2015) Foundations of Sport and Exercise Psychology, 6th Ed. Human Kinetics Publishers, Inc Champaign IL.

## **Yoga and Mental Health**

### **Unit I**

Introduction to Psycho Physiology of Yoga: Introduction to Yoga and Mental Health (Psychological and Transcendental perspective, Meaning and characteristics of Mental Health, Psycho – Physiology of Traditional Yoga, Concept of Normality, Importance of Normality and Psychological Model

### **Unit II**

Metaphysical Base of Yoga: Psychoanalysis of Freud and Psycho-synthesis of Yoga, Attitude formations through Yama and Niyam, Individual adjustment in the context of Yoga, Conflict : Concept, Types and the Yogic approach, Frustration : Concept and the Remedial measures in Yoga

### **Unit III**

Concept of Personality: Indian and western concept of personality, Indian approach to personality of Pancha Kosa, Attitude change through Yoga, Psychological approach of Freud, Mental Relaxation through Prayer

### **Unit IV**

Therapeutic Applications of Yoga: Yoga Psychology, Relevance to Stress, Relevance to Anxiety, Relevance to Emotional Disorders, Yogic life style for Stress, Anxiety and Depression, Yoga Meditation : Metaphysical and Therapeutic Perspective , Concept of Health and Positive Health in Relation to Yogic way, Prayer : a cross cultural approach to Mental Health and beyond

### **Recommended Books**

- ⌈ Ajaya, S., Rama, S., and Ballentine, R. (1976). *Yoga & Psychotherapy: The evolution of Consciousness*. Honesdale, PA: Himalayan Institute Press.
- ⌈ Aurobindo, S. (1955). *A Practical Guide to Integral Yoga*. Pondicherry: Sri Aurobindo Press.
- ⌈ Chidbhavananda, S. (2005). *The BhagavadGita*. Tiruchirappalli: Sri Ramakrishna Tapovanam.
- ⌈ Eliade, M. (1958). *Yoga: Immortality and Freedom* (W. R. Trask, Trans. 2nd ed.). New Jersey: Princeton University Press.
- ⌈ Farhi, D. (2003). *Bringing Yoga to Life*. New York: Harper Collins Press.
- ⌈ Forbes, B. (2011). *Yoga for Emotional Balance*. Boston: Shambala Press

## **Psychology of Women and Special Population**

### **Unit I**

Gender Role: Meaning and Definition of Gender, Sex Differences and their importance, Socialization Process in Girls and Boys, Gender-Inequity and Gender Expectation in Sport

### **Unit II**

Female Athletes and Sport: Female Athletes Triad: Problems caused by extreme exercise, Problems by high performance female athletes (Societal, Dietary, Menstrual, Emotional, Osteoporosis), Psycho physiological Issues

### **Unit III**

Female Athletes and Role Play: Role Conflict and Female Athletes, Gender role expectation, Gender Stereotypes ( Past and Present), Expectation from Family, Friends and others

### **Unit IV**

Sport and Special Populations: Minority & High risk Athletes, Elite Athlete, Physically Challenged and Injured Athletes, Psychological perspective on athlete's with physical disabilities.

### **Recommended Books**

- Nideffer, Robert M. (1987) *Athlete's Guide to Mental Training*, 2nd ed. Human Kinetics Publishers, Inc Champaign IL.
- ⌈ Papaioannou, A.G and Hackfort, Dieter (2014) *Routledge Companion to Sport and Exercise Psychology*. Routledge , Taylor & Francis Group, London and New york.
- ⌈ Tenenbaum, Gershon and Marcy Driscoll (2005) *Methods Of Research In Sport Sciences: Quantitative And Qualitative Approaches* Meyer & Meyer Fachverlag Und Buchhandel Gmbh
- ⌈ Vealey , Robin.S (2005) *Coaching for the Inner Edge* Morgantown, WV: Fitness Information Technology
- ⌈ Williams, Jean M.(2014) *Vikki Krane Applied Sport Psychology, Personal Growth in Peak Performance*, 7thEd. WM.C.Brown Publishers.

**MSSPY 307**

**Laboratory V**

**Credit 3**

1. Memory experiments: Intelligence testing (Jalota, Ravens Progressive Matrices), Measurement of attention.
2. Test Construction and preparation of Batteries in personality/motivation/social facilitation.

3. Assessment of Types of Athletes: Strategies for relaxation and activation, Schedule of psychological Preparation for coaches and officials, Designing and implementing PST programme

**MSSPY 308**

**Laboratory VI**

**Credit 3**

1. Intervention strategies for individual sport athletes, Intervention strategies for team sport athletes
2. Measurement and analysis of motor skills, Hand eye co-ordination, Foot-Eye Coordination, Hand-Foot Eye Coordination.

**SEMESTER IV**

**MSSPY 401**

**Research Methodology**

**Credit 3**

**Unit-I**

Introduction to Research in Physical Activity, Developing the Problem and Using the Literature, Presenting the Problem, Formulating the Method, Ethical Issues in Research and Scholarship

**Unit-II**

Types of Research: Socio Historical Process in Sport Studies, Philosophical Research in Physical Activity, Research Synthesis (Meta-Analysis), Surveys, Other Descriptive Research Methods, Physical Activity Epidemiology Research, Experimental and Quasi-Experimental Research, Qualitative Research, Mixed-Methods Research

**Unit-III**

Writing the Research Report: Completing the Research Process, Ways of Reporting Research

Introduction to review of literature, Evaluation of scientific literature; organizing literature – strategies, use of software; Meta-analysis, Writing review – structuring the review, quoting/paraphrasing, the citation referencing system

**Recommended Books:**

- ⌈ Research Methodology: Methods and Techniques by C. R. Kothari
- ⌈ ICMR. Ethical Guidelines for Biomedical Research on Human Subjects. 2006; ICMR, New Delhi.
- ⌈ Research Methods in Physical Activity- 7th Edition By Jerry Thomas, Jack Nelson, Stephen Silverman, Human Kinetics
- ⌈ Research Methods in Sport by Mark F Smith
- ⌈ Research Methods for Sports Performance Analysis By Peter O' Donoghue
- ⌈ Research Methods in Physical Education and Youth Sport 1st Edition by Kathleen Armour and Doune Macdonald
- ⌈ Ridley, D. The Literature Review a step-by-step guide for students. 2012; Sage Publications Limited, New Delhi

# **School of Sports Sciences**

## **Department of Sports Biosciences**



### **Proposed Course Structure and Course Details**

## **M.Sc. Sports Biochemistry**

Central University of Rajasthan  
NH-8, Bandar Sindri, Kishangarh-305817  
Dist. – Ajmer (Rajasthan)

## M.Sc. Sports Biochemistry

### SEMESTER I (Total credits: 24)

Code	Title of Course	Type of Course	Credits
MSSB 101	Human Anatomy and Physiology	Core	3
MSSB 102	Biomolecules and Metabolism	Core	3
MSSB 103	Kinesiology	Core	3
MSSB 104	Psychological and Social Aspects of Sports	Core	3
MSSB 105	Biomechanics and Motor Learning	Core	3
MSSB 106	Elective I <ul style="list-style-type: none"><li>• Elective from any other Department</li><li>• Sports First Aid and Emergencies</li><li>• History of Physical Education and Sports</li><li>• Physiological Aspects of Ageing</li></ul>	Elective	3
MSSB 107	Laboratory I	Core	3
MSSB 108	Laboratory II	Core	3

### SEMESTER II (Total credits: 24)

Code	Title of Course	Type of Course	Credits
MSSB 201	Principles and Methods of Sports Training	Core	3
MSSB 202	Performance Evaluation and Testing	Core	3
MSSB 203	Fatigue, Injuries and Rehabilitation	Core	3
MSSB 204	Food and Nutrition	Core	3
MSSB 205	Statistics for Sports Science	Core	3
MSSB 206	Elective II <ul style="list-style-type: none"><li>• Elective from any other Department</li><li>• Kinanthropometry in Sports</li><li>• Health Fitness and Wellness</li><li>• Adaptations to Exercise and Training</li></ul>	Elective	3
MSSB 207	Laboratory III	Core	3
MSSB 208	Laboratory IV	Core	3

### SEMESTER III (Total credits: 24)

Code	Title of Course	Type of Course	Credits
MSSB 301	Analytical Biochemistry for Sports	Core	3
MSSB 302	Sports Performance and Nutritional Biochemistry	Core	3
MSSB 303	Immunological Aspects of Sports Training	Core	3
MSSB 304	Sports and Exercise Metabolism	Core	3
MSSB 305	Biochemical Aspects of Health Issues in Sports	Core	3
MSSB 306	Elective III <ul style="list-style-type: none"><li>• Elective from any other Department</li><li>• Drugs and Doping in Sports</li><li>• Sports Genetics and Performance</li><li>• Exercise Immunology</li></ul>	Elective	3
MSSB 307	Laboratory V	Core	3
MSSB 308	Laboratory VI	Core	3

### SEMESTER IV (Total credits: 24)

Code	Title of Course	Type of Course	Credits
MSSB 401	Research Methodology	Core	3
MSSB 402	Journal Club Presentation	Presentation	3
MSSB 403	Major Project	Tutorial/Laboratory	18



## SEMESTER-I

**MSSB 101**

**Human Anatomy and Physiology**

**Credit 3**

### Unit-I

Anatomy and Physiology of: Blood, Cardiovascular System, Lymphatic System, Integumentary System and Respiratory System.

### Unit-II

Anatomy and Physiology of: Nervous System, Special Senses, Endocrine System, Skeletal System, Joints and Muscular System.

### Unit-III

Anatomy and Physiology of: Digestive System, Immune System, Urinary System, Fluid and Electrolyte Balance, Reproductive System, Pregnancy and Human Development.

### Recommended Books:

- | Human Anatomy and Physiology (10<sup>th</sup> edition) by Elaine N Marieb, Katja N Hoehn.
- | Introduction to Human Body- The Essentials of Anatomy and Physiology by Gerard J. Tortora.
- | Textbook of Anatomy with Coloured Atlas by Inderbir Singh.
- | Textbook of Medical Physiology by Arthur C. Guyton.
- | Principle of Human Anatomy (10<sup>th</sup> Edition) by Gerard J. Tortora.
- Gray's Anatomy: Anatomical Basis of Clinical Practice by Standring, Susan. Borley, Neil R. Gray Henry.
- | Human Physiology by C.C. Chatterjee.
- | Chowdhary Medical Physiology by S K Chowdhary.
- Netter's Atlas of Human Anatomy by Frank H. Netter.

**MSSB 102**

**Biomolecules and Metabolism**

**Credit 3**

### Unit-I

Foundation of Biochemistry, Properties of Water, Amino Acids, Peptides and Proteins, Structure and Function of Proteins, Enzymes, Sugars, Carbohydrates and Glycobiology, Nucleotides and Nucleic Acids, Fatty Acids, Structure and Functions of Lipids.

### Unit-II

Principles of Bioenergetics, Major Metabolic Pathways in Human and its Relevance with Exercise, Glycolysis, Gluconeogenesis, Pentose Phosphate Pathway, Citric Acid Cycle, Electron Transfer System in Mitochondria, Oxidative Phosphorylation.

### Unit-III

Basic Concepts and Design of Metabolism, Metabolic Regulation of Glucose and Glycogen, Biosynthesis of Carbohydrates, Lipid Biosynthesis, Fatty Acids Catabolism, Amino Acids- Biosynthesis, Oxidation and Production of Urea, Metabolism of Lactate, Integration and Regulation of Metabolism.

### Recommended Books:

- | Principles of Biochemistry- Lehninger Nilson and Cox W.H. Freeman.
- | Principles of Biochemistry- Donald Voet, CW Pratt, JG Voet (2012) Wiley, ISBN:1118092449.
- | Principles of Exercise Biochemistry Editor(s): Poortmans J.R. (Brussels) Karger Publishers.
- | Biochemistry JM Berg, TL Tymoczko L Stryer W. H. Freeman and Company.
- | West & Todd Text book of Biochemistry. Mac Millan Company London.
- | G.P. Talwar & ID Singh Textbook of Biochemistry & Human Biology - Prentice Hall of India, New Delhi.
- | Vasudevan Textbook of Biochemistry. Jaypee Brothers Medical publishers (P) Ltd.
- Jain J.L., Jain Sanjay, Jain Nitin, S Fundamentals of Biochemistry -. Chand and Company Ltd, New Delhi.
- | A.C. Dev. Comprehensive Viva and practical Biochemistry. New Central Book Agency Pvt LTD.

**MSSB 103**

**Kinesiology**

**Credit 3**

### Unit-I

Meaning of Kinesiology, Aims and Objectives of Kinesiology, Role of Kinesiology in Sports; Anatomical Position, Principles of Plane and Axis, Various types of movements.

### Unit-II

Bones: Meaning and composition of bone, Kinds of bones (flat, long, short, irregular and sesamoid), Function of bones, Bone fracture and its types; General features of the following bones: Upper Extremities: Clavicle, Scapula, Radius and Ulna, Humorous;

increase the flexibilities, Structure, function, fundamental movements around the joints; General features, structure and movements of the following joints: Shoulder Complex, Elbow Complex, Hip Complex, Knee joint, Spinal column and Pelvic girdle.

#### Unit-III

Introduction to Muscular System: Muscles and Tendons, Classification of muscles, Structure of Skelton muscle, classification of muscles on basis of fibre arrangement, Physiology of muscle contraction, types of muscle contraction, Role of muscle in movement, Methods of studying the action of muscle. Origin, Insertion and action of major muscle groups of the Body; Nervous System: Overview of Nervous system, Neurons, Motor Unit and Receptors.

#### Recommended Books:

- | Clinical Mechanics and Kinesiology With Web Resource, Human Kinetics, by Janice Loudon, Robert Manske, Michael Reiman.
- Biomechanics and Kinesiology of Exercise – 2013 by Michael Yessis.
- | Cynthia C. Norkin, Pamela K. Levangie : Joint structure & function- A comprehensive analysis 2nd edition.
- | Brunnstrom - Clinical Kinesiology, F.A. Davis.
- | Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
- | Shaw, D., Pedagogic Kinesiology, Khel Sahitya Kendra, 2007.
- | Thompson, C., Manual of Structural Kinesiology. (10th Ed.), St. Louis: Times Mirror/ Mosby College Publishing, 1995
- | Shaw, Dhanonjoy, Kinsiology and Biomechanics of Human Motion, Khel Sahitya Kendra, 1998.
- | White and Punjabi - Biomechanics of Spine - Lippincott.
- | Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
- Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Edi.
- | Basic Biomechanics 4th edition, susan J. Hall, MCGraw Hill.

**MSSB 104**

**Psychological and Social Aspects of Sports**

**Credit 3**

#### Unit-I

Sports Psychology and role of Psychology in Sports, Methods of Psychology employed in Sports, Motor leaning and Performance, Importance of Sports Psychology for Athletes, Coaches and others related to Sports settings.

#### Unit-II

Personality and its role in Sports, Attention and Perception in Sports; Motivation and Goal setting and its role in Sports, Emotions in Sports, Stress and Anxiety in Sports, Biofeedback techniques in Sports.

#### Unit-III

Sociology of Sports, Social Factors and Socio-metric techniques in Sports, Group processes, Team cohesiveness and Leadership in sports, Effect of crowd behaviour in Sports, Economics and Politics in Sports.

#### Recommended Books:

- | Weinberg & Gould, Foundations of Sports and Exercise Psychology. Human Kinetics 2016.
- | Motor Learning and Performance 5th Edition With Web Study Guide From Principles to Application, Human Kinetics by Richard Schmidt, Tim Lee.
- | Morgan and King: Introduction to Psychology - Tata McGraw Hill.
- | M.L. Kamlesh Psychology in Physical Education and Sports by Publisher Mehopolitan book co. Pvt. Ltd., Netaji Subash Marg, New Delhi 11002.
- | Sanjeev. P. Sahni Psychology and its application in sports by D.V.S. publications, 100, Giri Nagar Kalkaji, New Delhi - 110019.
- | Agyajit Singh Psychology of coaching by Friends Publications, # 101 Ansari Road Darya Ganj, New Delhi-110002.
- | Jitendra Mohan Recent Advances in Sports psychology, By, Publisher, Friends Publications.
- | Fundamentals of Sociology of Sport and Physical Activity, Human Kinetics by Katherine M. Jamieson, Maureen M. Smith.
- | Doing Exercise Psychology, Human Kinetics by Mark Andersen, Stephanie Hanrahan.
- | Social Issues in Sport 3rd Edition, Human Kinetics by Ron Woods.

**MSSB 105**

**Biomechanics and Motor Learning**

**Credit 3**

#### Unit-I

Role of Bio–Mechanics in the Field of Sports Science, Principles of Biomechanics; Biomechanical Concepts: Motion, Newton’s Law of Angular Motion and Linear Motion and its Relationships, Force, Centripetal and Centrifugal forces, Equilibrium, Centre of Gravity and Stability, Freely Falling Bodies and Projectile , Momentum, Impulse, Lever and its Classification, Work, Power, Energy: Relationship of Work, Power and Energy, Friction, Spin, Impact, Elasticity, Rebound, Fluid Mechanics, Air Resistance and Water Resistance.

## Unit-II

Determine The Simultaneous-Sequential Nature of A Variety Of Movement Skills, Classify Motor Skills Using the Classification System Presented, Bio-Mechanical Analysis of Fundamental Skills: Walking, Running, Jumping, Pulling, Pushing, Lifting, Lowering, Throwing.

## Unit-III

Introduction to Gait Analysis, Mechanical Analysis of Sports Skills: Athletics (Running, Jumping, and Throwing), Swimming, Football, Basketball, Volleyball, Cricket. Technological Use and Advances in Biomechanics: Techniques and Tools for Measurement of Biomechanical Variables.

### Recommended Books:

- | Biomechanical Analysis of Fundamental Human Movements by Arthur Chapman, 2008, Human Kinetics.
- | Biomechanics of Sport and Exercise 3rd Edition With Web Resource and MaxTRAQ 2D Educational Software Access- Loose-Leaf Edition, Human Kinetics, By Peter McGinnis.
- Biomechanics and Kinesiology of Exercise – 2013 by Michael Yessis .
- | Cynthia C. Norkin, Pamela K. Levangie : Joint structure & function- A comprehensive analysis 2nd edition, F.A. Davis Company Philadelphia.
- | Brunstrom - Clinical Kinesiology, F.A. Davis.
- | Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
- | White and Punjabi - Biomechanics of Spine - Lippincott.
- | Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
- Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Edi.
- | Basic Biomechanics 4th edition, Susan J. Hall, MCGraw Hill.
- | Joseph Hamill, Kathleen M. Knutzen. Biomechanical Basis of Human Movement.

**MSSB 106**

**Elective I**

**Credit 3**

## **Sports First Aid & Emergencies**

### Unit-I

Introduction to Sports First Aid: Athletic Health Care Team, Sport First Aid Game Plan, First Aid Equipment and Kit, Basic Life Support System: Recovery Position, Head to Toe- Survey, Artificial Ventilation; Basic Sport First Aid Skills : Anatomy and Sport Injury Terminology, Emergency Action Steps , Physical Assessment and First Aid Techniques, Moving Injured or Sick Athletes.

### Unit II

Sport First Aid for Specific Injuries: Unconsciousness: ABC, CPR, AED, Respiratory Emergencies and Illnesses , Shock, Wounds and Bleeding, Head, Spine and Nerve Injuries, Internal Organ Injuries, Upper and Lower Body Musculoskeletal Injuries, Facial and Scalp Injuries Skin Problems.

### Unit-III

Disaster Preparedness and Management: Weather-Related Problems, Environmental Emergencies: Animal Bites and Stings, Allergies, First Aid Protocols, Practical Skills in using: Triangular Bandages, Broad fold, Thin fold, Slings, Collars, Cardiac Emergencies.

### Recommended Books:

- | Sport First Aid-5th Edition by Melinda Flegel, Human Kinetics, 2014.
- American Red Cross, First Aid/CPR/AED : Participant's Manual.
- | Practical First Aid: British Red Cross in Association with donning kinder sley.
- | John Morris: First Aid Training Manual, Everyday learning Pvt Ltd.
- | Authorized Manual of St. John Ambulance (India): First Aid.
- | Bradley R.A. Wilson. Timothy E. Glaros : Managing Health Promotion Programs Human Kinetics Publishers.

## **History of Physical Education and Sports**

### Unit-I

What are Play, Game and Sports? Types of sports and recreational activities, Importance of free play and organizational games , Terminology: Sports Science and Physical Education, Health Related and Motor performance Related Fitness, Health and Wellness (physical, mental, psychological, social and spiritual) and Athletics, Sports Careers: Media, Management, Performance, Coaching and other Related Areas.

### Unit-II

Philosophy and its need in Sports and Physical Education, Idealism, Naturalism and Pragmatism in Physical Education, Physical Education in Ancient Greek, Rome, India and Modern India. History of Olympic Games, Asian Games, SAARC Games and SAF Games, National Sports Awards, Trends and Problems in Sports Sciences and Physical Education in 21<sup>st</sup> Century.

#### Unit-III

Introduction to General Rules and Regulations of Selected Sports (Football, Field Hockey, Basketball, Volleyball, Cricket, Badminton, Tennis), Introduction to Playfields and Track Specifications, General Organizational Process of Sports Competitions.

#### Recommended Books:

- | Bucher, C.A.: Foundation of Physical Education, St. Louis: The C.V. Mosby company, 1983.
- | History and Philosophy of Sport and Physical Activity, Human Kinetics by R. Scott Kretchmar, Mark Dyreson, Matthew Liewellyn, John Gleaves, 2017.
- | Synder and Geoh: Professional preparation in Health Education, Physical Education and Recreation..
- | Barrow, H.M.: Man and Movement: Principles of Physical Education, Philadelphia Lea and Fabiger, 1977.
- | Joseph, P.M.: Organisation of Physical Education, Kandivila,: Old students Association, T.I.P.E.
- | Kamlesh, M.L. and Sangral, M.S. : History and Principles of Physical Education, Prakash Brothers, 1983.
- | Wuest and Bucher: Foundations of Physical Education and Sports, B.I. Publications Pvt. Ltd., New Delhi.
- | William, H.F.: Physical Education and Sports in Changing Society, Surjeet Publication, Delhi.

### Physiological Aspects of Ageing

#### Unit-I

Growth and Biological Maturation: Relevance to Athletic Performance; Muscle Development During Childhood and Adolescence, Relevance to Understanding Effects of Growth on Performance.

#### Unit-II

Theory of Ageing, Age Related Changes in Different Body Systems, Cardiovascular Concerns in the Young Athlete, Trainability During Childhood, Ageing and Muscular Strength, Aging and Joint Flexibility.

#### Unit-III

Exercise Guideline For Geriatric Populations. Introduction to Masters Sports, Ageing and Performance, Role Of Continued Involvement, Psychosocial Issues in Masters Sport, Model of Lifespan Physical Activity, Health and Performance.

#### Recommended Books:

- | Helge Hebestreit and Oded Bar-Or (2008) The young athlete. Blackwell Publishing Ltd.
- | Joseph Baker, Sean Horton and Patricia Weir ( 2000 ) The masters athlete: understanding the role of exercise in optimizing aging. Routledge.
- | "Fitness and Wellness" : Warner W. K Hoeger and Sharvon A. Hoeger.
- | "Fitness & Wellness concepts": Charles B. Corbina & Ruth Lindsey.
- | "Lifetime Fitness & Wellness - A personal choice": Melvin H. Williams.

#### MSSB 107

#### Laboratory I

Credits 3

- | Introduction to laboratory techniques- pipetting, calculations, introduction to equipments, sterile techniques and lab safety.
- | How to Use microscopes.
- | To study Counting Chambers.
- | To determine the total Red Blood Corpuscles count.
- | To determine the total Leucocyte Count in blood.
- | To measure the Haemoglobin concentration of blood.
- | To measure Blood Pressure of a subject in different positions.
- | Calculation of Energy expenditure.
- | Measurement of blood glucose Cholesterol/HDL, Glycerol, Lactate, Triglycerides.
- | Biochemical Assessment of Metabolites.
- | Biochemical Assessment of Enzymes.
- | Biochemical Assessment of Hormones.
- | Estimation of sugars, iron, phosphate, vitamin C and organic acids.
- | Estimation of protein concentration.

#### MSSB 108

#### Laboratory II

Credits 3

- | To analyse various planes and axes of the body.
- | To demonstrate the surface anatomy and muscle attachments of following bones: Clavicle, Scapula, Humerus, Radius, Ulna, Meta Carpals, Phalanges, Femur, Tibia , Fibula, Patella, Tarsals and Metatarsals.

- | To demonstrate the following joints including corresponding muscles and movements of Upper Extremity: Acromioclavicular joint, Sternoclavicular joint, Shoulder joint, Elbow joint, Proximal Radioulnar joint, Distal Radioulnar joint, Wrist joint, Radio carpal joint, Thumb joint.
- | To demonstrate the following joints including corresponding muscles and movements of Lower Extremity: Hip Joint, Knee Complex and Ankle joint.
- | Demonstration and Estimation of Centre of Gravity of Human Body.
- | Determination of Human Gait pattern.

## **SEMESTER-II**

**MSSB 201**

**Principles and Methods of Sports Training**

**Credit 3**

### Unit-I

Scientific basis of Sports Training, Importance, Aims and Objectives of Sports Training; Characteristics of Sports Training; Biological Process in Training; Components of Physical Fitness (motor abilities) – Endurance, Strength, Speed, Flexibility, Co-ordination; Agility.

### Unit-II

Principles of Sports Training- Overload, Specificity, Progression and Reversibility; Meaning and concept of Training load; Adaptation and Recovery, Super Compensation, Training Structure - Volume, Intensity, Frequency, Peaking, Errors in Training, Adaptations to Resistance Training, Adaptations to Aerobic and Anaerobic Training.

### Unit-III

Training plan; Need and importance in planning; Types of training plans- short term and long term plans; Training and Competition Cycles (training conception, macro, micro, meso); Periodization– Need, Types; Aims of various phases of Periodization (Preparatory, competition and transition); Competition-Types of Competition, Preparation for competition; the number and frequency of competition. Training athletes with disability, Adapted games for Disabled; Special Olympics and Paralympics.

### Recommended Books:

- | Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
- | Periodization-6th Edition Theory and Methodology of Training by Tudor Bompa, Carlo Buzzichelli.
- | Physiological Aspects of Sport Training and Performance With Web Resource-2nd Edition, Human Kinetics By Jay Hoffman.
- | Recovery for Performance in Sport by Institut National du Sport de l'Expertise et de la Performance INSEP, Human Kinetics, Christophe Hausswirth, A. Mujika.
- | Essentials of Sports Training and Conditioning by JB Learning, NASM.
- | Singh, H: Science of Sports training, DVS Publication, New Delhi, 1991.
- | Matweyev, L.P.: Fundamentals of Sports training, publication Moscow, 1984.
- | Harre, D: Principles of sports training, Sportverlag, Berlin, 1988.
- | Singh, H: Science of Sports training: General theory and methods, NIS, Patiala, 1984.
- | Scholisch, M: Circuit training, Sportverlag, Berlin.
- | Willmore, J.H.: Athletic training and physical fitness, Antro and Becon Inc, Sydney.

**MSSB 202**

**Performance Evaluation and Testing**

**Credit 3**

### Unit-I

Introduction to Test, Measurement, Evaluation and Research, Basic concepts in Tests: Evaluation, Validity, Reliability, Objectivity and Norms, Test Construction and its Organisation and Administration; Pre-test considerations: Risks associated and Safety considerations, ACSM guidelines for when to stop a Test, Pre-Exercise Test Evaluations: Calculation of HR MAX and 85% HR max depending on protocol, Population considerations: Children, Elderly, apparently Healthy.

### Unit-II

Test Order: Equations used to estimate aerobic power from TM protocols, Equations used to estimate aerobic power from Cycle ergometer protocols (arm and leg), Calculations used to estimate aerobic power from other variables, Test protocols used for measuring the health and skill-related components of fitness, CV endurance field tests, VO2max testing, Norm tables, Maximal versus submaximal tests.

### Unit-III

Modes of Testing, Muscular Strength, Endurance and Flexibility, Body composition and Anthropometry, Balance, Agility, Coordination, Reaction time and Anaerobic power, Physical Fitness Batteries, Specific Sports Skill Tests (Soccer, Basketball, Volleyball, Hockey, Badminton, Tennis and other Sports).

Recommended Books:

- | Advanced Fitness Assessment and Exercise Prescription 8th Edition with Online Video, Human Kinetics by Ann Gibson, Dale Wagner, Vivian Heyward, 2018.
- | Laboratory Manual for Exercise Physiology 2nd Edition. With Web Study Guide, Human Kinetics by G. Gregory Haff, Charles Dumke, 2018.
- | Measurement and Evaluation in Human Performance 5th Edition, Human Kinetics by James Morrow Jr., Dale Mood, James Disch, Minsoo Kang, 2016.
- | Physiological Tests for Elite Athletes 2nd Edition by Australian Institute of Sport Rebecca Tanner, Christopher Gore, 2012.
- | ACSM's Guidelines for Exercise Testing and Prescription, 10<sup>th</sup> Edition by American College of Sports Medicine. Wolters Kluwer, 2017
- | Text book of Applied Measurement Evaluation & Sports Selection second edition: Dewinder K Kansal Sports & Spiritual Science Publications
- | Heyward, Vivian. Advanced Fitness Assessment and Exercise Prescription, 5th ed., Human Kinetics, 2006.
- ACSM's Guidelines for Exercise Testing and Prescription, 8th ed., Lippincott Williams and Wilkins, 2009.
- ACSM's Health-Related Physical Fitness Assessment Manual, 3rd ed., 2009.
- Ed. Durstine and Moore. ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities, 2nd ed. Human Kinetics, 2003.

**MSSB 203**

**Fatigue, Injuries and Rehabilitation**

**Credit 3**

Unit-I

Concept of Overloading, Overtraining, Fatigue and Staleness, Symptoms and Causes of Fatigue, Types of Fatigue, Theories associated with Fatigue, Definition, Types, Symptoms, Findings, Underlying Mechanisms and Frequency of Overtraining and Overtraining Syndrome, Oxygen Debt Theory, Recovery Oxygen Uptake or Excess Post-Exercise Oxygen Consumption (EPOC), Implications of EPOC for Exercise and Recovery, Optimal Recovery From Steady-Rate Exercise and Non-Steady-Rate Exercise, Intermittent Exercise and Recovery.

Unit-II

Sports Injury- Meaning, Classification, Causes, Types, General guidelines Prevention, Recovery Time, Introduction and Management of common Sports Injuries (Fracture, Dislocation, Laceration, Abrasion, Sprain and Strain), How to avoid Sports Injuries, Role of Warm-up and Cool Down.

Unit-III

Rehabilitation: Meaning, Concepts, Objective and Scope of Rehabilitation, Principal of Care and Rehabilitation  
Therapeutic Modalities: Electrotherapeutic Modalities (Shortwave Diathermy, Ultra Sound, T.E.N.S), Heat and Cold, Soft tissue Massage, Aquatic Rehabilitation Exercise, Therapeutic Exercise, Therapeutic Nutrition, Psychological Rehabilitation.

Recommended Books:

- | Shaun Phillips (2015) Fatigue in Sport and Exercise. Routledge, NY.
- | Therapeutic Modalities for Musculoskeletal Injuries 4th Edition, Human Kinetics by Craig Denegar, Ethan Saliba, Susan Saliba, 2016.
- | Essentials of Athletic injury management 10th edition by William E. Prentice, Human Kinetics.
- | Clinical Sports Medicine Fifth Edition by Peter Brukner, Karim Khan, McGraw-Hill Education Australia, 2016.
- | Principles and Practice of Therapeutic Massage by Sinha, Jaypee Publishers.
- | Textbook of Electrotherapy by Singh Jagmohan, Jaypee Publishers.
- | Manfred Lehmann, Carl Foster, Uwe Gastmann, Hans Keizer and Jtirgen M. Steinacker(Eds) (1997) Overload, Performance Incompetence and Regeneration In sport. Kluwer Academic / Plenum Publishers, N.

**MSSB 204**

**Food and Nutrition**

**Credit 3**

Unit-I

Nutrients: Functions and Recommended Intakes, Healthy Eating and Balanced Diet, Fuel Sources for Muscle and Exercise Metabolism, Energy: Food Energy and Expenditure, Gastric Emptying, Digestion, and Absorption.

Unit-II

Nutritional Role and Recommendations for following: Carbohydrate, Fat, Protein and Amino Acids, Water Requirements and Fluid Balance, Vitamins and Minerals, Nutrition Supplements.

Unit-III

Nutrition and Training Adaptations, Nutrition and Immune Function in Athletes, Body Composition and Weight Management, Eating Disorders in Athletes, Personalized Nutrition, Menu Planning (Meal Timing and Spacing).

Recommended Books:

- | Sport Nutrition 3rd Edition by Asker Jeukendrup, Michael Gleeson, Human Kinetics, 2018.
- | Nutrition for Sport, Exercise, and Health by Marie Spano, Laura Kruskall, D. Travis Thomas, Human Kinetics.
- | Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
- | Exercise Physiology: Nutrition, Energy and Human Performance 8th Edition by William D. McArdle, Frank I. Katch, Victor L. Katch.
- Nancy Clark's Sports Nutrition Guidebook by Nancy Clark, Human Kinetics.
- NSCA's Guide to Sport and Exercise Nutrition by National Strength Conditioning Association, Human Kinetics.
- | Fundamental of Foods, Nutrition & Diet Therapy 5<sup>th</sup> edition by S.R. Mudambi, M.V. Rajagopal, New Age International Limited, New Delhi.
- | Applied Nutrition. By R. Rajlaxmi, IBH Publications, New Delhi.
- | Nutritional Supplements in Sports, Exercise and Health: An A to Z Guide by Linda M. Castell, Samantha J. Stear, Louise M. Burke, Routledge.

**MSSB 205**

**Statistics for Sports Science**

**Credit 3**

Unit-I

Introduction to Biostatistics, Frequency Distribution, Variable and Attribute, Line-diagram, Bar-diagram, Pie chart, Histogram, Mean, Median and Mode.

Unit-II

Variance, Standard deviation; Standard error of mean, Null hypothesis, Level of significance and Probability; Regression and correlation.

Unit-III

Student's t-test, Fisher's t-test, Chi-square test, Analysis of Variance (ANOVA), ANCOVA, Introduction and Application of Statistical Software.

Recommended Books:

- | A Text book of Biostatistics, by A.K.Sharma, Discovery publishing house
- | Introduction to Biostatistics, By Dr. Pranab Kumar Banerjee, S. Chand Publishers
- | Research Methodology: Methods and Techniques Book by C. R. Kothari
- | Dutta N.K. Fundamentals of Bio-Statistics. 2002; Kanishka Publishers, New Delhi.
- | Gupta S.P. Statistical Methods. 2004; S. Chand & Sons, New Delhi.
- | Ruud H. Koning and James H. Albert ( 2008) Statistical thinking in sports. Chapman & Hall/CRC.

**MSSB 206**

**Elective II**

**Credit 3**

**Kinanthropometry in Sports**

Unit-I

Introduction, scope and general consideration, i.e. Application of anthropometric data in sports, Body proportions and indices, Sports specific body proportions and indices, Body mass index and its importance in sports.

Unit-II

Anthropometric Measurements and Procedures, Equipment for anthropometric measurements, Gross Body Measurements and procedures, Length of Body Parts, Measurements and procedures, Diameters of Body Parts, Measurements and procedures, Circumferences of Body Parts, Measurements and procedures, Skinfold Thickness, Measurements and procedures.

Unit-III

Physiological Maturation: Decimal Age and concept of Physiological maturity in sports. Assessment of skeletal maturity of athletes, Body Composition: Anthropometric determination, Importance in sports and various methods to estimate body composition, Somatotyping: Introduction, Definition of Somatotyping and Classification.

Recommended Books:

- | Sports Anthropometry by H.S. Sodhi, ANOVA Publication.
- | Physique and Selection of Sportsmen by H.S. Sodhi and L.S. Sidhu.
- | Kinanthropometry by S.P. Singh and P. Malhotra, Luna Publication, Patiala.
- | Kinanthropometry by Roger Eston and Thomas Reilly, E & F.N. SPON, London.
- | Skeletal Maturity by S.P. Singh, L.S. Sidhu, and J. Singh, Human Biology Publication Society, Punjabi University, Patiala.
- | Genetic and Anthropological Studies of Olympic Athletes by De Garray, Louis Levine & Cater, Academic Press, London.

## Health Fitness and Wellness

### Unit-I

Introduction to Health: Concept of health, Lifestyle and Disease, Ageing.

### Unit-II

Physical Activities & Fitness: Concept to Fitness, Exercise and its Principles, Health Education Recreation & Dance.

### Unit-III

Healthy Life Style Approach: Concept of Wellness, Wellbeing, Stress Management.

#### Recommended Books:

- | "Fitness and Wellness" : Warner W. K Hoeger and Sharvon A. Hoeger
- | "Fitness & Wellness concepts": Charles B. Corbina & Ruth Lindsey
- | "Lifetime Fitness & Wellness - A personal choice": Melvin H. Williams
- | Oxford Textbook of Public Health, Helen Liepman.
- | Sunderlal, Aadarsh, Pankaj, 2007, Textbook of Community Medicine, CBS Publishers & Distributors.
- | Kirch, Wilhelm, 2008, Encyclopedia of Public Health, Volume 1 & 2, Kluwer Academic Publishers.
- | Mary -Jane Schneider and Henry Schneider, 2006 (2nd edition), Introduction to Public Health, Jones and Bartlett Publishers.

## Adaptations to Exercise and Training

### Unit-I

Cardiovascular Adaptations to Endurance and Strength Training, Hypertrophy and Cardiomyopathy in Young and Older Athletes, Heart rate training zone, Effects Of High Altitude, Sudden Cardiac Death and Exercise in Healthy Adults

### Unit-II

Respiratory System Adaptations to Endurance and Strength Training, Ventilatory response to exercise and its use in sports, Ventilatory threshold, Effects Of Exercise, response to steady- state exercise, Exercise-Induced Bronchoconstriction, Control of Breathing during exercise; The Respiratory System under Stress, respiratory systems adaptation to long-term exercise, Adaptations to systematic Training, Effects Of High Altitude

### Unit-III

Muscular Mechanisms in Aerobic Endurance Training; Neural Mechanisms in Aerobic Endurance Training, Muscle Molecular Mechanisms in Strength Training, Muscle Property Changes in Strength Training, Neural Mechanisms in Strength Training. Initial responses of the neuromuscular systems to exercise; Training Adaptation of the Neuromuscular System

#### Recommended Books:

- | Roy J. Shephard and Henry S. Miller, Jr. (1999) Exercise and the Heart in Health and Disease. Marcel Dekker.
- | Shephard, R.J. and Astrand, P.-O. (1992) Endurance in sport. Blackwell Science Ltd, USA.
- | McArdle, W.D., Katch, F.I., Katch, V.L. (2006) Essentials of Exercise Physiology. Lippincott Williams and Wilkins, USA.
- | Victor F. Froelicher, Jonathan Myers (2006) Exercise and the heart. Elsevier Inc.
- | Christopher B. Cooper and Thomas W. Storer (2004) Exercise testing and interpretation- A practical approach. Cambridge University Press.
- | K. Wasserman, J Hansen, D Sue, W Stringer, B Whipp, eds (2004) Principles of Exercise Testing and Interpretation, 4th edn.. Lippincott Williams & Wilkins, Philadelphia, USA.
- | Christopher Bell. Cardiovascular Physiology in Exercise and Sport . 1st Edition. 2008; Churchill Livingstone.
- | Michael G. Levitzky. Pulmonary Physiology, 8e. 2013; Lange. The McGraw-Hill Companies.
- | Denise L. Smith and Bo Fernhall (2011) Advanced cardiovascular exercise physiology. Human Kinetics.

### MSSB 207

### Laboratory III

### Credit 3

- | Techniques of taking various anthropometric measurements
- | To define and illustrate various body landmarks
- | Gross body measurements: Body weight (Kg), Stature, sitting height, Height of interior superior Iliac spine, Subischial length.
- | Diameters or Breadths (cms): Bicristal diameter (Shoulder Breadth), Transverse chest diameter, Antero-posterior chest diameter, Femur bicondylar diameter (knee breadth), Humerus Bicondylar diameter (elbow Breadth)
- | BMI Estimation with and without software
- | Assess Energy and Nutrient intake from Diet using suitable Software



- | Circumferences or Girths of body parts, Calf circumference, Thigh circumference, Waist circumference, Chest circumference
- | Skinfold measurement and Body Fat Percentage calculations
- | Training Program: Circuit Training Program, Interval Training Program, Ballistic Training Program, Fertlek Training Program.

**MSSB 208**

**Laboratory IV**

**Credit 3**

- | Aerobic Power Field Assessments: Cooper 1.5-Mile Run/Walk Test and 12-Minute Run/Walk Test, Rockport Fitness Walking Test.
- High-Intensity Fitness Testing: Léger 20 m Shuttle Run Test, Yo-Yo Intermittent Recovery Test, 30-15 Intermittent Fitness Test, Sprinting Performance, Jumping Performance, Power Endurance, Anaerobic Cycling Power, Margaria-Kalamen Stair-Climb Test, BROCKPORT test system, AAHPER health related physical fitness test, Philips JCR test for General motor ability testing.
- | Tests for: Speed, Agility, Balance, Coordination, Reaction time, Flexibility.
- | Sports Skill Tests for: Soccer, Basketball, Hockey, Tennis.

**SEMESTER III**

**MSSB 301**

**Analytical Biochemistry for Sport**

**Credit-3**

**Unit I**

Principles for Biochemical Monitoring of Training, Pre-analytical, Analytical and Post-Analytical Phases of Testing, Biochemical Assessment of Exercising Persons- Serum Iron, Ferritin, Transferrin, Electrolytes, Urate, Urea and Creatinine, Total Protein, Albumin, Total Bilirubin, Cholesterol and Triglycerides, Glucose, Metabolites, Enzymes, Hormones.

**Unit II**

Mechanisms of Various Sports Performance Enhancing Drugs, Biochemical Classes of World Antidoping Agency (WADA) prohibited compounds, Detection and Masking Methods for Common Doping Drugs.

**Unit III**

Commonly Used Biochemical Techniques and Their Application in relation to Sports-Radioimmunoassay, Polymerase Chain Reaction, Recombinant DNA Technology, Electrophoresis, Centrifugation, Liquid and Gas Chromatography, Mass Spectrometry, Flow Cytometry, Iso-Electric Focusing, Immunoluminometric Assay.

**Recommended Books:**

- Exercise, Sport, and Bio analytical Chemistry-Anthony C. Hackney (2016), Elsevier, ISBN: 978-0-12-809206-4.
- Principles of Exercise Biochemistry, Editor(s): Poortmans J.R. (Brussels), Karger Publishers, ISBN:978-3-8055-7607-9.
- Exercise Biochemistry- Vassilis Mougios (2006) Human Kinetics, ISBN: 13:978-0-7360-5638-0.
- Biochemistry Primer for exercise Science-Peter Tiidus, A. Russell Tupling, Michael Houston (2012) Human Kinetics, ISBN-13: 9780736096058.
- Biochemical monitoring of sport training- Atko Viru, Mehis Viru (2001) Human Kinetics, ISBN:07360-0348-7.
- The analytical Chemistry of Drug Monitoring in Athletes, Larry D Bowers (2009) The annual reviews of Analytical Chemistry, DOI: 10.1146/annurev-anchem-060908-15519.
- Principles and Techniques of Biochemistry and Molecular Biology by Wilson and Walker (2010) Cambridge University Press, ISBN: 978-0-521-73167-6.

**MSSB 302**

**Sports Performance and Nutritional Biochemistry**

**Credit-3**

**Unit I**

The Biochemical Basis of Exercise and Sports, Biochemistry of Performance of Various Sporting Events- The Weightlifter, Sprinter, Middle Distance Events and The Endurance Athlete, Adaptation to Training, Effects of Detraining.

**Unit II**

Fundamentals of Nutritional Biochemistry, Various Classes of Nutrients and Their Role in Human Body, Basics of Energy Use in Body, Daily Energy Expenditure, Basic Metabolic Rate, Food Sources of Nutrients, Nutrient Digestion and Absorption, Nutrient Toxicities, Free Radicals and Anti-oxidants.

**Unit III**

Role of Nutrition in Sports Performance of Various Sports Events, Nutritional effect on Training Adaptation, Determining Energy Needs for Persons Involved in Various Exercise and Sports Activities, Proportion of Different Nutrients During Various Exercise/Sports, Hydration During Workouts, Dietary Recommendations for Different Sports.

Recommended Books:

- The Biochemical Basis of Sports Performance- Ronald J Maughan and Michael Gleeson (2010) Oxford University Press, ISBN:9780199208289.
- Biochemistry for Sports and Exercise Metabolism- Don MacLaren, James Morton, (2011) Wiley-Blackwell Publisher, ISBN-978-0-470-09185-2.
- Fundamentals of Human Nutrition- Catherine Heissler, Hilary Powers (2015) Churchill Livingstone Elsevier, ISBN:9780443069727.
- Nutrition Chemistry and Biology- by Julian F. Spallholz and Mallory Boylan (1998), CRC Press, ISBN 13: 978-0849385049.
- Brooks, GA; Fahey, TD; Baldwin KM/Exercise physiology: human bioenergetics and its applications/Fourth Edition/2005.

**MSSB 303**

**Immunological Aspects of Sports Training**

**Credit-3**

Unit I

General Overview of Immune System, Innate and Adaptive immunity, Antigen and Antibody, B and T Cell immunity, Major Histocompatibility Complex and Antigen Presentation, Cell Mediated and Humoral Immune Response, Inflammation, Complement system, Cytokines, Chemokine, Hypersensitive reaction, Autoimmunity.

Unit II

Relevance of Immune Function to Athletes, Causes of Illness in Athletes, Intensive Training & Effects on Immune Function, Allergy in Sports, Practical Guidelines on Minimising Infection Risk in Athletes.

Unit III

Strategies to Limit Exercise Induced Immune Depression, Strategies to Support Immunity for Athletes, Immunological Aspects of Sport Nutrition, Clinical Implication of Exercise Immunology.

Recommended Books

- Kuby Immunology- Judith A. Owen, Jenni Punt (2013) W. H. Freeman, ISBN: 1464137846.
- Basic Immunology-Abul Abbas, Andrew H. Lichtman, Shiv Pillai (2015) Elsevier, ISBN: 9780323390828.
- Immunology by Fathimunisa Begum (2014), PHI Learning Private Limited, ISBN-978-81-203-4983-4.
- Exercise immunology- Editors, Michael Gleeson, Nicolette Bishop, Neil Walsh, (2013) Routledge Publisher, ISBN-13: 978-0415507264.
- Immunological aspects of sport nutrition. Immunology and Cell Biology, GLEESON, M., 2016., 94 (2), pp. 117-123.
- Immune function in sport and exercise Michael Gleeson *J Appl Physiol* 103: 693–699, 2007; doi:10.1152/jappphysiol.00008.2007.
- Clinical implications of exercise immunology, David C Nieman (2012), Journal of Sport and Health Science 1 (2012) 12e17.

**MSSB 304**

**Sports and Exercise Metabolism**

**Credit-3**

Unit I

Historical and Future Perspectives, Development of Exercise Metabolism (The Early Years, Classic Period), Energy Sources for Muscular Activity, Skeletal Muscle Structure and Function, Muscles in Action, Metabolic Functions of key Organs during Exercise.

Unit II

Anaerobic Metabolism During Exercise, Aerobic Metabolism During Exercise, Skeletal Muscle/Hepatic/Adipose tissue Metabolism during Exercise, Carbohydrate Metabolism During Exercise, Fat Metabolism During Exercise, Protein and Amino-Acids Metabolism During Exercise.

Unit III

Inter-Organ Communication, Contraction Induced Modulators of Gene Expression in Skeletal Muscles, Molecular Level Adaptive Responses to Exercise, Metabolic Factors in Fatigue, Metabolic Adaptations to Endurance.

#### Recommended Books

- | Biochemistry for Sports and Exercise Metabolism- Don MacLaren, James Morton, (2011) Wiley-Blackwell Publisher, ISBN 978-0-470-09185-2.
- | The Biochemical Basis of Sports Performance- Ronald J Maughan and Michael Gleeson (2010) Oxford University Press, ISBN:9780199208289.
- | Exercise Metabolism- Mark Hargreaves, Lawrence L. Spriet (2006) Human Kinetics, ISBN:978-0-7360-4103-4.

**MSSB 305**

**Biochemical Aspects of Health Issues in Sports**

**Credits-3**

#### Unit I

Concept of Health and Disease, Lifestyle and Disease, Connection between Physical Activity and Health, Exercise and Its Benefits and hazards.

#### Unit II

Biochemical Basis of Health Hazards and Benefits of Physical Activity, Biochemical Basic of Health Problems in Athletics, Biomarkers in Sports and Exercise, Tracking Health, Performance, and Recovery in Athletes.

#### Unit III

Biochemical Basis of General Medical Issues For Athletes- Respiratory System (Asthma, Upper Respiratory Tract Infections), Cardiovascular System (Heart Problems, Sudden Cardiac Arrest, Anaemia), Gastrointestinal (Nausea, Vomiting and Diarrhoea), Neurological (Headache, Dizziness, Confusion, Loss Of Consciousness), Muscular System (Exercise Associated Muscle Cramps, Skeletal Muscle Diseases, Rhabdomyolysis), Overtraining Syndrome, Unusual Fatigue, Dry or Sticky Mouth, Eating Disorders, Sports Injuries, Sports Specific Health Issues.

#### Recommended Books

- Functional Biochemistry in Health and Disease, Eric A. Newsholme and Tony R. Leech (2010) Willey-Blackwel, ISBN:978-0-471-931652.
- Elaine C. S. Fragala A. M. Luke Douglas J. Casa (2017) Biomarkers in Sports and Exercise: Tracking Health, Performance, And Recovery in Athletes. The Journal of Strength and Conditioning Research, 31(10)/2920–2937.
- Medical Conditions in the athlete, Katie Walsh and Micki Cuppett (2017) Human Kinetics, ISBN:978-1-4925-3350.
- Health and Elite Sports, Joe Baker, Parisa Safai, Jessica Fraser-Thomas (2015) Routledge, ISBN:978-0-415-70866-1.

**MSSB 306**

**Elective III**

**Credit 3**

#### Drugs and Doping in Sports

#### Unit I

The Evolution of Doping and Antidoping In Sports, Prevalence of Doping in Sports, Doping Control in Sports, Inadvertent Use of Prohibited Substances in Sports, Role of Athlete Support Personnel in Preventing Deliberate and Inadvertent Use of Prohibited Substances, WADA Rules and Regulations Regarding Inadvertent Use of Prohibited Substances.

#### Unit II

Different Methods and Chemicals of Doping and Masking, Anabolic Androgenic Steroids, Stimulants, Glucocorticoids, Peptide-Protein Hormone, Beta-2 Agonists, Hormone and Metabolic Modulators, Narcotics, Beta Blockers, Manipulation of Blood and Blood Components, Chemical and Physical Manipulations, Gene Doping, Diuretics and Masking.

#### Unit III

Substances and Methods Permitted in Sports, Sport Supplements and Herbal Preparations, Evolving Issues Concerning Drug Use in Sports, Athletic Testing, Analytical Procedures, And Adverse Analytical Findings, The Future of Performance Enhancing Substances in Sports, Antidoping Movement.

#### Recommended Books:

- | Anthony C Hackey (2017) Doping, Performance-Enhancing Drugs, and Hormones in Sports ISBN:978-0-12-813442-9.
- | David R. Mottram, Neil Chester (2018) Drugs in Sports, Routledge, ISBN:1351838989.
- | Portefield, Jason (2008) Doping: athletes and drugs, Rosenn Publishing, New York, ISBN:1-4042-1917-5.

## **Sports Genetics and Performance**

### **Unit I**

Basic Genetic Concepts, Mendelian inheritance, population genetics, Human chromosome Karyotype, Chromosome Disorders, Genome Structure and Genetic Mapping, Mitochondrial Inheritance, The Genetic Code and Genetic Alterations, DNA Injuries and Repair, Monogenic and Polygenetic Diseases, Molecular Diagnostics.

### **Unit II**

Ethics of Genetic Testing and Research in Sport, Current Challenges and Directions to the Future, Genetic Modifications in Sports, Ethical Considerations of Genetic Manipulation in Sport, Gene Therapy and Gene Doping.

### **Unit III**

Connecting Sports and Genetics, The Genetics of Sports Injuries and Athletic Performance, Genetic Contributors to Hypertrophic Cardiomyopathy, Chronic Traumatic Encephalopathy, Different Classes of Performance Enhancing Genetic Variants.

#### **Recommended Books:**

- Bruce R. Korf and Mira B Irons (2012) Human Genetics and Genomics, Wiley-Blackwell.
- Manu L Kothari, Lopa A Mehta, Sadhana S roychoudhury, (2009) Principles of Genetics, Universities Press.
- Ricki Lewis (2017) Human Genetics the basics, Routledge, ISBN:978-1-138-66801-0
- Michael Posthum and Malcolm Collins (2016) Genetics and Sports, Karger Publisher.
- Elaine A. Ostrander, Heather J. Huson, and Gary K. Ostrander Genetics of Athletic Performance (2009) Annu. Rev. Genomics Hum. Genet. 2009.10:407–29.
- Guilherme JPLF et al (2014) Genetics and sport performance: current challenges and directions to the future, Rev Bras Educ Fís Esporte, (São Paulo) 2014 Jan-Mar; 28(1):177-93.
- Lisa M. Guth and Stephen M. Roth (2013) Genetic influence on athletic performance, Curr Opin Pediatr. 2013 December; 25(6): 653–658. doi:10.1097/MOP.0b013e3283659087.
- Giuseppe Lippi, Umile Giuseppe Longo, Nicola Maffulli (2009) Genetics and sports, British Medical Bulletin 2010; 93: 27–47 DOI:10.1093/bmb/ldp007.
- Nicola Mafulli et al (2013) the genetics of sports injuries and athletic performance. Muscles, Ligaments and Tendons Journal, 3 (3): 173-189.

## **Exercise Immunology**

### **Unit I**

Immunological system and exercise : Exercise and innate and humoral immunity, Exercise induced change in Ig and antibody, exercise and cytokines.

### **Unit II**

Sex Differences in Immune Function after Aerobic Exercise, Sex differences in immune variables and respiratory infection, Killer cell immunoglobulin-like receptors and exercise, Anti-inflammatory influence of exercise training- Physical activity, fitness, and chronic inflammation, C-Reactive Protein (CRP),

### **Unit III**

Cytokines, Free radicals, Antioxidants, Effect of exercise on immunity, Physical activity – A stimulator and an inhibitor to the immune system. Exercise and upper respiratory tract infection

### **Unit IV**

Infection and exercise performance, Exercise and HIV infection, Exercise and Cancer, Exercise aging and immunity, Maintaining immune health, Importance of exercise immunology in health promotion.

#### **Recommended Books:**

- | Michael Gleeson, Nicolette Bishop, and Neil Walsh.(Eds) (2013) Exercise immunology. Routledge
- | Warren Levinson (2016) Review of Medical Microbiology and Immunology. Lange, Mc Graw Hill.

**MSSB 307**

**Laboratory V**

**Credits 3**

1. Isolation of genomic DNA from blood.
2. DNA amplification using Polymerase Chain Reaction.
3. Application of General Biochemistry techniques- Electrophoresis, Centrifugation.
4. Estimation of Total Antioxidant Capacity.
5. Estimation of Vitamin A or Vitamin C.
6. Estimation Total Bilirubin, Enzymes, Hormones.

1. Estimation of Glucose/ Lactate in Exercising Persons.
2. Estimation of Serum Iron, Serum Ferritin in Exercising Persons.
3. Estimation of Cholesterol, Triglycerides, HDL/LDL in Exercising Persons.
4. Estimation of Serum Albumin in Exercising Persons.
5. Isolation of Immunoglobulin G from serum/egg.

**SEMESTER-IV****Unit-I**

Introduction to Research in Physical Activity, Developing the Problem and Using the Literature, Presenting the Problem, Formulating the Method, Ethical Issues in Research and Scholarship

**Unit-II**

Types of Research: Socio Historical Process in Sport Studies, Philosophical Research in Physical Activity, Research Synthesis (Meta-Analysis), Surveys, Other Descriptive Research Methods, Physical Activity Epidemiology Research, Experimental and Quasi-Experimental Research, Qualitative Research, Mixed-Methods Research

**Unit-III**

Writing the Research Report: Completing the Research Process, Ways of Reporting Research

Introduction to review of literature, Evaluation of scientific literature; organizing literature – strategies, use of software; Meta-analysis, Writing review – structuring the review, quoting/paraphrasing, the citation referencing system

**Recommended Books:**

- | Research Methodology: Methods and Techniques by C. R. Kothari.
- | ICMR. Ethical Guidelines for Biomedical Research on Human Subjects. 2006; ICMR, New Delhi.
- | Research Methods in Physical Activity- 7th Edition By Jerry Thomas, Jack Nelson, Stephen Silverman, Human Kinetics
- | Research Methods in Sport by Mark F Smith.
- | Research Methods for Sports Performance Analysis By Peter O' Donoghue.
- | Research Methods in Physical Education and Youth Sport 1st Edition by Kathleen Armour and Doune Macdonald.
- | Ridley, D. The Literature Review a step-by-step guide for students. 2012; Sage Publications Limited, New Delhi.

# **School of Sports Sciences**

## **Department of Sports Biosciences**



### **Proposed Course Structure and Course Details**

## **M.Sc. Sports Nutrition**

Central University of Rajasthan NH-8,  
Bandar Sindri, Kishangarh-305817 Dist. –  
Ajmer (Rajasthan)

## M.Sc. Sports Nutrition

### SEMESTER I (Total credits: 24)

Code	Title of Course	Type of Course	Credits
MSSN 101	Human Anatomy and Physiology	Core	3
MSSN 102	Biomolecules and Metabolism	Core	3
MSSN 103	Kinesiology	Core	3
MSSN 104	Psychological and Social Aspects of Sports	Core	3
MSSN 105	Biomechanics and Motor Learning	Core	3
MSSN 106	Elective I <ul style="list-style-type: none"> <li>• Elective from any other Department</li> <li>• Sports First Aid and Emergencies</li> <li>• History of Physical Education and Sports</li> <li>• Physiological Aspects of Ageing</li> </ul>	Elective	3
MSSN 107	Laboratory I	Core	3
MSSN 108	Laboratory II	Core	3

### SEMESTER II (Total credits: 24)

Code	Title of Course	Type of Course	Credits
MSSN 201	Principles and Methods of Sports Training	Core	3
MSSN 202	Exercise Physiology and Metabolism	Core	3
MSSN 203	Fatigue, Injuries and Rehabilitation	Core	3
MSSN 204	Food and Nutrition	Core	3
MSSN 205	Statistics for Sports Science	Core	3
MSSN 206	Elective II <ul style="list-style-type: none"> <li>• Elective from any other Department</li> <li>• Kinanthropometry in Sports</li> <li>• Health Fitness and Wellness</li> <li>• Adaptations to Exercise and Training</li> </ul>	Elective	3
MSSN 207	Laboratory III	Core	3
MSSN 208	Laboratory IV	Core	3

### SEMESTER III (Total credits: 24)

Code	Title of Course	Type of Course	Credits
MSSN 301	Clinical Sports Nutrition	Core	3
MSSN 302	Dietary Supplements and Ergogenic Aids	Core	3
MSSN 303	Assessment of Health and Fitness of Athlete	Core	3
MSSN 304	Nutritional and Exercise Biochemistry	Core	3
MSSN 305	Sports Specific Nutrition	Core	3
MSSN 306	Elective III <ul style="list-style-type: none"> <li>• Elective from any other Department</li> <li>• Food Psychology and Counselling</li> <li>• Sports Genetics and Performance</li> <li>• Exercise Immunology</li> </ul>	Elective	3
MSSN 307	Laboratory V	Core	3
MSSN 308	Laboratory VI	Core	3

### SEMESTER IV (Total credits: 24)

Code	Title of Course	Type of Course	Credits
MSSN 401	Research Methodology	Core	3
MSSN 402	Journal Club Presentation	Presentation	3
MSSN 403	Major Project	Tutorial/Laboratory	18

## SEMESTER-I

**MSSN 101**

**Human Anatomy and Physiology**

**Credit 3**

### Unit-I

Anatomy and Physiology of: Blood, Cardiovascular System, Lymphatic System, Integumentary System and Respiratory System.

### Unit-II

Anatomy and Physiology of: Nervous System, Special Senses, Endocrine System, Skeletal System, Joints and Muscular System.

### Unit-III

Anatomy and Physiology of: Digestive System, Immune System, Urinary System, Fluid and Electrolyte Balance, Reproductive System, Pregnancy and Human Development.

### Recommended Books:

- Human Anatomy and Physiology (10<sup>th</sup> edition) by Elaine N Marieb, Katja N Hoehn.
- Introduction to Human Body- The Essentials of Anatomy and Physiology by Gerard J. Tortora.
- Textbook of Anatomy with Coloured Atlas by Inderbir Singh.
- Textbook of Medical Physiology by Arthur C. Guyton.
- Principle of Human Anatomy (10<sup>th</sup> Edition) by Gerard J. Tortora.
- Gray's Anatomy: Anatomical Basis of Clinical Practice by Standring, Susan. Borley, Neil R. Gray Henry.
- Human Physiology by C.C. Chatterjee.
- Chowdhary Medical Physiology by S K Chowdhary.
- Netter's Atlas of Human Anatomy by Frank H. Netter.

**MSSN102**

**Biomolecules and Metabolism**

**Credit 3**

### Unit-I

Foundation of Biochemistry, Properties of Water, Amino Acids, Peptides and Proteins, Structure and Function of Proteins, Enzymes, Sugars, Carbohydrates and Glycobiology, Nucleotides and Nucleic Acids, Fatty Acids, Structure and Functions of Lipids.

### Unit-II

Principles of Bioenergetics, Major Metabolic Pathways in Human and its Relevance with Exercise, Glycolysis, Gluconeogenesis, Pentose Phosphate Pathway, Citric Acid Cycle, Electron Transfer System in Mitochondria, Oxidative Phosphorylation.

### Unit-III

Basic Concepts and Design of Metabolism, Metabolic Regulation of Glucose and Glycogen, Biosynthesis of Carbohydrates, Lipid Biosynthesis, Fatty Acids Catabolism, Amino Acids- Biosynthesis, Oxidation and Production of Urea, Metabolism of Lactate, Integration and Regulation of Metabolism.

### Recommended Books:

- Principles of Biochemistry- Lehninger Nilson and Cox W.H. Freeman.
- Principles of Biochemistry- Donald Voet, CW Pratt, JG Voet (2012) Wiley, ISBN:1118092449.
- Principles of Exercise Biochemistry Editor(s): Poortmans J.R. (Brussels) Karger Publishers.
- Biochemistry JM Berg, TL Tymoczko L Stryer W. H. Freeman and Company.
- West & Todd Text book of Biochemistry. Mac Millan Company London.
- G.P. Talwar & ID Singh Textbook of Biochemistry & Human Biology - Prentice Hall of India, New Delhi.
- Vasudevan Textbook of Biochemistry. Jaypee Brothers Medical publishers (P) Ltd.
- Jain J.L., Jain Sanjay, Jain Nitin, S Fundamentals of Biochemistry –. Chand and Company Ltd, New Delhi.
- A.C. Dev. Comprehensive Viva and practical Biochemistry. New Central Book Agency Pvt. LTD.

**MSSN 103**

**Kinesiology**

**Credit 3**

### Unit-I

Meaning of Kinesiology, Aims and Objectives of Kinesiology, Role of Kinesiology in Sports; Anatomical Position, Principles of Plane and Axis, Various types of movements.

### Unit-II

Bones: Meaning and composition of bone, Kinds of bones (flat, long, short, irregular and sesamoid), Function of bones, Bone fracture and its types; General features of the following bones: Upper Extremities: Clavicle, Scapula, Radius and Ulna, Humorous; Lower Extremities: Femur, Patella, Tibia, Fibula, Pelvic Bones; Joints: Meaning and types of joints, Joint flexibility, Technique to increase the flexibilities, Structure, function, fundamental movements around the joints; General features, structure and movements of the following joints: Shoulder Complex, Elbow Complex, Hip Complex, Knee joint, Spinal column and Pelvic girdle.



### Unit-III

Introduction to Muscular System: Muscles and Tendons, Classification of muscles, Structure of Skelton muscle, classification of muscles on the basis of fibre arrangement, Physiology of muscle contraction, types of muscle contraction, Role of muscle in the movement, Methods of studying the action of muscle. Origin, Insertion and action of major muscle groups of the body; Nervous System: Overview of Nervous system, Neurons, Motor Unit and Receptors.

#### Recommended Books:

- Clinical Mechanics and Kinesiology With Web Resource, Human Kinetics, by Janice Loudon, Robert Manske, Michael Reiman.
- Biomechanics and Kinesiology of Exercise – 2013 by Michael Yessis.
- Cynthia C. Norkin, Pamela K. Levangie : Joint structure & function- A comprehensive analysis 2nd edition.
- Brunnstrom - Clinical Kinesiology, F.A. Davis.
- Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
- Shaw, D., Pedagogic Kinesiology, Khel Sahitya Kendra, 2007.
- Thompson, C., Manual of Structural Kinesiology. (10th Ed.), St. Louis: Times Mirror/ Mosby College Publishing, 1995.
- Shaw, Dhanonjoy, Kinsiology and Biomechanics of Human Motion, Khel Sahitya Kendra, 1998.
- White and Punjabi - Biomechanics of Spine - Lippincott.
- Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
- Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Edi.
- Basic Biomechanics 4th edition, susan J. Hall, MCGraw Hill.

**MSSN 104**

**Psychological and Social Aspects of Sports**

**Credit 3**

### Unit-I

Sports Psychology and role of Psychology in Sports, Methods of Psychology employed in Sports, Motor leaning and Performance, Importance of Sports Psychology for Athletes, Coaches and others related to Sports settings.

### Unit-II

Personality and its role in Sports, Attention and Perception in Sports; Motivation and Goal setting and its role in Sports, Emotions in Sports, Stress and Anxiety in Sports, Biofeedback techniques in Sports.

### Unit-III

Sociology of Sports, Social Factors and Socio-metric techniques in Sports, Group processes, Team cohesiveness and Leadership in Sports, Effect of crowd behaviour in Sports, Economics and Politics in Sports.

#### Recommended Books:

- Weinberg & Gould, Foundations of Sports and Exercise Psychology. Human Kinetics 2016.
- Motor Learning and Performance 5th Edition With Web Study Guide From Principles to Application, Human Kinetics by Richard Schmidt, Tim Lee.
- Morgan and King: Introduction to Psychology - Tata McGraw Hill.
- M.L. Kamlesh Psychology in Physical Education and Sports by Publisher Mehopolitan book co. Pvt. Ltd., Netaji Subash Marg, New Delhi 11002.
- Sanjeev. P. Sahni Psychology and its application in sports by, Publisher D.V.S. publications, 100, Giri Nagar Kalkaji, New Delhi-110019.
- Agyajit Singh Psychology of Coaching , Friends Publications, # 101 Ansari Road Darya Ganj, New Delhi-110002.
- Jitendra Mohan Recent Advances in Sports psychology, By, Publisher, Friends Publications.
- Fundamentals of Sociology of Sport and Physical Activity, Human Kinetics by Katherine M. Jamieson, Maureen M. Smith.
- Doing Exercise Psychology, Human Kinetics by Mark Andersen, Stephanie Hanrahan.
- Social Issues in Sport 3rd Edition, Human Kinetics by Ron Woods.

**MSSN 105**

**Biomechanics and Motor Learning**

**Credit 3**

### Unit-I

Role of Bio–Mechanics in the field of Sports Science, Principles of Biomechanics; Biomechanical Concepts: Motion, Newton’s law of Angular Motion and Linear Motion and its relationships, Force, Centripetal and Centrifugal forces, Equilibrium, Centre of Gravity and Stability, Freely falling bodies and Projectile, Momentum, Impulse, Lever and its Classification, Work, power, Energy: Relationship of Work, Power and Energy, Friction, Spin, Impact, Elasticity, Rebound, Fluid mechanics, Air resistance and Water Resistance.

### Unit-II

Determine the simultaneous-sequential nature of a variety of movement skills, Classify motor skills using the classification system presented, Bio-Mechanical analysis of fundamental skills: Walking, Running, Jumping, Pulling, Pushing, Lifting, Lowering, Throwing.

### Unit-III

Introduction to Gait Analysis. Mechanical Analysis of Sports Skills: Athletics (Running, Jumping and Throwing), Swimming, Football, Basketball, Volleyball, Cricket. Technological Use and Advances in Biomechanics: Techniques and Tools for Measurement of Biomechanical Variables.

#### Recommended Books:

- Biomechanical Analysis of Fundamental Human Movements by Arthur Chapman, 2008, Human Kinetics.
- Biomechanics of Sport and Exercise 3rd Edition With Web Resource and MaxTRAQ 2D Educational Software Access- Loose-Leaf Edition, Human Kinetics, By Peter McGinnis.
- Biomechanics and Kinesiology of Exercise – 2013 by Michael Yessis.
- Cynthia C. Norkin, Pamela K. Levangie : Joint structure & function- A comprehensive analysis 2nd edition, F.A. Davis Company Philadelphia.
- Brunnstrom - Clinical Kinesiology, F.A. Davis.
- Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
- White and Punjabi - Biomechanics of Spine - Lippincott.
- Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
- Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Edi.
- Basic Biomechanics 4th edition, Susan J. Hall, MCGraw Hill.
- Joseph Hamill, Kathleen M. Knutzen. Biomechanical Basis of Human Movement.

**MSSN 106**

**Elective I**

**Credit 3**

### **Sports First Aid & Emergencies**

#### Unit-I

Introduction to Sports First Aid, Athletic Health Care Team, Sport First Aid Game Plan , First Aid Equipment and Kit, Basic Life Support System, Recovery Position, Head to toe- survey, Artificial Ventilation, Basic Sport First Aid Skills, Anatomy and Sport Injury Terminology, Emergency Action Steps , Physical Assessment and First Aid Techniques, Moving Injured or Sick Athletes.

#### Unit-II

Sport First Aid for Specific Injuries: Unconsciousness: ABC, CPR, AED, Respiratory Emergencies and Illnesses , Shock, Wounds and Bleeding, Head, Spine and Nerve Injuries , Internal Organ Injuries , Upper and Lower Body Musculoskeletal Injuries , Facial and Scalp Injuries, Skin Problems.

#### Unit-III

Disaster Preparedness and Management: Weather-Related Problems, Environmental Emergencies: Animal Bites and Stings, Allergies, First Aid Protocols, Practical Skills in using: Triangular Bandages, Broad fold, Thin fold, Slings, Collars, Cardiac Emergencies.

#### Recommended Books:

- Sport First Aid-5th Edition by Melinda Flegel, Human Kinetics, 2014.
- American Red Cross, First Aid/CPR/AED : PARTICIPANT'S MANUAL.
- Practical First Aid: British Red Cross in Association with donning kinder sley.
- John Morris: First Aid Training Manual, Everyday learning PVT., Ltd.
- Authorized Manual of St. John Ambulance (India): First Aid.
- Bradley R.A. Wilson. Timothy E. Glaros : Managing Health Promotion Programs Human Kinetics Publishers.

### **History of Physical Education and Sports**

#### Unit-I

What are Play, Game and Sports? Types of sports and recreational activities, Importance of free play and organizational games, Terminology: Sports Science and Physical Education, Health related and Motor performance related fitness, Health and Wellness (Physical, Mental, Psychological, Social and Spiritual) and Athletics, Sports Careers: Media, Management, Performance, Coaching and other related areas.

#### Unit-II

Philosophy and its need in Sports and Physical Education, Idealism, Naturalism and Pragmatism in Physical Education, Physical Education in Ancient Greek, Rome, India and Modern India. History of Olympic Games, Asian Games, SAARC Games and SAF Games, National Sports Awards, Trends and problems in Sports Sciences and Physical Education in 21<sup>st</sup> Century.

#### Unit-III

Introduction to general Rules and Regulations of Selected Sports (Football, Field Hockey, Basketball, Volleyball, Cricket, Badminton, Tennis), Introduction to Playfields and Track Specifications, General organizational process of Sports Competitions.

#### Recommended Books:

- Bucher, C.A.: Foundation of Physical Education, St. Louis: The C.V. Mosby company, 1983.
- History and Philosophy of Sport and Physical Activity, Human Kinetics by R. Scott Kretchmar, Mark Dyreson, Matthew Liewellyn, John Gleaves, 2017.
- Synder and Geoh: Professional preparation in Health Education, Physical Education and Recreation.
- Barrow, H.M.: Man and Movement: Principles of Physical Education, Philadelphia Lea and Fabiger, 1977.
- Joseph, P.M.: Organisation of Physical Education, Kandivila,: Old students Association, T.I.P.E.
- Kamlesh, M.L. and Sangral, M.S. : History and Principles of Physical Education, Prakash Brothers, 1983.
- Wuest and Bucher: Foundations of Physical Education and Sports, B.I. Publications Pvt. Ltd., New Delhi.
- William, H.F.: Physical Education and Sports in Changing Society, Surjeet Publication, Delhi.

### **Physiological Aspects of Ageing**

#### **Unit-I**

Growth and Biological Maturation: Relevance to Athletic Performance; Muscle Development during Childhood and Adolescence, Relevance to Understanding Effects of Growth on Performance.

#### **Unit-II**

Theory of ageing, Age related changes in different body systems, Cardiovascular Concerns in the Young Athlete, Trainability During Childhood, Ageing and muscular strength, Ageing and joint flexibility.

#### **Unit-III**

Exercise guideline for Geriatric populations. Introduction to Masters Sports, Ageing and Performance, and the role of continued involvement, Psychosocial issues in Masters Sports, Model of lifespan physical activity, health and performance.

#### **Recommended Books:**

- Helge Hebestreit and Oded Bar-Or (2008) The young athlete. Blackwell Publishing Ltd.
- Joseph Baker, Sean Horton and Patricia Weir (2000) The masters athlete: understanding the role of exercise in optimizing aging. Routledge.
- "Fitness and Wellness": Warner W. K Hoeger and Sharvon A. Hoegor.
- "Fitness & Wellness concepts": Charles B. Corbina & Ruth Lindsey.
- "Lifetime Fitness & Wellness - A personal choice": Melvin H. Williams.

#### **MSSN 107**

#### **Laboratory I**

**Credits-3**

- Introduction to laboratory techniques- pipetting, calculations, introduction to equipments, sterile techniques and lab safety.
- How to Use microscopes.
- To study Counting Chambers.
- To determine the total Red Blood Corpuscles count.
- To determine the total Leucocyte Count in blood.
- To measure the Haemoglobin concentration of blood.
- To measure Blood Pressure of a subject in different positions.
- Calculation of Energy expenditure.
- Measurement of blood glucose Cholesterol/HDL, Glycerol, Lactate, Triglycerides.
- Biochemical Assessment of Metabolites.
- Biochemical Assessment of Enzymes.
- Biochemical Assessment of Hormones.
- Estimation of sugars, iron, phosphate, vitamin C and organic acids.
- Estimation of protein concentration.

#### **MSSN 108**

#### **Laboratory II**

**Credits-3**

- To analyse various planes and axes of the body.
- To demonstrate the surface anatomy and muscle attachments of following bones: Clavicle, Scapula, Humerus, Radius, Ulna, Meta Carpals, Phalanges, Femur, Tibia , Fibula, Patella, Tarsals and metatarsals.
- To demonstrate the following joints including corresponding muscles and movements of Upper Extremity: Acromioclavicular joint, Sternoclavicular joint, Shoulder joint, Elbow joint, Proximal Radioulnar joint, Distal Radioulnar joint, Wrist joint Thumb joint.
- To demonstrate the following joints including corresponding muscles and movements of Lower Extremity: Hip Joint, Knee complex, Ankle joint.
- Demonstration and Estimation of Centre of Gravity of Human Body.
- Determination of Human Gait pattern.

## SEMESTER-II

**MSSN 201**

**Principles and Methods of Sports Training**

**Credit 3**

### Unit-I

Scientific basis of Sports Training, Importance, Aims and Objectives of Sports Training; Characteristics of Sports Training; Biological Process in Training; Components of Physical Fitness (motor abilities) – Endurance, Strength, Speed, Flexibility, Co-ordination; Agility.

### Unit-II

Principles of Sports Training - Overload, Specificity, Progression and Reversibility; Meaning and concept of Training load; Adaptation and Recovery, Super Compensation, Training Structure - Volume, Intensity, Frequency, Peaking, Errors in Training, Adaptations to Resistance Training, Adaptations to Aerobic and Anaerobic Training.

### Unit-III

Training plan; Need and importance in planning; Types of training plans - short term and long term plans; Training and Competition Cycles (training conception, macro, micro, meso); Periodization – Need, Types; Aims of various phases of Periodization (Preparatory, Competition and Transition); Competition -Types of Competition, Preparation for competition; the number and frequency of competition. Training athletes with disability, Adapted games for Disabled; Special Olympics and Paralympics.

### Recommended Books:

- Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
- Periodization-6th Edition Theory and Methodology of Training by Tudor Bompa, Carlo Buzzichelli.
- Physiological Aspects of Sport Training and Performance With Web Resource-2nd Edition, Human Kinetics By Jay Hoffman.
- Recovery for Performance in Sport by Institut National du Sport de l'Expertise et de la Performance INSEP, Human Kinetics, Christophe Hausswirth, A. Mujika.
- Essentials of Sports Training and Conditioning by JB Learning, NASM.
- Singh, H: Science of Sports training, DVS Publication, New Delhi, 1991.
- Matweyev, L.P.: Fundamentals of Sports training, publication Moscow, 1984.
- Harre, D: Principles of sports training, Sportverlag, Berlin, 1988.
- Singh, H: Science of Sports training: General theory and methods, NIS, Patiala, 1984.
- Scholisch, M: Circuit training, Sportverlag, Berlin.
- Willmore, J.H.: Athletic training and physical fitness, Antro and Becon Inc, Sydney.

**MSSN 202**

**Exercise Physiology and Metabolism**

**Credit 3**

### Unit-I

Introduction to Exercise Physiology: Definitions of terminologies (Work, Power, speed, strength, efficiency etc.); Types of exercise (aerobic and anaerobic) and limiting factors, Exercise intensity and duration, Adaptations to exercise: Physiological and metabolic adaptations to training; Muscle hypertrophy and performance.

### Unit-II

Adaptation of Respiratory and Cardiovascular Systems to exercise: Respiratory responses during exercise at varying intensities, Cardiovascular responses to exercise. Fluid balance and Thermoregulation: Energy Production; Aerobic metabolism during exercise (oxygen and carbon-di-oxide production, oxygen cost of breathing, RER, Estimation of calorie expenditure, MET, Field estimates of energy expenditure, efficiency and economy), Exercise in environmental stress; Exercise in the heat; Cardiovascular demands of exercise in the heat; Exercise in cold; Cold induced injuries.

### Unit III

Adaptation of skeletal muscle, endocrine and immune system in training: Bone development; Factors influencing bone health; Special applications in osteoporosis; Female athletic triad; Skeletal injuries. Skeletal muscle and neuromuscular system, Importance of muscle fibre types in athletes; Skeletal muscle force production; Fatigue and muscle soreness; Physiological response to stretching; Application of training principles to flexibility; Adaptation to flexibility.

### Recommended Books:

- Christopher B. Scott. (2010). A Primer for the Exercise and Nutrition Sciences: Thermodynamics, Bioenergetics, Metabolism. Humana Press.
- Raven, P., Wasserman, D., Squires, W., & Murray, T. (2012). Exercise Physiology: An Integrated approach. Nelson Education.
- ACSM's Resources for Clinical Exercise Physiology: Musculoskeletal, Neuromuscular, Neoplastic, Immunologic and Hematologic Conditions by American College of Sports Medicine.
- Powers, S. (2014). Exercise physiology: Theory and application to fitness and performance. McGraw-Hill Higher Education.

- Smith, D. L., & Fernhall, B. (2011). Advanced cardiovascular exercise physiology. Human Kinetics.
- Farrell, P. A., Joyner, M., & Caiozzo, V. (2011). ACSM's advanced exercise physiology.
- Cheung, S. (2010). Advanced environmental exercise physiology. Human Kinetics.
- Hale, T. (2005). Exercise physiology: a thematic approach (Vol. 5). John Wiley & Sons.
- Ehrman, J. K., Kerrigan, D., & Keteyian, S. (2017). Advanced Exercise Physiology: Essential Concepts and Applications. Human Kinetics.
- McArdle, W. D., Katch, F. I., & Katch, V. L. (2015). Exercise physiology: nutrition, energy, and human performance. 8th Edition, Lippincott Williams & Wilkins.

**MSSN 203**

**Fatigue, Injuries and Rehabilitation**

**Credit 3**

**Unit-I**

Concept of Overloading, Overtraining, Fatigue and Staleness, Symptoms and Causes of Fatigue, Types of Fatigue, Theories associated with Fatigue, Definition, Types, Symptoms, Findings, Underlying Mechanisms and Frequency of Overtraining and Overtraining Syndrome, Oxygen Debt Theory, Recovery Oxygen Uptake or Excess Post-Exercise Oxygen Consumption (EPOC), Implications of EPOC for Exercise and Recovery, Optimal Recovery From Steady-Rate Exercise and Non-Steady-Rate Exercise, Intermittent Exercise and Recovery.

**Unit-II**

Sports Injury- Meaning, Classification, Causes, Types, General guidelines for their Prevention, Recovery Time, Introduction and Management of common Sports Injuries (Fracture, Dislocation, Laceration, Abrasion, Sprain and Strain), How to avoid Sports Injuries, Role of Warm-up and Cool Down.

**Unit-III**

Rehabilitation: Meaning, Concepts, Objective and scope of Rehabilitation, Principal of care and Rehabilitation  
Therapeutic Modalities: Electrotherapeutic modalities (Shortwave Diathermy, Ultra Sound, T.E.N.S), Heat and Cold, Soft tissue Massage, Aquatic Rehabilitation Exercise, Therapeutic Exercise, Therapeutic Nutrition, Psychological Rehabilitation.

**Recommended Books:**

- Shaun Phillips (2015) Fatigue in Sport and Exercise. Routledge, NY
- Therapeutic Modalities for Musculoskeletal Injuries 4th Edition, Human Kinetics by Craig Denegar, Ethan Saliba, Susan Saliba, 2016
- Essentials of Athletic injury management 10th edition by William E. Prentice, Human Kinetics.
- Clinical Sports Medicine Fifth Edition by Peter Brukner, Karim Khan, McGraw-Hill Education Australia, 2016
- Principles and Practice of Therapeutic Massage by Sinha, Jaypee Publishers
- Textbook of Electrotherapy by Singh Jagmohan, Jaypee Publishers
- Manfred Lehmann, Carl Foster, Uwe Gastmann, Hans Keizer and Jtirgen M. Steinacker(Eds) (1997) Overload, Performance Incompetence and Regeneration In sport. Kluwer Academic / Plenum Publishers, N.

**MSSN 204**

**Food and Nutrition**

**Credit 3**

**Unit-I**

Nutrients: Functions and Recommended Intakes, Healthy Eating and Balanced Diet, Fuel Sources for Muscle and Exercise Metabolism, Energy: Food Energy and Expenditure, Gastric Emptying, Digestion, and Absorption.

**Unit-II**

Nutritional Role and Recommendations for following: Carbohydrate, Fat, Protein and Amino Acids, Water Requirements and Fluid Balance, Vitamins and Minerals, Nutrition Supplements.

**Unit-III**

Nutrition and Training Adaptations, Nutrition and Immune Function in Athletes, Body Composition and Weight Management, Eating Disorders in Athletes, Personalized Nutrition, Menu Planning (Meal Timing and Spacing).

**Recommended Books:**

- Sport Nutrition 3rd Edition by Asker Jeukendrup, Michael Gleeson, Human Kinetics, 2018.
- Nutrition for Sport, Exercise, and Health by Marie Spano, Laura Kruskall, D. Travis Thomas, Human Kinetics.
- Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
- Exercise Physiology: Nutrition, Energy and Human Performance 8th Edition by William D. McArdle, Frank I. Katch, Victor L. Katch
- Nancy Clark's Sports Nutrition Guidebook by Nancy Clark, Human Kinetics
- NSCA's Guide to Sport and Exercise Nutrition by National Strength Conditioning Association, Human Kinetics
- Fundamental of Foods, Nutrition & Diet Therapy 5<sup>th</sup> edition by S.R. Mudambi, M.V. Rajagopal, New Age International Limited, New Delhi.
- Applied Nutrition. By R. Rajlaxmi, IBH Publications, New Delhi.

- Nutritional Supplements in Sports, Exercise and Health: An A to Z Guide by Linda M. Castell, Samantha J. Stear, Louise M. Burke, Routledge.

**MSSN 205**

**Statistics for Sports Science**

**Credit 3**

**Unit-I**

Introduction to Biostatistics, Frequency Distribution, Variable and Attribute, Line-diagram, Bar-diagram, Pie chart, Histogram, Mean, Median and Mode.

**Unit-II**

Variance, Standard deviation; Standard error of mean, Null hypothesis, Level of significance and Probability; Regression and correlation.

**Unit-III**

Student's t-test, Fisher's t-test, Chi-square test, Analysis of Variance (ANOVA), ANCOVA, Introduction and Application of Statistical Software.

**Recommended Books:**

- A Text book of Biostatistics, by A.K.Sharma, Discovery publishing house.
- Introduction to Biostatistics, By Dr. Pranab Kumar Banerjee, S. Chand Publishers.
- Research Methodology: Methods and Techniques Book by C. R. Kothari.
- Dutta N.K. Fundamentals of Bio-Statistics. 2002; Kanishka Publishers, New Delhi.
- Gupta S.P. Statistical Methods. 2004; S. Chand & Sons, New Delhi.
- Ruud H. Koning and James H. Albert ( 2008) Statistical thinking in sports. Chapman & Hall/CRC.

**MSSN 206**

**Elective II**

**Credit 3**

**Kinanthropometry in Sports**

**Unit-I**

Introduction, scope and general consideration, i.e. Application of anthropometric data in sports, Body proportions and indices, Sports specific body proportions and indices, Body mass index and its importance in sports.

**Unit-II**

Anthropometric Measurements and Procedures, Equipment for anthropometric measurements, Gross Body Measurements and procedures, Length of Body Parts, Measurements and procedures, Diameters of Body Parts, Measurements and procedures, Circumferences of Body Parts, Measurements and procedures, Skinfold Thickness, Measurements and procedures.

**Unit-III**

Physiological Maturation: Decimal Age and concept of Physiological maturity in sports. Assessment of skeletal maturity of athletes, Body Composition: Anthropometric determination, Importance in sports and various methods to estimate body composition, Somatotyping: Introduction, Definition of Somatotyping and Classification.

**Recommended Books:**

- Sports Anthropometry by H.S. Sodhi, ANOVA Publication.
- Physique and Selection of Sportsmen by H.S. Sodhi and L.S. Sidhu.
- Kinanthropometry by S.P. Singh and P. Malhotra, Luna Publication, Patiala.
- Kinanthropometry by Roger Eston and Thomas Reilly, E & F.N. SPON, London.
- Skeletal Maturity by S.P. Singh, L.S. Sidhu, and J. Singh, Human Biology Publication Society, Punjabi University, Patiala.
- Genetic and Anthropological Studies of Olympic Athletes by De Garray, Louis Levine & Cater, Academic Press, London.

**Health Fitness and Wellness**

**Unit-I**

Introduction to Health: Concept of health, Lifestyle and Disease, Ageing.

**Unit-II**

Physical Activities & Fitness: Concept to Fitness, Exercise and its Principles, Health Education Recreation & Dance.

**Unit-III**

Healthy Life Style Approach: Concept of Wellness, Wellbeing, Stress Management.

**Recommended Books:**

- "Fitness and Wellness" : Warner W. K Hoeger and Sharvon A. Hoeger.
- "Fitness & Wellness concepts": Charles B. Corbina & Ruth Lindsey.
- "Lifetime Fitness & Wellness - A personal choice": Melvin H. Williams

- Oxford Textbook of Public Health, Helen Liepman.
- Sunderlal, Aadarsh, Pankaj, 2007, Textbook of Community Medicine, CBS Publishers & Distributors.
- Kirch, Wilhelm, 2008, Encyclopedia of Public Health, Volume 1 & 2, Kluwer Academic Publishers.
- Mary -Jane Schneider and Henrey Schneider, 2006 (2nd edition), Introduction to Public Health, Jones and Bartlett Publishers.

### **Adaptations to Exercise and Training**

#### **Unit-I**

Cardiovascular Adaptations to Endurance and Strength Training, Hypertrophy and Cardiomyopathy in Young and Older Athletes, Heart rate training zone, Effects Of High Altitude, Sudden Cardiac Death and Exercise in Healthy Adults.

#### **Unit-II**

Respiratory System Adaptations to Endurance and Strength Training, Ventilatory response to exercise and its use in sports, Ventilatory threshold, Effects Of Exercise, response to steady- state exercise, Exercise-Induced Bronchoconstriction, Control of Breathing during exercise; The Respiratory System under Stress, respiratory systems adaptation to long-term exercise, Adaptations to systematic Training, Effects Of High Altitude.

#### **Unit-III**

Muscular Mechanisms in Aerobic Endurance Training; Neural Mechanisms in Aerobic Endurance Training, Muscle Molecular Mechanisms in Strength Training, Muscle Property Changes in Strength Training, Neural Mechanisms in Strength Training. Initial responses of the neuromuscular systems to exercise; Training Adaptation of the Neuromuscular System.

#### **Recommended Books:**

- Roy J. Shephard and Henry S. Miller, Jr. (1999) Exercise and the Heart in Health and Disease. Marcel Dekker.
- Shephard, R.J. and Astrand, P.-O. (1992) Endurance in sport. Blackwell Science Ltd, USA.
- McArdle, W.D., Katch, F.I., Katch, V.L. (2006) Essentials of Exercise Physiology. Lippincott Williams and Wilkins, USA.
- Victor F. Froelicher, Jonathan Myers (2006) Exercise and the heart. Elsevier Inc.
- Christopher B. Cooper and Thomas W. Storer (2004) Exercise testing and interpretation- A practical approach. Cambridge University Press.
- K. Wasserman, J Hansen, D Sue, W Stringer, B Whipp, eds (2004) Principles of Exercise Testing and Interpretation, 4th edn.. Lippincott Williams & Wilkins, Philadelphia, USA.
- Christopher Bell. Cardiovascular Physiology in Exercise and Sport . 1st Edition. 2008; Churchill Livingstone.
- Michael G. Levitzky. Pulmonary Physiology, 8e. 2013; Lange. The McGraw-Hill Companies.
- Denise L. Smith and Bo Fernhall (2011) Advanced cardiovascular exercise physiology. Human Kinetics.

### **MSSN 207**

### **Laboratory III**

**Credit 3**

- Techniques of taking various anthropometric measurements.
- To define and illustrate various body landmarks.
- Gross body measurements: Body weight (Kg), Stature, sitting height, Height of interior superior Iliac spine, Subischial length.
- Diameters or Breadths (cms): Bicristal diameter (Shoulder Breadth), Transverse chest diameter, Antero-posterior chest diameter, Femur bicondylar diameter (knee breadth), Humerus Bicondylar diameter (elbow Breadth).
- BMI Estimation with and without software.
- Assess Energy and Nutrient intake from Diet using suitable Software.
- Circumferences or Girths of body parts, Calf circumference, Thigh circumference, Waist circumference, Chest circumference
- Skinfold measurement and Body Fat Percentage calculations.
- Training Program: Circuit Training Program, Interval Training Program, Ballistic Training Program, Fertlek Training Program.

### **MSSN 208**

### **Laboratory IV**

**Credit 3**

- Aerobic Power Field Assessments: Cooper 1.5-Mile Run/Walk Test and 12-Minute Run/Walk Test, Rockport Fitness Walking Test.
- High-Intensity Fitness Testing: Léger 20 m Shuttle Run Test, Yo-Yo Intermittent Recovery Test, 30-15 Intermittent Fitness Test, Sprinting Performance, Jumping Performance, Power Endurance, Anaerobic Cycling Power, Margaria-Kalamen Stair-Climb Test, BROCKPORT test system, AAHPER health related physical fitness test, Philips JCR test for General motor ability testing.
- Tests for: Speed, Agility, Balance, Coordination, Reaction time, Flexibility.
- Sports Skill Tests for: Soccer, Basketball, Hockey, Tennis.

## SEMESTER III

MSSN 301

Clinical Sports Nutrition

Credits 3

### Unit I

Athletes with Nutrition related disorders; Diabetes and Cardiovascular disease: Physiological effect of exercise; Physical activity prescription; insulin abuse; Effects of long-term physical activity; Acute effects of exercise; Exercise in the presence of Hyperinsulinemia and Hypoinsulinemia; Medical nutrition therapy (MNT); Dietary guidelines and Nutrient timing; type of carbohydrate and timing; Pre and post event carbohydrate loading and fluids; Insulin adjustments. Osteoporosis: Causes and consequences; Physiological effects of exercise; Pathophysiology; Medical Nutrition Therapy. Sports Anaemia: Causes and consequences; Physiological effects of exercise; Pathophysiology; MNT. Athletes with gastrointestinal disorders: food allergies and food intolerance; GI disturbance; Excessive flatulence; Abdominal distention; Intermittent diarrhoea; Constipation; Food related adverse reactions (FRAR); Physiological and dietary factors affecting gut comfort; Gut trainability; Lower GI tract conditions; Irritable Bowel Syndrome (IBS); Low FODMAP diet for IBS; Composition, food sources of FODMAP and pattern of consumption; Coeliac disease; Inflammatory bowel disease (IBD)-Diagnosis, Nutrition related concerns; MNT; Food allergy and Food intolerance: Diagnosis and MNT; nutritional intervention.

### Unit II

Nutrition for Special groups, Special Needs and Sports injuries; The Paralympic Athlete: Body composition assessment and management; Eating difficulties and behaviours, Dietary intakes and potential issues; Reported dietary intakes; Fibre timing of food intake and bowel control; Fluid intake; Medicine requiring Therapeutic Use Exemption (TUE) under WADA; Use of vitamin, mineral or sports supplement; Children and adolescent athletes: Growth and development; Nutritional issues; Eating habits and addiction; Nutritional requirements for growth and training; Female athletes: Vulnerability to nutrition assault and insufficiency; Differences in nutrient utilisation; Female athletic triad (FAT) ( eating disorder, menstrual irregularity and poor bone mineral density); energy availability and its association with FAT; Assessment for FAT; Dietary guidelines for FAT. Vegetarian athletes: Nutritional status and dietary considerations; Nutritional gaps currently identified and suitable dietary modification for fuelling during training, competitions and traveling.

### Unit III

Nutrition for extreme environmental conditions; Altitude: Altitude training and Physiology; Dietary recommendations at varied altitudes; Common Nutritional problems faced by athletes at high altitude. Cold and Heat: Effect of Cold/Hot environment on dietary habits and recommendations for training and competing in cold/Hot environments; Effects of exercising in the heat; Heat stress and injury; Strategic timing of water and electrolyte consumption during extreme climatic conditions; Guidelines for preventing food borne diseases; Strategies for Treating Diarrhea and Vomiting; Replacing fluid and electrolytes.

### Recommended Books:

- Burke, Louise, and Vicki Deakin. (2015). Clinical sports nutrition. McGraw-Hill.
- Broad, E. (Ed.). (2014). Sports Nutrition for Paralympic Athletes. CRC Press.
- Maughan, R. J., & Shirreffs, S. M. (Eds.). (2013). Food, Nutrition and Sports Performance III. Routledge.
- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Larson-Meyer, D. E. (2007). Vegetarian sports nutrition. Human Kinetics.
- Marie Dunford. (2017) Nutrition for Sport and Exercise.
- LeMura, L. M., & Von Duvillard, S. P. (Eds.). (2004). Clinical exercise physiology: application and physiological principles. Lippincott Williams & Wilkins.
- Cheung, S. (2010). Advanced environmental exercise physiology. Human Kinetics.

MSSN 302

Dietary Supplements and Ergogenic Aids

Credits 3

### Unit I

Nutritional supplements: Evolution into ergogenic aids or drugs among athletes and government regulations. Dietary supplement: Definition and classifications; Ergogenic aids: Definitions and Classifications; Dietary Supplement Health and Education Act of 1994; Government Protections from Dietary Supplement Hazards and Risks; New Dietary Ingredients; FDA Regulatory Action: Ephedra Supplements and DMAA; FDA Regulatory Actions: Androstenedione, Piracetam, and ATD; Contaminated Supplements and Banned Ingredients; Anabolic Steroid Control Act and Designer Anabolic Steroid Control Act; Adverse Event Regulation and Legislation; Contamination or Adulteration. Doping control and Supplement testing: World anti-doping agency and National Anti-doping agency (NADA), Formation, History and Standards; List of prohibited substances and Drugs; Analytical procedures and testing of samples from athletes; Drug abuse and athletic performance; Regulations on Dietary supplements: FSSAI and NADA. The Role of Nutritional Supplements Complementing Nutrient-Dense Diets: General versus Sport/Exercise-Specific Dietary benefits, Use of Nutritional Supplements in Sport and Exercise; Consequences of mega dosage in sports performance.

### Unit II

Macronutrient and Micronutrient Supplements; Protein Supplements: Whey, Casein, Egg Albumen, Soy Protein, Pea Protein & Other Vegan Proteins/Protein Blends), Protein Bars, Protein shakes Amino Acid Supplements- BCAA, Glutamine, Arginine, Taurine. CHO Supplements: Carbo loading, Sports Drinks, Bars and Gels. Fat Supplements: Omega Fatty acids, Medium Chain TCG, Fish Oils. Vitamin Supplements: B-Complex Vitamins, Vitamin C, Vitamin D, Vitamin E Supplements, Multi-Vitamin



Supplements. Mineral Supplements: Calcium-Magnesium-, Iron Supplements, Chromium, Zinc. Antioxidants Supplements: Antioxidants Vitamins & Mineral Supplements.

### Unit III

Botanical Ergogenic Supplements: Wheat Germ oil, Beetroot, Green Tea Extract, Tart Cherries, Caffeine, Curcumin, Phytosterols, Bio Flavonoids, Ashwagandha, Rhodiola, Shilajit, Ginseng, Grape Seed Extract, chyanprash, Herbal Testosterone-Boosters (Eg. Tribulus Terrestris, Nettle Root, Long Jack Root Etc), Bitter Orange (Citrus aurantium), Capsaicin, White Kidney Bean (Phaseolus vulgaris), Garcinia Cambogia (Hydroxycitric Acid), Guar Gum, and Psyllium, Glucomannan. Metabolite Ergogenic Supplements: Beta-Alanine, L-Carnitine Co Enzyme Q 10, Creatinine, DHEA, NADH, Glycerol, Inosine, Melatonin, Gamma Oryzanol (Ferulates), FRAC, Glucosania, Alcohol, Adaptogens, Alkalinizers, Androstenedione, B HMB. Use of Nutritional Supplements in Sport and Exercise: Motivational Antecedents and behavioural Outcomes: Motivational Theories Applied to Supplement Use; Behavioural Effects of Selected Supplements Commonly Employed for Performance, Fitness, and Health.

#### Recommended Books:

- Antonio, J., & Stout, J. R. (2002). Supplements for endurance athletes. Human Kinetics.
- Greenwood, M., Cooke, M. B., Ziegenfuss, T., Kalman, D. S., & Antonio, J. (Eds.). (2015). Nutritional supplements in sports and exercise. Humana Press.
- Cooper, C. E. (2008). Drugs and ergogenic aids to improve sport performance. Essays in biochemistry, 44, 1-10.

**MSSN 303**

**Assessment of Health and Fitness of Athletes**

**Credits 3**

### Unit I

Assessment of Physique; Kinanthropometry: Definition; Introduction; Body size and proportion; Somatotyping; Circumferences; Skinfold measurement sites and determining body composition; Applications. Body Composition and Performance: Factors that affect Body Composition; Assessment and Interpretation of Anthropometric and body composition data; Ideal Body Composition for Different Sports. Body Composition Assessment Techniques: Direct, Indirect and Doubly indirect (Under Water Weighing, Dexa, Whole Body Conductivity, Skin folds, Bioelectrical Impedance, Total Body Potassium, Near Infrared Interactance).

### Unit II

Dietary Assessment of Athletes: Different methods (food and fluid intake); Advantages and Disadvantages; Applications; Assessing food and fluid intake while traveling. Special issues with dietary assessment in sports: Diversity in intake; Training periodisation and food intake; Misreporting; Season and region specific dietary practices. Estimation of dietary intakes: Food data tables and software use; Evaluation of Nutrient Adequacy of Athletes' dietary intake; Methods for assessing food and fuel intake among athletes; Types of dietary assessment tools (Validity and reliability among athletes); Special concerns in assessing food intake among athletes; Translating the dietary intake data into analysis and determining nutritional information.

### Unit III

Assessment of Physical fitness: Functional tests; Cardiorespiratory and muscular assessment; Type of measurement and protocol for evaluation and interpretation of performance; Aerobic Power or VO<sub>2</sub>max; Anaerobic Threshold; Economy of Movement. Fitness assessment: Types of exercise, Components of physical fitness and its evaluation in health and performance. Activity Recording: Self-reporting of activities vs. Direct monitoring of activities. Biochemical and clinical assessment in sports: Assessment of Lipids, Protein, Vitamin and Mineral Status. Clinical Assessment: Signs and symptoms of various nutritional deficiencies. Assessment of Hydration: Estimation of sweat loss and sweat rate; urine volume and indicators of dehydration (Water, Urine and Thirst).

#### Recommended Books:

- Driskell, J. A., & Wolinsky, I. (Eds.). (2016). Nutritional assessment of athletes. CRC press.
- Eston, R., & Reilly, T. (Eds.). (2013). Kinanthropometry and exercise physiology laboratory manual: tests, procedures and data: volume two: physiology. Routledge.
- ACSM's Health-Related Physical Fitness Assessment Manual.
- H Aile, L., Agher Jr, G. A., Ael, M., & J Robertson, R. (2016). Perceived exertion laboratory manual. Springer New York.
- Heyward, V. H., & Gibson, A. (2014). Advanced fitness assessment and exercise prescription 7th edition. Human kinetics.

**MSSN 304**

**Nutritional and Exercise Biochemistry**

**Credits 3**

### Unit I

Enzyme chemistry and hormones in macronutrient metabolism and energy production; Enzymes: Structure; Composition; Nomenclature; Classification; Enzyme activity; Factors affecting enzyme activity; Role of co-enzymes; Enzyme kinetics; Enzyme inhibition; Drug and enzyme interactions; Regulation of enzyme activity; Enzymes of clinical significance. Hormone Chemistry: Regulatory system; Physiological function and nutrient interactions of Pituitary hormones; Thyroid and Parathyroid gland hormones; Pancreatic Hormones; Adrenal Glands; Sex Hormones; Pineal gland. General introduction on energy states and anabolism/catabolism: Phosphate energy (short) and oxidation-reduction reactions (long term) as energy sources; Role of glycolysis, gluconeogenesis, glycogenolysis, beta oxidation, Krebs cycle, HMP, ketone body formation, urea cycle and electron transport chain in energy (ATP) production; Biochemical changes during exercise performance; Biochemical characteristics of sub-cellular skeletal muscle during rest and activities.

## Unit II

Nucleic Acids and Gene Expression; Biosynthesis and Degradation of Nucleotides: Purine & Pyrimidine Metabolism; Bio Synthesis of Deoxy nucleotides. DNA & RNA: Type; Structure; Metabolism; Transcription; Translation; Protein Biosynthesis and Turn Over. Gene Expression: Basic Mechanisms; Regulation; Nutrient Gene Expressions.

## Unit III

Free Radicals: Introduction; Reactive Oxygen Species; Reactive Nitrogen Species; Oxidative Stress; Antioxidant defences (Endogenous & Exogenous). Immune Response: Introduction; Types; Immune dysfunction; Effect of Malnutrition. Aging: Theories; Damage to Mitochondria; Intervention in delaying aging; Genetic modules of aging, exercise and healthy aging, metabolic adaptation to exercise in aging. Inter Relationship between Nutrients: Energy and B Vitamins; Fats and Vitamin A, D, E, K; Vitamin A and Zn; Vitamin E and Se; Fe and Protein; Vitamin C and Fe; Vitamin D and Ca, P; B-Complex and Mn, Mg, Co. Drug Metabolism: Absorption; Metabolism; Excretion; Mechanism; Drugs as Anti Metabolites. Interaction between Nutrient and Drug; Interaction between Food and Drugs; Nutrient and Drugs; Effect on Nutritional Status; Cytochrome P450; Mono Oxidase Inhibitors.

### Recommended Books:

- Mougios, V. (2006). Exercise biochemistry. Human Kinetics.
- Poortmans, J.R. (2004). Principles of Exercise Biochemistry, 3rd edition, Karger Publishers.
- MacLaren, D., & Morton, J. (2011). Biochemistry for sport and exercise metabolism. John Wiley & Sons.
- Brody, T. (1998). Nutritional biochemistry. Academic press.
- Tiidus, P., Tupling, A. R., & Houston, M. Biochemistry Primer for Exercise Science 4th Edition. Human Kinetics.

## MSSN 305

## Sports Specific Nutrition

## Credits 3

### Unit I

Nutrition for popular team sports (Hockey, Football, Volleyball, Kabaddi and Cricket): Playing position; Basic physiology of playing team sports; body composition; Determining position wise fuel need; Quantity and timing of nutrient intake; Current research on position-specific nutrition needs and fuel utilisation; Current literature suggestions on food intake and recovery strategies; Supplement usage and Dietary periodisation among the athletes; Case studies on team sports.

### Unit II

Nutrition for Athletics and Endurance Sports (Long distance Swimming, Cycling and Marathon): Physiology; energy systems; Fuel utilisation; Body composition; Duration and intensity of event; Dietary and Hydration Strategies; nutrient requirements; Distribution of macronutrients in the diet; Guidelines for fuel during different phases of training and competition; Nutrient timing; Travel nutrition; Use of Supplements; Case studies of athletes. Nutrition for Racket sports (Badminton, Tennis, Squash): Game dynamics and fuel utilisation (energy and macronutrients & micronutrients); Body composition; Energy demands of the game; Nutrient timing and dietary periodisation; Current research on racket sports; Tailored nutrition and Hydration guidelines pre, during and post training/competitions, Supplement/ ergogenic aids; Recovery strategies; Case studies on racket sports.

### Unit III

Nutrition for Strength and Combat sport (Wrestling, Weightlifting, Judo, Boxing, Taekwondo and Fencing): Game dynamics; Energy demands and Fuel utilisation; Case studies of Indian players; Nutrient timing and dietary periodisation; Current research on strength & combat sport; Weight management issues; Supplement or other ergogenic aids; Recovery strategies. Nutrition for Balance (Gymnastics, Golf)/Coordination sports (Archery, Shooting): Playing formats and Fuel utilisation (energy and macronutrients); Different energy demands of balance sport; Physique maintenance and weight management issues; nutrient timing and dietary periodisation; Current research on balance/Coordination sports; Tailored nutrition and hydration guidelines; Supplement/ergogenic aids; Recovery strategies. Case studies of Gymnasts/archers /shooters. Nutrition for water sport (Rowing, Kayaking): Physiological and Biochemical changes; Research in relation to nutrition and dietary habits. Common nutritional problems; Nutritional Guidelines; individual energy/macronutrient requirements; Nutrient timing; Dietary periodisation; Supplement usage.

### Recommended Books:

- Maughan, R. J. (Ed.). (2008). Nutrition in sport (Vol. 7). John Wiley & Sons.
- Fink, H. H., & Mikesky, A. E. (2017). Practical applications in sports nutrition. Jones & Bartlett Learning.
- Eberle, S. G. (2013). Endurance Sports Nutrition, 3E. Human Kinetics.
- Ryan, M. (2012). Sports nutrition for endurance athletes. Velo Press.
- Campbell, B. (Ed.). (2013). Sports nutrition: enhancing athletic performance. CRC Press.
- Reaburn, P. R. (Ed.). (2014). Nutrition and Performance in Masters Athletes. CRC Press.
- Slater, G., & Phillips, S. M. (2011). Nutrition guidelines for strength sports: sprinting, weightlifting, throwing events, and bodybuilding. Journal of sports sciences, 29(sup1), S67-S77.
- Christoph Zinner and Billy Sperlich. (2016). Marathon Running: Physiology, Psychology, Nutrition and Training Aspects.

## Food Psychology and Nutrition

### Unit I

Important concepts in Food psychology; Effect of psychology on eating behaviour and food choices: Models of food choices; Neuropsychology and food choices; Food choices across life span. Biological and Learning Influences on Food Choice: Biological influences on energy intake; Food Neophobia in humans; Role of learning in development of food preferences; Mood, Emotions and Food choice; Food cravings and Addictions. Societal Influences on Food Choice: Marketing parameters and their Influence on consumer food choice; Role of context in food choice; Food acceptance and Food consumption; Impact of the media on food choice; Impact of advertising on food choice.

### Unit II

Concepts of Health Behaviour change psychology; Theories of behaviour change: Usefulness of theories in behaviour change; Health Belief Model; Theory of Reasoned Action/Theory of Planned Behaviour Self-Efficacy; The Trans theoretical Model; Self-Determination Theory; Motivational Interviewing; Social Cognitive Theory; Dual-Process Models; Social Support/Social Networks; Diffusion of Innovations; Ethics of Behaviour Change. Behaviour modification strategies to influence eating habits and health outcomes: Impact of optimistic bias on dietary behaviour; Implementation intentions; Strategic Automatization of food choice; Use of the Stages of Change Model with dietary behaviours; Addictive behaviour assessment and strategies to overcome, General behavioural assessment and psychological testing tools.

### Unit III

Nutrition counselling and education; Nutrition counselling: Definition; Requirement; Procedures to adopt; Role of a Sports Dietitian and theories and strategies to be adopted in nutrition counselling. Computer applications and protocols for nutrition counselling: Counselling session for individual athlete, for team, for coaches and other supporting staff.

Models of health and nutrition education in sports persons: Definition; Tools useful for education; Strategies for effective nutrition education.

#### Recommended Books:

- Shepherd, R., & Raats, M. (Eds.). (2006). *The psychology of food choice* (Vol. 3). Cabi.
- Tenenbaum, G., & Eklund, R. C. (Eds.). (2007). *Handbook of sport psychology*. John Wiley & Sons.
- Luiselli, J. K., & Reed, D. D. (Eds.). (2011). *Behavioral sport psychology: Evidence-based approaches to performance enhancement*. Springer Science & Business Media.

## Sports Genetics and Performance

### Unit I

Basic Genetic Concepts, Mendelian inheritance, population genetics, Human chromosome Karyotype, Chromosome Disorders, Genome Structure and Genetic Mapping, Mitochondrial Inheritance, The Genetic Code and Genetic Alterations, DNA Injuries and Repair, Monogenic and Polygenetic Diseases, Molecular Diagnostics.

### Unit II

Ethics of Genetic Testing and Research in Sport, Current Challenges and Directions to the Future, Genetic Modifications in Sports, Ethical Considerations of Genetic Manipulation in Sport, Gene Therapy and Gene Doping.

### Unit III

Connecting Sports and Genetics, The Genetics of Sports Injuries and Athletic Performance, Genetic Contributors to Hypertrophic Cardiomyopathy, Chronic Traumatic Encephalopathy, Different Classes of Performance Enhancing Genetic Variants.

#### Recommended Books:

- Bruce R. Korf and Mira B Irons (2012) *Human Genetics and Genomics*, Wiley-Blackwell.
- Manu L Kothari, Lopa A Mehta, Sadhana S roychoudhury, (2009) *Principles of Genetics*, Universities Press.
- Ricki Lewis (2017) *Human Genetics the basics*, Routledge, ISBN 978-1-138-66801-0.
- Michael Posthum and Malcolm Collins (2016) *Genetics and Sports*, Karger Publisher.
- Elaine A. Ostrander, Heather J. Huson, and Gary K. Ostrander *Genetics of Athletic Performance* (2009) *Annu. Rev. Genomics Hum. Genet.* 2009.10:407–29.
- Lisa M. Guth and Stephen M. Roth (2013) *Genetic influence on athletic performance*, *Curr Opin Pediatr.* 2013 December; 25(6): 653–658. doi:10.1097/MOP.0b013e3283659087.
- Nicola Mafulli et al (2013) *the genetics of sports injuries and athletic performance*. *Muscles, Ligaments and Tendons Journal*, 3 (3): 173-189.

## Exercise Immunology

### Unit I

Immunological system and exercise: Exercise and innate and humoral immunity, Exercise induced change in Ig and antibody, exercise and cytokines.

## Unit II

Sex Differences in Immune Function after Aerobic Exercise, Sex differences in immune variables and respiratory infection, Killer cell immunoglobulin-like receptors and exercise, Anti-inflammatory influence of exercise training- Physical activity, fitness, and chronic inflammation, C-Reactive Protein (CRP).

## Unit III

Cytokines, Free radicals, Antioxidants, Effect of exercise on immunity, Physical activity – A stimulator and an inhibitor to the immune system, Exercise and upper respiratory tract infection, Infection and exercise performance, Exercise and HIV infection, Exercise and Cancer, Exercise aging and immunity, Maintaining immune health, Importance of exercise immunology in health promotion.

### Recommended Books:

- Michael Gleeson, Nicolette Bishop, and Neil Walsh.(Eds) (2013) Exercise immunology. Routledge.
- Warren Levinson (2016) Review of Medical Microbiology and Immunology. LANGE, Mc Graw Hill.

### **MSSN 307**

### **Laboratory V**

**Credits 3**

1. Planning a year round diet for an athlete with diabetes/Sports anaemia.
2. Planning a year round diet for an athlete with Food-Related adverse reactions.
3. Planning a diet for an athlete with sports-injury/Paralympic athlete.
4. Planning a year round diet for vegetarian athletes.
5. Nutrition strategies and menu planning for athletes in different altitude.
6. Nutrition guidelines/suggestions for athletes while travelling and to overcome jet lag.
7. Composition and brand names of supplements that improve Muscle mass commonly available in the market and role of nutrients listed in athletic performance.
8. Composition and brand names of carbohydrate/fat/ supplements commonly available in the market.
9. Composition and brand names of supplements micronutrients commonly available in the market.
10. Composition and brand names of metabolite supplements commonly available in the market.
11. Composition and brand names of botanical supplements commonly available in the market.
12. Planning a diet for strength athletes with supplements for muscle building.
13. Planning a diet for endurance athletes with supplements for energy and micronutrients.
14. Providing diet for clinical conditions with supplement usage (Planning the type, quantity and timing of supplement intake).
15. Methods of measuring dietary recalls: Food diary, Weighed food record, Recall.
16. To assess energy and nutrient intake from diet using suitable software.
17. Procedure to collect and monitor activity record using Time Allocation Pattern and activity monitors.
18. Energy balance: Calculation of total energy expenditure (TEE) and energy intake.
19. Measuring height, body mass, MUAC and skinfold thickness.
20. Measuring body composition using various techniques: Skinfold technique, BOD POD, DEXA and In Body.
21. Exercise testing: Submaximal and maximal level.
22. Fitness tests: Aerobic, Anaerobic, Intermittent, Strength, Endurance, Flexibility and Agility.

### **MSSN 308**

### **Laboratory VI**

**Credits 3**

1. Estimation of Glucose in blood samples.
2. Estimation of Lactate in blood samples.
3. Handling and using the blood gas/chemistry analyser.
4. Estimation of serum Iron.
5. Estimation of serum Ferritin.
6. Estimation of Lipids.
7. Estimation of Serum Albumin.
8. Estimation of Total Antioxidant Capacity.
9. Estimation of Vitamin A or Vitamin C.
10. Menu planning and fluid intake during training and competition including nutrient periodisation for Cricket/football/Hockey players.
11. Menu planning and fluid intake during training and competition including nutrient periodisation for sprinters/Marathon Runners.
12. Menu planning and fluid intake during training and competition including nutrient periodisation for badminton.
13. Menu planning and fluid intake during training and competition including nutrient periodisation for rowing.
14. Menu planning and fluid intake during training and competition including nutrient periodisation and weight-management for power sports/gymnastics.
15. Menu planning during training and competition including nutrient periodisation for archery.

## SEMESTER-IV

**MSSN 401**

**Research methodology**

**Credit 3**

### Unit-I

Introduction to Research in Physical Activity, Developing the Problem and Using the Literature, Presenting the Problem, Formulating the Method, Ethical Issues in Research and Scholarship.

### Unit-II

Types of Research: Socio Historical Process in Sport Studies, Philosophical Research in Physical Activity, Research Synthesis (Meta-Analysis), Surveys, Other Descriptive Research Methods, Physical Activity Epidemiology Research, Experimental and Quasi-Experimental Research, Qualitative Research, Mixed-Methods Research.

### Unit-III

Writing the Research Report: Completing the Research Process, Ways of Reporting Research

Introduction to review of literature, Evaluation of scientific literature; organizing literature – strategies, use of software; Meta-analysis, Writing review – structuring the review, quoting/paraphrasing, the citation referencing system.

### Recommended Books:

- Research Methodology: Methods and Techniques by C. R. Kothari.
- ICMR. Ethical Guidelines for Biomedical Research on Human Subjects. 2006; ICMR, New Delhi.
- Research Methods in Physical Activity- 7th Edition By Jerry Thomas, Jack Nelson, Stephen Silverman, Human Kinetics.
- Research Methods in Sport by Mark F Smith.
- Research Methods for Sports Performance Analysis By Peter O' Donoghue.
- Research Methods in Physical Education and Youth Sport 1st Edition by Kathleen Armour and Doune Macdonald.
- Ridley, D. The Literature Review a step-by-step guide for students. 2012; Sage Publications Limited, New Delhi.

# **School of Sports Sciences**

## **Department of Sports Biosciences**



### **Proposed Course Structure and Course Details**

## **M.Sc. Sports Physiology**

Central University of Rajasthan NH-8,  
Bandar Sindri, Kishangarh-305817 Dist.  
– Ajmer (Rajasthan)

## M.Sc. Sports Physiology

### SEMESTER I (Total credits: 24)

Code	Title of Course	Type of Course	Credits
MSSP 101	Human Anatomy and Physiology	Core	3
MSSP 102	Biomolecules and Metabolism	Core	3
MSSP 103	Kinesiology	Core	3
MSSP 104	Psychological and Social Aspects of Sports	Core	3
MSSP 105	Biomechanics and Motor Learning	Core	3
MSSP 106	Elective I <ul style="list-style-type: none"> <li>• Elective from any other Department</li> <li>• Sports First Aid and Emergencies</li> <li>• History of Physical Education and Sports</li> <li>• Physiological Aspects of Ageing</li> </ul>	Elective	3
MSSP 107	Laboratory I	Core	3
MSSP 108	Laboratory II	Core	3

### SEMESTER II (Total credits: 24)

Code	Title of Course	Type of Course	Credits
MSSP 201	Principles and Methods of Sports Training	Core	3
MSSP 202	Performance Evaluation and Testing	Core	3
MSSP 203	Fatigue, Injuries and Rehabilitation	Core	3
MSSP 204	Food and Nutrition	Core	3
MSSP 205	Statistics for Sports Science	Core	3
MSSP 206	Elective II <ul style="list-style-type: none"> <li>• Elective from any other Department</li> <li>• Kinanthropometry in Sports</li> <li>• Health Fitness and Wellness</li> <li>• Adaptations to Exercise and Training</li> </ul>	Elective	3
MSSP 207	Laboratory III	Core	3
MSSP 208	Laboratory IV	Core	3

### SEMESTER III (Total credits: 24)

Code	Title of Course	Type of Course	Credits
MSSP 301	Physiology of Sports and Exercise	Core	3
MSSP 302	Sports Ergonomics and Ergogenic Aids	Core	3
MSSP 303	Fitness Assessment and Exercise Prescription	Core	3
MSSP 304	Neuroscience and Endocrinology in Sports	Core	3
MSSP 305	Physiological Support for Athletes	Core	3
MSSP 306	Elective III <ul style="list-style-type: none"> <li>• Elective from any other Department</li> <li>• Drugs and Doping in Sports</li> <li>• Sports Genetics and Performance</li> <li>• Exercise Immunology</li> </ul>	Elective	3
MSSP 307	Laboratory V	Core	3
MSSP 308	Laboratory VI	Core	3

### SEMESTER IV (Total credits: 24)

Code	Title of Course	Type of Course	Credits
MSSP 401	Research Methodology	Core	3
MSSP 402	Journal Club Presentation	Presentation	3
MSSP 403	Major Project	Tutorial/Laboratory	18

## SEMESTER-I

**MSSP 101**

**Human Anatomy and Physiology**

**Credit 3**

### Unit-I

Anatomy and Physiology of: Blood, Cardiovascular System, Lymphatic System, Integumentary System and Respiratory System.

### Unit-II

Anatomy and Physiology of: Nervous System, Special Senses, Endocrine System, Skeletal System, Joints and Muscular System.

### Unit-III

Anatomy and Physiology of: Digestive System, Immune System, Urinary System, Fluid and Electrolyte Balance, Reproductive System, Pregnancy and Human Development.

### Recommended Books:

- Human Anatomy and Physiology (10<sup>th</sup> edition) by Elaine N Marieb, Katja N Hoehn.
- Introduction to Human Body- The Essentials of Anatomy and Physiology by Gerard J. Tortora.
- Textbook of Anatomy with Coloured Atlas by Inderbir Singh.
- Textbook of Medical Physiology by Arthur C. Guyton.
- Principle of Human Anatomy (10<sup>th</sup> Edition) by Gerard J. Tortora.
- Gray's Anatomy: Anatomical Basis of Clinical Practice by Standring, Susan. Borley, Neil R. Gray Henry.
- Human Physiology by C.C. Chatterjee.
- Chowdhary Medical Physiology by S K Chowdhary.
- Netter's Atlas of Human Anatomy by Frank H. Netter.

**MSSP 102**

**Biomolecules and Metabolism**

**Credit 3**

### Unit-I

Foundation of Biochemistry, Properties of Water, Amino Acids, Peptides and Proteins, Structure and Function of Proteins, Enzymes, Sugars, Carbohydrates and Glycobiology, Nucleotides and Nucleic Acids, Fatty Acids, Structure and Functions of Lipids.

### Unit-II

Principles of Bioenergetics, Major Metabolic Pathways in Human and its Relevance with Exercise, Glycolysis, Gluconeogenesis, Pentose Phosphate Pathway, Citric Acid Cycle, Electron Transfer System in Mitochondria, Oxidative Phosphorylation.

### Unit-III

Basic Concepts and Design of Metabolism, Metabolic Regulation of Glucose and Glycogen, Biosynthesis of Carbohydrates, Lipid Biosynthesis, Fatty Acids Catabolism, Amino Acids- Biosynthesis, Oxidation and Production of Urea, Metabolism of Lactate, Integration and Regulation of Metabolism.

### Recommended Books:

- Principles of Biochemistry- Lehninger Nilson and Cox W.H. Freeman.
- Principles of Biochemistry- Donald Voet, CW Pratt, JG Voet (2012) Wiley, ISBN:1118092449.
- Principles of Exercise Biochemistry Editor(s): Poortmans J.R. (Brussels) Karger Publishers.
- Biochemistry JM Berg, TL Tymoczko L Stryer W. H. Freeman and Company.
- West & Todd Text book of Biochemistry. Mac Millan Company London.
- G.P. Talwar & ID Singh Textbook of Biochemistry & Human Biology - Prentice Hall of India, New Delhi.
- Vasudevan Textbook of Biochemistry. Jaypee Brothers Medical publishers (P) Ltd.
- Jain J.L., Jain Sanjay, Jain Nitin, S Fundamentals of Biochemistry –. Chand and Company Ltd, New Delhi.
- A.C. Dev. Comprehensive Viva and practical Biochemistry. New Central Book Agency Pvt. Ltd.

**MSSP 103**

**Kinesiology**

**Credit 3**

### Unit-I

Meaning of Kinesiology, Aims and Objectives of Kinesiology, Role of Kinesiology in Sports; Anatomical Position, Principles of Plane and Axis, Various types of movements.

### Unit-II

Bones: Meaning and composition of bone, Kinds of bones (flat, long, short, irregular and sesamoid), Function of bones, Bone fracture and its types; General features of the following bones: Upper Extremities: Clavicle, Scapula, Radius and Ulna, Humorous; Lower Extremities: Femur, Patella, Tibia, Fibula, Pelvic Bones; Joints: Meaning and types of joints, Joint flexibility, Technique to



increase the flexibilities, Structure, function, fundamental movements around the joints; General features, structure and movements of the following joints: Shoulder Complex, Elbow Complex, Hip Complex, Knee joint, Spinal column and Pelvic girdle.

#### Unit-III

Introduction to Muscular System: Muscles and Tendons, Classification of muscles, Structure of Skelton muscle, classification of muscles on basis of fibre arrangement, Physiology of muscle contraction, types of muscle contraction, Role of muscle in movement, Methods of studying the action of muscle. Origin, Insertion and action of major muscle groups of the Body; Nervous System: Overview of Nervous system, Neurons, Motor Unit and Receptors.

#### Recommended Books:

- Clinical Mechanics and Kinesiology with web Resource, Human Kinetics, by Janice Loudon, Robert Manske, Michael Reiman.
- Biomechanics and Kinesiology of Exercise – 2013 by Michael Yessis.
- Cynthia C. Norkin, Pamela K. Levangie : Joint structure & function- A comprehensive analysis 2nd edition.
- Brunnstrom - Clinical Kinesiology, F.A. Davis.
- Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
- Shaw, D., Pedagogic Kinesiology, Khel Sahitya Kendra, 2007.
- Thompson, C., Manual of Structural Kinesiology. (10th Ed.), St. Louis: Times Mirror/ Mosby College Publishing, 1995.
- Shaw, Dhanonjoy, Kinsiology and Biomechanics of Human Motion, Khel Sahitya Kendra, 1998.
- White and Punjabi - Biomechanics of Spine - Lippincott.
- Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
- Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Edi.
- Basic Biomechanics 4th edition, susan J. Hall, MCGraw Hill.

### **MSSP 104**

### **Psychological and Social Aspects of Sports**

**Credit 3**

#### Unit-I

Sports Psychology and role of Psychology in Sports, Methods of Psychology employed in Sports, Motor leaning and Performance, Importance of Sports Psychology for Athletes, Coaches and others related to sports settings.

#### Unit-II

Personality and its role in Sports, Attention and Perception in Sports; Motivation and Goal setting and its role in Sports, Emotions in Sports, Stress and Anxiety in Sports, Biofeedback techniques in Sports.

#### Unit-III

Sociology of Sports, Social Factors and Socio-metric techniques in Sports, Group processes, Team cohesiveness and Leadership in sports, Effect of crowd behaviour in Sports, Economics and Politics in Sports.

#### Recommended Books:

- Weinberg & Gould, Foundations of Sports and Exercise Psychology. Human Kinetics 2016.
- Motor Learning and Performance 5th Edition With Web Study Guide From Principles to Application, Human Kinetics by Richard Schmidt, Tim Lee.
- Morgan and King: Introduction to Psychology - Tata McGraw Hill.
- M.L. Kamlesh Psychology in Physical Education and Sports by Mehopolitan book co. Pvt. Ltd., Netaji Subash Marg, New Delhi 11002.
- Sanjeev. P. Sahni Psychology and its application in sports by D.V.S. publications, 100, Giri Nagar Kalkaji, New Delhi-110019.
- Agyajit Singh Psychology of Coaching by Friends Publications, # 101 Ansari Road Darya Ganj, New Delhi-110002.
- Jitendra Mohan Recent Advances in Sports psychology, By, Publisher, Friends Publications.
- Fundamentals of Sociology of Sport and Physical Activity, Human Kinetics by Katherine M. Jamieson, Maureen M. Smith.
- Doing Exercise Psychology, Human Kinetics by Mark Andersen, Stephanie Hanrahan.
- Social Issues in Sport 3rd Edition, Human Kinetics by Ron Woods.

### **MSSP 105**

### **Biomechanics and Motor Learning**

**Credit 3**

#### Unit-I

Role of Bio–Mechanics in the Field of Sports Science, Principles of Biomechanics; Biomechanical Concepts: Motion, Newton's law of Angular Motion and Linear Motion and its relationships, Force, Centripetal and Centrifugal forces, Equilibrium, Centre of Gravity and Stability, Freely falling bodies and Projectile, Momentum, Impulse, Lever and its Classification, Work, Power, Energy: Relationship of Work, Power and Energy, Friction, Spin, Impact, Elasticity, Rebound, Fluid Mechanics, Air Resistance and Water Resistance.

## Unit-II

Determine the simultaneous-sequential nature of a variety of movement skills, Classify motor skills using the classification system presented, .Bio-Mechanical analysis of fundamental skills: Walking, Running, Jumping, Pulling, Pushing, Lifting, Lowering, Throwing.

## Unit-III

Introduction to Gait Analysis. Mechanical Analysis of Sports Skills: Athletics (Running, Jumping and Throwing), Swimming, Football, Basketball, Volleyball, Cricket. Technological Use and Advances in Biomechanics: Techniques and Tools for Measurement of Biomechanical Variables.

### Recommended Books:

- Biomechanical Analysis of Fundamental Human Movements by Arthur Chapman, 2008, Human Kinetics.
- Biomechanics of Sport and Exercise 3rd Edition With Web Resource and MaxTRAQ 2D Educational Software Access- Loose-Leaf Edition, Human Kinetics, By Peter McGinnis.
- Biomechanics and Kinesiology of Exercise – 2013 by Michael Yessis.
- Cynthia C. Norkin, Pamela K. Levangie : Joint structure & function- A comprehensive analysis 2nd edition, F.A. Davis Company Philadelphia.
- Brunnstrom - Clinical Kinesiology, F.A. Davis.
- Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
- White and Punjabi - Biomechanics of Spine - Lippincott.
- Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
- Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion 9th Edi.
- Basic Biomechanics 4th edition, susan J. Hall, MCGraw Hill.
- Joseph Hamill, Kathleen M. Knutzen. Biomechanical Basis of Human Movement.

**MSSP 106**

**Elective I**

**Credit 3**

## **Sports First Aid & Emergencies**

### Unit-I

Introduction to Sports First Aid, Athletic Health Care Team, Sport First Aid Game Plan, First Aid Equipment and Kit, Basic Life Support System: Recovery Position, Head to toe- survey, Artificial Ventilation; Basic Sport First Aid Skills : Anatomy and Sport Injury Terminology , Emergency Action Steps , Physical Assessment and First Aid Techniques , Moving Injured or Sick Athletes.

### Unit-II

Sport First Aid for Specific Injuries: Unconsciousness: ABC, CPR, AED, Respiratory Emergencies and Illnesses, Shock, Wounds and Bleeding, Head, Spine and Nerve Injuries, Internal Organ Injuries, Upper Body and Lower Body Musculoskeletal Injuries, Facial and Scalp Injuries, Skin Problems.

### Unit-III

Disaster Preparedness and Management: Weather-Related Problems, Environmental Emergencies: Animal Bites and Stings, Allergies, First Aid Protocols, Practical Skills in using: Triangular Bandages, Broad fold, Thin fold, Slings, Collars, Cardiac Emergencies.

### Recommended Books:

- Sport First Aid-5th Edition by Melinda Flegel, Human Kinetics, 2014.
- American Red Cross, First Aid/CPR/AED : PARTICIPANT'S MANUAL.
- Practical First Aid: British Red Cross in Association with Donning Kinder Sley.
- John Morris: First Aid Training Manual, Everyday learning Pvt. Ltd.
- Authorized Manual of St. John Ambulance (India): First Aid.
- Bradley R.A. Wilson. Timothy E. Glaros : Managing Health Promotion Programs Human Kinetics Publishers.

## **History of Physical Education and Sports**

### Unit-I

What are Play, Game and Sports? Types of sports and recreational activities, Importance of free play and organizational games, Terminology of Sports Science and Physical Education, Health related and Motor performance related fitness, Health and Wellness (Physical, Mental, Psychological, Social and Spiritual) and Athletics, Sports Carriers: Media, Management, Performance, Coaching and other related areas.

### Unit-II

Philosophy and its need in Sports and Physical Education, Idealism, Naturalism and Pragmatism in Physical Education, Physical Education in Ancient Greek, Rome, India and Modern India. History of Olympic Games, Asian Games, SAARC Games and SAF Games, National Sports Awards, trends and problems in Sports Sciences and Physical Education in 21<sup>st</sup> Century

### Unit-III

Introduction to general Rules and Regulations of Selected Sports (Football, Field Hockey, Basketball, Volleyball, Cricket Badminton and Tennis), Introduction to Playfields and Track Specifications, General organizational process of Sports Competitions.

#### Recommended Books:

- Bucher, C.A.: Foundation of Physical Education, St. Louis: The C.V. Mosby company, 1983.
- History and Philosophy of Sport and Physical Activity, Human Kinetics by R. Scott Kretchmar, Mark Dyreson, Matthew Liewellyn, John Gleaves, 2017.
- Synder and Geoh: Professional preparation in Health Education, Physical Education and Recreation.
- Barrow, H.M.: Man and Movement: Principles of Physical Education, Philadelphia Lea and Fabiger, 1977.
- Joseph, P.M.: Organisation of Physical Education, Kandivila, : Old students Association, T.I.P.E.
- Kamlesh, M.L. and Sangral, M.S. : History and Principles of Physical Education, Prakash Brothers, 1983.
- Wuest and Bucher: Foundations of Physical Education and Sports, B.I. Publications Pvt. Ltd., New Delhi.
- William, H.F.: Physical Education and Sports in Changing Society, Surjeet Publication, Delhi.

### Physiological Aspects of Ageing

#### Unit-I

Growth and Biological Maturation: Relevance to Athletic Performance; Muscle Development during Childhood and Adolescence, Relevance to Understanding Effects of Growth on Performance.

#### Unit-II

Theory of Ageing, Age related changes in different body systems, Cardiovascular Concerns in the Young Athlete, Trainability During Childhood, Ageing and muscular strength, ageing and joint flexibility

#### Unit-III

Exercise guidelines for geriatric populations. Introduction to Masters Sports, Ageing and performance, Role of continued involvement, Psychosocial issues in Masters Sport, Model of lifespan physical activity, health and performance.

#### Recommended Books:

- Helge Hebestreit and Oded Bar-Or (2008) The Young Athlete. Blackwell Publishing Ltd.
- Joseph Baker, Sean Horton and Patricia Weir (2000) The Masters Athlete: Understanding the role of exercise in optimizing aging. Routledge.
- Fitness and Wellness: Warner W. K Hoeger and Sharvon A. Hoeger.
- Fitness & Wellness Concepts: Charles B. Corbina & Ruth Lindsey.
- Lifetime Fitness & Wellness- A personal choice, Melvin H. Williams.

#### MSSP 107

#### Laboratory I

#### Credits-3

- Introduction to laboratory techniques- pipetting, calculations, introduction to equipments, sterile techniques and lab safety.
- How to Use microscopes.
- To study Counting Chambers.
- To determine the total Red Blood Corpuscles count.
- To determine the total Leucocyte Count in blood.
- To measure the Haemoglobin concentration of blood.
- To measure Blood Pressure of a subject in different positions.
- Calculation of Energy expenditure
- Measurement of blood glucose Cholesterol/HDL, Glycerol, Lactate, Triglycerides
- Biochemical Assessment of Metabolites.
- Biochemical Assessment of Enzymes.
- Biochemical Assessment of Hormones.
- Estimation of sugars, iron, phosphate, Vitamin C and organic acids.
- Estimation of protein concentration.

#### MSSP 108

#### Laboratory II

#### Credits-3

- To analyse various planes and axes of the body.
- To demonstrate the surface anatomy and muscle attachments of following bones: Clavicle, Scapula, Humerus, Radius, Ulna, Meta Carpals, Phalanges, Femur, Tibia, Fibula, Patella, Tarsals and metatarsals
- To demonstrate the following joints including corresponding muscles and movements of Upper Extremity: Acromioclavicular joint, Sternoclavicular joint, Shoulder joint, Elbow joint, Proximal Radioulnar joint, Distal Radioulnar joint, Wrist joint, Thumb joint

- To demonstrate the following joints including corresponding muscles and movements of Lower Extremity: Hip Joint, Knee Complex, Ankle joint.
- Demonstration and Estimation of Centre of Gravity of Human Body.
- Determination of Human Gait pattern.

## **SEMESTER-II**

### **MSSP 201**

### **Principles and Methods of Sports Training**

**Credit 3**

#### Unit-I

Scientific basis of Sports Training, Importance, Aims and Objectives of Sports Training; Characteristics of Sports Training; Biological Process in Training; Components of Physical Fitness (motor abilities) – Endurance, Strength, Speed, Flexibility, Co-ordination; Agility.

#### Unit-II

Principles of Sports Training - Overload, Specificity, Progression and Reversibility; Meaning and concept of Training load; Adaptation and Recovery, Super Compensation, Training Structure - Volume, Intensity, Frequency, Peaking, Errors in Training, Adaptations to Resistance Training, Adaptations to Aerobic and Anaerobic Training.

#### Unit-III

Training plan; Need and importance in planning; Types of training plans - short term and long term plans; Training and Competition Cycles (training conception, macro, micro, meso); Periodization – Need, Types; Aims of various phases of Periodization (Preparatory, competition and transition); Competition -Types of Competition, Preparation for competition; the number and frequency of competition. Training athletes with disability, Adapted games for Disabled; Special Olympics and Paralympics.

#### Recommended Books:

- Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
- Periodization-6th Edition Theory and Methodology of Training by Tudor Bompa, Carlo Buzzichelli.
- Physiological Aspects of Sport Training and Performance, 2nd Edition, Human Kinetics by Jay Hoffman.
- Recovery for Performance in Sport by Institut National du Sport de l'Expertise et de la Performance INSEP, Human Kinetics, Christophe Hausswirth, A. Mujika.
- Essentials of Sports Training and Conditioning by JB Learning, NASM.
- Singh, H: Science of Sports training, DVS Publication, New Delhi, 1991.
- Matweyev, L.P.: Fundamentals of Sports training, publication Moscow, 1984.
- Harre, D: Principles of sports training, Sportverlag, Berlin, 1988.
- Singh, H: Science of Sports training: General theory and methods, NIS, Patiala, 1984.
- Scholisch, M: Circuit training, Sportverlag, Berlin.
- Willmore, J.H.: Athletic training and physical fitness, Antro and Becon Inc, Sydney.

### **MSSP 202**

### **Performance Evaluation and Testing**

**Credit 3**

#### Unit-I

Introduction to Test, Measurement, Evaluation and Research, Basic concepts in Tests: Evaluation, Validity, Reliability, Objectivity and Norms, Test construction and its Organisation and Administration; Pre-test considerations: Risks associated and Safety considerations, ACSM guidelines for when to stop a Test, Pre-exercise test evaluations: Calculation of HR MAX and 85% HR max depending on protocol, Population considerations: Children, Elderly and Apparently healthy.

#### Unit-II

Test Order: Equations used to estimate aerobic power from TM protocols, Equations used to estimate aerobic power from Cycle ergometer protocols (arm and leg), Calculations used to estimate aerobic power from other variables, Test protocols used for measuring the health and skill-related components of fitness, CV endurance field tests, VO<sub>2</sub>max testing, Norm tables, Maximal versus submaximal tests.

#### Unit-III

Modes of testing, Muscular strength, endurance and flexibility, Body composition and Anthropometry, Balance, Agility, Coordination, Reaction time and Anaerobic power, Physical Fitness Batteries, Specific Sports Skill Tests (Soccer, Basketball, Volleyball, Hockey, Badminton, Tennis and other sports)

#### Recommended Books:

- Advanced Fitness Assessment and Exercise Prescription 8th Edition with Online Video, Human Kinetics by Ann Gibson, Dale Wagner, Vivian Heyward, 2018.

- Laboratory Manual for Exercise Physiology 2nd Edition. With Web Study Guide, Human Kinetics by G. Gregory Haff, Charles Dumke, 2018.
- Measurement and Evaluation in Human Performance 5th Edition, Human Kinetics by James Morrow Jr., Dale Mood, James Disch, Minsoo Kang, 2016.
- Physiological Tests for Elite Athletes 2nd Edition by Australian Institute of Sport Rebecca Tanner, Christopher Gore, 2012.
- ACSM's Guidelines for Exercise Testing and Prescription, 10<sup>th</sup> Edition by American College of Sports Medicine. Wolters Kluwer, 2017.
- Text book of Applied Measurement Evaluation & Sports Selection second edition: Dewinder K Kansal Sports & Spiritual Science Publications.
- Heyward, Vivian. Advanced Fitness Assessment and Exercise Prescription, 5th ed., Human Kinetics, 2006.
- ACSM's Guidelines for Exercise Testing and Prescription, 8th ed., Lippincott Williams and Wilkins, 2009.
- ACSM's Health-Related Physical Fitness Assessment Manual, 3rded, 2009.
- Ed. Durstine and Moore. ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities, 2nd ed. Human Kinetics, 2003.

**MSSP 203**

**Fatigue, Injuries and Rehabilitation**

**Credit 3**

Unit-I

Concept of Overloading, Overtraining, Fatigue and Staleness, Symptoms and Causes of Fatigue, Types of Fatigue, Theories associated with Fatigue, Definition, Types, Symptoms, Findings, Underlying Mechanisms and Frequency of Overtraining and Overtraining Syndrome, Oxygen Debt Theory, Recovery Oxygen Uptake or Excess Post-exercise Oxygen Consumption (EPOC), Implications of EPOC for Exercise and Recovery, Optimal Recovery From Steady-Rate Exercise and Non-Steady-Rate Exercise, Intermittent Exercise and Recovery

Unit-II

Sports Injury- Meaning, Classification, Causes, Types, General guidelines for their Prevention, Recovery Time, Introduction and Management of common Sports Injuries (Fracture, Dislocation, Laceration, Abrasion, Sprain and Strain), How to avoid Sports Injuries, Role of Warm-up and Cool Down

Unit-III

Rehabilitation: Meaning, Concepts, Objective and scope of Rehabilitation, Principal of care and Rehabilitation  
Therapeutic Modalities: Electrotherapeutic modalities (Shortwave Diathermy, Ultra Sound, T.E.N.S), Heat and Cold, Soft tissue Massage, Aquatic Rehabilitation Exercise, Therapeutic Exercise, Therapeutic Nutrition, Psychological Rehabilitation

Recommended Books:

- Shaun Phillips (2015) Fatigue in Sport and Exercise. Routledge, NY
- Therapeutic Modalities for Musculoskeletal Injuries 4th Edition, Human Kinetics by Craig Denegar, Ethan Saliba, Susan Saliba, 2016
- Essentials of Athletic injury management 10th edition by William E. Prentice, Human Kinetics.
- Clinical Sports Medicine Fifth Edition by Peter Brukner, Karim Khan, McGraw-Hill Education Australia, 2016
- Principles and Practice of Therapeutic Massage by Sinha, Jaypee Publishers
- Textbook of Electrotherapy by Singh Jagmohan, Jaypee Publishers
- Manfred Lehmann, Carl Foster, Uwe Gastmann, Hans Keizer and Jtirgen M. Steinacker(Eds) (1997) Overload, Performance Incompetence and Regeneration In sport. Kluwer Academic / Plenum Publishers, N.

**MSSP 204**

**Food and Nutrition**

**Credit 3**

Unit-I

Nutrients: Functions and Recommended Intakes, Healthy Eating and Balanced Diet, Fuel Sources for Muscle and Exercise Metabolism, Energy: Food Energy and Expenditure, Gastric Emptying, Digestion, and Absorption.

Unit-II

Nutritional Role and Recommendations for following: Carbohydrate, Fat, Protein and Amino Acids, Water Requirements and Fluid Balance, Vitamins and Minerals, Nutrition Supplements.

Unit-III

Nutrition and Training Adaptations, Nutrition and Immune Function in Athletes, Body Composition and Weight Management, Eating Disorders in Athletes, Personalized Nutrition, Menu Planning (Meal Timing and Spacing)

Recommended Books:

- Sport Nutrition 3rd Edition by Asker Jeukendrup, Michael Gleeson, Human Kinetics, 2018.
- Nutrition for Sport, Exercise, and Health by Marie Spano, Laura Kruskall, D. Travis Thomas, Human Kinetics.

- Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
- Exercise Physiology: Nutrition, Energy and Human Performance 8th Edition by William D. McArdle, Frank I. Katch, Victor L. Katch
- Nancy Clark's Sports Nutrition Guidebook by Nancy Clark, Human Kinetics
- NSCA's Guide to Sport and Exercise Nutrition by National Strength Conditioning Association, Human Kinetics
- Fundamental of Foods, Nutrition & Diet Therapy 5<sup>th</sup> edition by S.R. Mudambi, M.V. Rajagopal, New Age International Limited, New Delhi.
- Applied Nutrition. By R. Rajlaxmi, IBH Publications, New Delhi.
- Nutritional Supplements in Sports, Exercise and Health: An A to Z Guide by Linda M. Castell, Samantha J. Stear, Louise M. Burke, Routledge.

**MSSP 205**

**Statistics for Sports Science**

**Credit 3**

Unit-I

Introduction to Biostatistics, Frequency Distribution, Variable and Attribute, Line-diagram, Bar-diagram, Pie chart, Histogram, Mean, Median and Mode.

Unit-II

Variance, Standard deviation; Standard error of mean, Null hypothesis, Level of significance and Probability; Regression and correlation.

Unit-III

Student's t-test, Fisher's t-test, Chi-square test, Analysis of Variance (ANOVA), ANCOVA.  
Introduction and Application of Statistical Softwares

Recommended Books:

- A Text book of Biostatistics, by A.K.Sharma, Discovery publishing house
- Introduction to Biostatistics, By Dr. Pranab Kumar Banerjee, S. Chand Publishers
- Research Methodology: Methods and Techniques Book by C. R. Kothari
- Dutta N.K. Fundamentals of Bio-Statistics. 2002; Kanishka Publishers, New Delhi.
- Gupta S.P. Statistical Methods. 2004; S. Chand & Sons, New Delhi
- Ruud H. Koning and James H. Albert ( 2008) Statistical thinking in sports. Chapman & Hall/CRC

**MSSP 206**

**Elective II**

**Credit 3**

**Kinanthropometry in Sports**

Unit-I

Introduction, scope and general consideration, i.e. Application of anthropometric data in sports, Body proportions and indices, Sports specific body proportions and indices, Body mass index and its importance in sports'

Unit-II

Anthropometric Measurements and Procedures, Equipment for anthropometric measurements, Gross Body Measurements and procedures, Length of Body Parts, Measurements and procedures, Diameters of Body Parts, Measurements and procedures, Circumferences of Body Parts, Measurements and procedures, Skinfold Thickness, Measurements and procedures.

Unit-III

Physiological Maturation: Decimal Age and concept of Physiological maturity in sports. Assessment of skeletal maturity of athletes, Body Composition: Anthropometric determination, Importance in sports and various methods to estimate body composition, Somatotyping: Introduction, Definition of Somatotyping and Classification

Recommended Books:

- Sports Anthropometry by H.S. Sodhi, ANOVA Publication.
- Physique and Selection of Sportsmen by H.S. Sodhi and L.S. Sidhu.
- Kinanthropometry by S.P. Singh and P. Malhotra, Luna Publication, Patiala.
- Kinanthropometry by Roger Eston and Thomas Reilly, E & F.N. SPON, London.
- Skeletal Maturity by S.P. Singh, L.S. Sidhu, and J. Singh, Human Biology Publication Society, Punjabi University, Patiala.
- Genetic and Anthropological Studies of Olympic Athletes by De Garray, Louis Levine & Cater, Academic Press, London.

**Health Fitness and Wellness**

Unit-I

Introduction to Health: Concept of health, Lifestyle and Disease, Ageing

## Unit-II

Physical Activities & Fitness: Concept to Fitness, Exercise and its Principles, Health Education Recreation & Dance

## Unit-III

Healthy Life Style Approach: Concept of Wellness, Wellbeing, Stress Management

### Recommended Books:

- Fitness and Wellness: Warner W. K Hoeger and Sharvon A. Hoeger
- Fitness & Wellness Concepts": Charles B. Corbina & Ruth Lindsey
- Lifetime Fitness & Wellness - A personal choice": Melvin H. Williams
- Oxford Textbook of Public Health, Helen Liepman.
- Sunderlal, Aadarsh, Pankaj, 2007, Textbook of Community Medicine, CBS Publishers & Distributors.
- Kirch, Wilhelm, 2008, Encyclopedia of Public Health, Volume 1 & 2, Kluwer Academic Publishers.
- Mary -Jane Schneider and Henrey Schneider, 2006 (2nd edition), Introduction to Public Health, Jones and Bartlett Publishers.

## Adaptations to Exercise and Training

### Unit-I

Cardiovascular Adaptations to Endurance and Strength Training, Hypertrophy and Cardiomyopathy in Young and Older Athletes, Heart rate training zone, Effects Of High Altitude, Sudden Cardiac Death and Exercise in Healthy Adults

### Unit-II

Respiratory System Adaptations to Endurance and Strength Training, Ventilatory response to exercise and its use in sports, Ventilatory threshold, Effects Of Exercise, response to steady- state exercise, Exercise-Induced Bronchoconstriction, Control of Breathing during exercise; The Respiratory System under Stress, respiratory systems adaptation to long-term exercise, Adaptations to systematic Training, Effects Of High Altitude

### Unit-III

Muscular Mechanisms in Aerobic Endurance Training; Neural Mechanisms in Aerobic Endurance Training, Muscle Molecular Mechanisms in Strength Training, Muscle Property Changes in Strength Training, Neural Mechanisms in Strength Training. Initial responses of the neuromuscular systems to exercise; Training Adaptation of the Neuromuscular System

### Recommended Books:

- Roy J. Shephard and Henry S. Miller, Jr. (1999) Exercise and the Heart in Health and Disease. Marcel Dekker
- Shephard, R.J. and Astrand, P.-O. (1992) Endurance in sport. Blackwell Science Ltd, USA
- McArdle, W.D., Katch, F.I., Katch, V.L. (2006) Essentials of Exercise Physiology. Lippincott Williams and Wilkins, USA.
- Victor F. Froelicher, Jonathan Myers (2006) Exercise and the heart. Elsevier Inc.
- Christopher B. Cooper and Thomas W. Storer (2004) Exercise testing and interpretation- A practical approach. Cambridge University Press.
- K. Wasserman, J Hansen, D Sue, W Stringer, B Whipp, eds (2004) Principles of Exercise Testing and Interpretation, 4th edn.. Lippincott Williams & Wilkins, Philadelphia, USA.
- Christopher Bell. Cardiovascular Physiology in Exercise and Sport . 1st Edition. 2008; Churchill Livingstone
- Michael G. Levitzky. Pulmonary Physiology, 8e. 2013; Lange. The McGraw-Hill Companies.
- Denise L. Smith and Bo Fernhall (2011) Advanced cardiovascular exercise physiology. Human Kinetics

### MSSP 207

### Laboratory III

Credit 3

- Techniques of taking various anthropometric measurements
- To define and illustrate various body landmarks
- Gross body measurements: Body weight (Kg), Stature, sitting height, Height of interior superior Iliac spine, Subischial length.
- Diameters or Breadths (cms): Bicristal diameter (Shoulder Breadth), Transverse chest diameter, Anteroposterior chest diameter, Femur bicondylar diameter (knee breadth), Humerus Bicondylar diameter (elbow Breadth)
- BMI Estimation with and without software
- Assess Energy and Nutrient intake from Diet using suitable Software
- Circumferences or Girths of body parts, Calf circumference, Thigh circumference, Waist circumference, Chest circumference
- Skinfold measurement and Body Fat Percentage calculations
- Training Program: Circuit Training Program, Interval Training Program, Ballistic Training Program, Fertlek Training Program

### MSSP 208

### Laboratory IV

Credit 3

- Aerobic Power Field Assessments: Cooper 1.5-Mile Run/Walk Test and 12-Minute Run/Walk Test, Rockport Fitness Walking Test

- High-Intensity Fitness Testing: Léger 20 m Shuttle Run Test, Yo-Yo Intermittent Recovery Test, 30-15 Intermittent Fitness Test, Sprinting Performance, Jumping Performance, Power Endurance, Anaerobic Cycling Power, Margaria-Kalamen Stair-Climb Test, BROCKPORT test system, AAHPER health related physical fitness test, Philips JCR test for General motor ability testing
- Tests for: Speed, Agility, Balance, Coordination, Reaction time, Flexibility
- Sports Skill Tests for: Soccer, Basketball, Hockey, Tennis

### **SEMESTER-III**

**MSSP 301**

**Physiology of Sports and Exercise**

**Credit 3**

#### Unit I

Introduction to Exercise and Sport Physiology, Structure and Function of Exercising Muscle, Fuel for Exercise: Bioenergetics and Muscle Metabolism

#### Unit II

The Cardiovascular System and Its Control, Electrophysiology of Heart, Introduction and interpretation of EKG/ECG, Pacemakers and its Rhythms

#### Unit III

The Respiratory System and Its Regulation, Cardiorespiratory Responses to Acute Exercise, Energy Expenditure and Fatigue

#### Recommended Books:

- Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
- Physiological Aspects of Sport Training and Performance With Web Resource- 2nd Edition, Human Kinetics By Jay Hoffman
- Exercise Physiology: Theory and Application to Fitness and Performance 10th Edition By Scott Powers and Edward Howley 2018.
- Exercise Physiology: Nutrition, Energy, and Human Performance 8th Edition by William D. McArdle, Frank I. Katch, Victor L. Katch
- Laboratory Manual for Exercise Physiology 2nd Edition. With Web Study Guide, Human Kinetics by G. Gregory Haff, Charles Dumke, 2018.
- A Textbook of Sports & Exercise Physiology by Dey Swapan Kumar, Jaypee Publishers
- Practical ECG for Exercise Science and Sports Medicine by Greg Whyte, Sanjay Sharma, Human Kinetics, 2010
- Physiological Tests for Elite Athletes 2nd Edition by Australian Institute of Sport Rebecca Tanner, Christopher Gore, 2012.
- ACSM's Guidelines for Exercise Testing and Prescription, 10th Edition by American College of Sports Medicine. Wolters Kluwer, 2017
- Recovery for Performance in Sport by Institut National du Sport de l'Expertise et de la Performance INSEP, Human Kinetics, Christophe Hausswirth, A. Mujika
- A Textbook of Sports & Exercise Physiology by Swapan kumar Dey, Jaypee brother, 2012.

**MSSP 302**

**Sports Ergonomics and Ergogenic Aids**

**Credit 3**

#### Unit-I

Introduction to Ergonomics; Ergonomical Risk Factors in Sports: Physical Properties of Human Structures, Health and Safety, Environmental Stress, Circadian Rhythms and Sports training; Ergonomics Models and Training Modes in Sport and Leisure, Competitive and Training Stress in Sport

#### Unit-II

Influence of Sports Equipment and Playing Surfaces, Ergonomics in Physical Activities, Clinical Aspects in Sports Ergonomics, Holistic and Nutritional Ergonomics Perspective

#### Unit-III

Ergogenic Aids in Sport, Researching Ergogenic Aids, Nutritional Ergogenic Aids, Anti-Doping Codes and Drug Testing, WADA and NADA, Prohibited Substances and Techniques

#### Recommended Books:

- Handbook of Ergonomics in Sport and Exercise Edited by Youlian Hong, Routledge 2013
- Ergonomics in Sport and Physical Activity Enhancing Performance and Improving Safety by Thomas Reilly, Human Kinetics, 2010.
- Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill
- A Textbook of Sports & Exercise Physiology by Dey Swapan Kumar, Jaypee Publishers



- IOC Manual of Sports Injuries: An Illustrated Guide to the Management of Injuries in Physical Activity by Roald Bahr, John Wiley & Sons, 2012
- Principles of Manual Therapy (A Manual Therapy Approach to Musculoskeletal Dysfunction) by Sebastian Deepak, Jaypee Publishers

**MSSP 303**

**Fitness Assessments and Exercise Prescription**

**Credit 3**

Unit-I

Physical Activity and Physiological Benefits, Health and Chronic Disease, Preliminary Health Screening and Risk Classification, Health-Related Physical Fitness, Testing and Interpretation, Interpretation of Clinical Exercise Test Results

Unit-II

Principles of Assessment, Prescription, and Exercise Program Adherence, Designing Resistance Training Programs, Exercise Prescription for Healthy Populations with Special Considerations and Environmental Considerations, Exercise Prescription for Patients with Cardiovascular and Cerebrovascular Disease

Unit-III

Exercise Prescription for Pulmonary Diseases, Neuromuscular Diseases, Diabetic Patients and Cancer Patients. Exercise Prescription for Pregnancy, Designing Weight Management and Body Composition Programs, Behavioral Theories and Strategies for Promoting Exercise

Recommended Books:

- ACSM's Guidelines for Exercise Testing and Prescription, Edition 10 by American College of Sports Medicine
- Advanced Fitness Assessment and Exercise Prescription 8th Edition by Ann Gibson, Dale Wagner, Vivian Heyward, Human Kinetics, 2018
- Principles of Exercise Prescription by V Bhutkar Milind, Jaypee Publishers
- Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
- Principles of Manual Therapy (A Manual Therapy Approach to Musculoskeletal Dysfunction) by Sebastian Deepak, Jaypee Publishers
- Physiological Tests for Elite Athletes 2nd Edition by Australian Institute of Sport Rebecca Tanner, Christopher Gore, 2012
- Measurement and Evaluation in Human Performance 5th Edition, Human Kinetics by James Morrow Jr., Dale Mood, James Disch, Minsoo Kang, 2016
- Laboratory Manual for Exercise Physiology 2nd Edition. With Web Study Guide, Human Kinetics by G. Gregory Haff, Charles Dumke, 2018.
- Therapeutic Exercise- Foundations & Techniques by Carolyn Kisner & Lynn Allen Colby, Jay Pee Brothers, New Delhi.
- Pollock's Textbook of Cardiovascular Disease and Rehabilitation by JL Durstine, HK

**MSSP 304**

**Neuroscience and Endocrinology in Sports**

**Credit 3**

Unit-I

Neural Control of Exercising Muscle, Hormonal Control during Exercise, Body Composition and Nutrition for Sport

Unit-II

Metabolic Effects of Exercise, Aging in Sport and Exercise, Sex Differences in Sport and Exercise

Unit-III

Obesity, Diabetes, and Physical Activity, Energy Balance and Weight Control, Exercise Training in the Normal Female: Effects of Low Energy Availability on Reproductive Functions, Cardiovascular Disease and Physical Activity

Recommended Books:

- Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
- Physiological Aspects of Sport Training and Performance With Web Resource- 2nd Edition, Human Kinetics By Jay Hoffman
- Exercise Physiology: Theory and Application to Fitness and Performance 10th Edition by Scott Powers and Edward Howley 2018.
- Exercise Physiology: Nutrition, Energy, and Human Performance 8th Edition by William D. McArdle, Frank I. Katch, Victor L. Katch
- Laboratory Manual for Exercise Physiology 2nd Edition. With Web Study Guide, Human Kinetics by G. Gregory Haff, Charles Dumke, 2018.

- Measurement and Evaluation in Human Performance 5th Edition, Human Kinetics by James Morrow Jr., Dale Mood, James Disch, Minsoo Kang, 2016.
- Physiological Tests for Elite Athletes 2nd Edition by Australian Institute of Sport Rebecca Tanner, Christopher Gore, 2012.
- ACSM's Guidelines for Exercise Testing and Prescription, 10th Edition by American College of Sports Medicine. Wolters Kluwer, 2017
- Endocrinology of Physical Activity and Sport, Second Edition Constantini, Naama, Hackney, Anthony C, 2013.
- Advanced Exercise Endocrinology, Human Kinetics by Katarina Borer, 2013.
- Handbook of Neuroscience and Psychophysiology by Roland Carlstedt.

**MSSP 305**

**Physiological Support for Athletes**

**Credit 3**

**Unit-I**

Physiology of the Performance, Environmental Influences on Performance, Physical Activity for Health and Fitness, Prescription of Exercise for Health and Fitness

**Unit-II**

Concept of Athlete Support, Athlete Development stages- Child, Pre-adolescent, Adolescent and Adult, Talent Identification, Steps of Sports talent Selection and counselling, Factors affecting Physical Growth and Development, Talent Development and Promotion

**Unit-III**

Athlete Monitoring and Analysis, Time-motion analysis in Sport; Analysis of Athlete Tracking Systems; GPS and accelerometer analysis of training and competition; monitoring and analysis of sport-specific physical and psychological variables; physiological monitoring; external sources of data relating to sports performance; reliability of data and sources. The use of performance indicators in performance analysis, Feedback based analysis of performance, Sport-specific notational systems; computerized notational analysis; notation in individual sports; notation in team sports; augmented feedback through video-based technologies

**Recommended Books:**

- Physiology of Sport and Exercise 6th Edition with Web Study Guide-Loose-Leaf Edition by W. Larry Kenney, Jack Wilmore, David Costill.
- Physiological Aspects of Sport Training and Performance With Web Resource- 2nd Edition, Human Kinetics By Jay Hoffman
- Exercise Physiology: Theory and Application to Fitness and Performance 10th Edition By Scott Powers and Edward Howley 2018.
- Talent Identification and Development in Sport International Perspectives Edited by Joseph Baker, Steve Copley, Jörg Schorer © 2012 – Routledge
- IOC Manual of Sports Injuries: An Illustrated Guide to the Management of Injuries in Physical Activity by Roald Bahr, John Wiley & Sons, 2012
- Peter O'Donoghue.( 2015 ) An introduction to performance analysis of sport.
- Carol-Lynne and Moore, Kaoru Yamamoto (2012) Beyond words movement observation and analysis. Routledge, NY.
- Routledge, NY Mike Hughes and Ian M. Franks.( 2015 ) Essentials of performance analysis in sport. Routledge, NY

**MSSP 306**

**Elective III**

**Credit 3**

**Drugs and Doping in Sports**

**Unit I**

The Evolution of Doping and Anti-doping in Sports, Prevalence of Doping in Sports, Doping Control in Sports, Inadvertent Use of Prohibited Substances in Sports, Role of Athlete Support Personnel in Preventing Deliberate and Inadvertent Use of Prohibited Substances, WADA Rules and Regulations Regarding Inadvertent Use of Prohibited Substances.

**Unit II**

Different Methods and Chemicals of Doping and Masking, Anabolic Androgenic Steroids, Stimulants, Glucocorticoids, Peptide-Protein Hormone, Beta-2 Agonists, Hormone and Metabolic Modulators, Narcotics, Beta Blockers, Manipulation of Blood and Blood Components, Chemical and Physical Manipulations, Gene Doping, Diuretics and Masking

**Unit III**

Substances and Methods Permitted in Sports, Sport Supplements and Herbal Preparations, Evolving Issues Concerning Drug Use in Sports, Athletic Testing, Analytical Procedures and Adverse Analytical Findings, The Future of Performance Enhancing Substances in Sports, Anti-doping Movement

#### Recommended Books:

- Anthony C Hackey (2017) Doping, Performance-Enhancing Drugs, and Hormones in Sports ISBN:978-0-12-813442-9
- David R. Mottram, Neil Chester (2018) Drugs in Sports, Routledge, ISBN:1351838989
- Portefield, Jason (2008) Doping: athletes and drugs, Rosenn Publishing, New York, ISBN:1-4042-1917-5

### **Sports Genetics and Performance**

#### Unit I

Basic Genetic Concepts, Mendelian inheritance, population genetics, Human chromosome Karyotype, Chromosome Disorders, Genome Structure and Genetic Mapping, Mitochondrial Inheritance, The Genetic Code and Genetic Alterations, DNA Injuries and Repair, Monogenic and Polygenetic Diseases, Molecular Diagnostics

#### Unit II

Ethics of Genetic Testing and Research in Sport, Current Challenges and Directions to the Future, Genetic Modifications in Sports, Ethical Considerations of Genetic Manipulation in Sport, Gene Therapy and Gene Doping

#### Unit III

Connecting Sports and Genetics, The Genetics of Sports Injuries and Athletic Performance, Genetic Contributors To Hypertrophic Cardiomyopathy, Chronic Traumatic Encephalopathy, Different Classes of Performance Enhancing Genetic Variants

#### Recommended Books:

- Bruce R. Korf and Mira B Irons (2012) Human Genetics and Genomics, WILEY-BLACKWELL
- Manu L Kothari, Lopa A Mehta, Sadhana S roychoudhury, (2009) Principles of Genetics, Universities Press
- Ricki Lewis (2017) Human Genetics the basics, Routledge, ISBN 978-1-138-66801-0
- Michael Posthum and Malcolm Collins (2016) Genetics and Sports, Karger Publisher
- Elaine A. Ostrander, Heather J. Huson, and Gary K. Ostrander Genetics of Athletic Performance (2009) Annu. Rev. Genomics Hum. Genet. 2009.10:407–29
- Lisa M. Guth and Stephen M. Roth (2013) Genetic influence on athletic performance, Curr Opin Pediatr. 2013 December; 25(6): 653–658.
- Nicola Mafulli et al (2013) the genetics of sports injuries and athletic performance. Muscles, Ligaments and Tendons Journal, 3 (3): 173-189

### **Exercise Immunology**

#### Unit I

Immunological system and exercise: Exercise and innate and humoral immunity, Exercise induced change in Ig and antibody, exercise and cytokines.

#### Unit II

Sex Differences in Immune Function after Aerobic Exercise, Sex differences in immune variables and respiratory infection, Killer cell immunoglobulin-like receptors and exercise, Anti-inflammatory influence of exercise training- Physical activity, fitness, and chronic inflammation, C-Reactive Protein (CRP)

#### Unit III

Cytokines, Free radicals, Antioxidants, Effect of exercise on immunity, Physical activity – A stimulator and an inhibitor to the immune system, Exercise and upper respiratory tract infection, Infection and exercise performance, Exercise and HIV infection, Exercise and Cancer, Exercise aging and immunity, Maintaining immune health, Importance of exercise immunology in health promotion.

#### Recommended Books:

- Michael Gleeson, Nicolette Bishop, and Neil Walsh.(Eds) (2013) Exercise immunology. Routledge
- Warren Levinson (2016) Review of Medical Microbiology and Immunology. LANGE, Mc Graw Hill

**MSSP 307**

**Laboratory V**

**Credit 2**

- Blood Pressure Measurements: Effects of Body Position, Dynamic Exercise and Isometric Contractions on BP
- Resting Metabolic Rate Determinations: Predicting and Measuring RMR
- Determination of VO<sub>2</sub>max by direct and indirect method.
- Assessment of Peak lactate, lactate tolerance, lactate clearance.
- Determination of anaerobic threshold.

- Assessment of EMG and ECG.
- Oxygen Deficit and EPOC Evaluations
- Submaximal Exercise Testing: Submaximal Bench Step Test, Submaximal Treadmill Test, Submaximal Cycle Ergometer Test
- Pulmonary Function Testing: Lung Volumes and Capacities, Pulmonary Function

**MSSP 308**

**Laboratory VI**

**Credit 2**

- MMT for Major Muscle Groups of the body
- Use of Body Composition Software
- Use of Fitness Related Software
- Exercise Prescription and Counselling for Weight Management
- Demonstration of ROM Exercises and Prescription
- Measurement of heart rate and blood pressure during and after exercise.(each student is expected to practice measurement on 50 volunteers and determine intra experimenter and inter-experimenter variation)
- Cardio-pulmonary resuscitation practice on Human Mannequin
- Aerobic power measurement using Queens' college test, Astrand-Rhyming test.
- Tests for anaerobic power (Wingate Test)

**SEMESTER-IV**

**MSSP 401**

**Research Methodology**

**Credit 3**

**Unit-I**

Introduction to Research in Physical Activity, Developing the Problem and Using the Literature, Presenting the Problem, Formulating the Method, Ethical Issues in Research and Scholarship

**Unit-II**

Types of Research: Socio Historical Process in Sport Studies, Philosophical Research in Physical Activity, Research Synthesis (Meta-Analysis), Surveys, Other Descriptive Research Methods, Physical Activity Epidemiology Research, Experimental and Quasi-Experimental Research, Qualitative Research, Mixed-Methods Research

**Unit-III**

Writing the Research Report: Completing the Research Process, Ways of Reporting Research

Introduction to review of literature, Evaluation of scientific literature; organizing literature – strategies, use of software; Meta-analysis, Writing review – structuring the review, quoting/paraphrasing, the citation referencing system

**Recommended Books:**

- Research Methodology: Methods and Techniques by C. R. Kothari
- ICMR. Ethical Guidelines for Biomedical Research on Human Subjects. 2006; ICMR, New Delhi.
- Research Methods in Physical Activity- 7th Edition By Jerry Thomas, Jack Nelson, Stephen Silverman, Human Kinetics
- Research Methods in Sport by Mark F Smith
- Research Methods for Sports Performance Analysis By Peter O' Donoghue
- Research Methods in Physical Education and Youth Sport 1st Edition by Kathleen Armour and Doune Macdonald
- Ridley, D. The Literature Review a step-by-step guide for students. 2012; Sage Publications Limited, New Delhi.

**OLD SCHEME**

**Integrated M. Sc. VII Semester**

Course Code	Title	Credit
MST 101	Probability Theory	4
MST 102	Distribution Theory	4
MST 103	Linear Algebra and Matrix theory	4
MST 104	Sampling Theory	4
MST 105	R: Statistical Programming Language	4
MST 106	Practicals	4

**Integrated M. Sc. VIII Semester**

Course Code	Title	Credit
MST 201	Estimation and Testing of Hypotheses	4
MST 202	Linear Models	4
MST 203	Stochastic Models	4
MST 206	Practicals	4
	Elective-1	4
	Elective-2	4

**Elective Courses**

Course Code	Title	Credit
MST 221	Design of Experiment -II	4
MST 222	Econometrics	4
MST 223	Financial Mathematics	4
MST 224	Economics for actuarial Science	4
MST 225	Machine Learning	4
MST 226	Modeling and Simulation (Mathematics, MTM 204)	4
MST 227	Mathematical Software and Tools (Mathematics, MTM 206)	4

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**NEW SCHEME**

**Integrated M. Sc. VII Semester**

Course Code	Title	Credit
IMST 411	Probability Theory	4
IMST 412	Distribution Theory	4
IMST 413	Linear Algebra and Real Analysis	4
IMST 414	Sampling Theory	4
IMST 415	Practicals	4

**Integrated M. Sc. VIII Semester**

Course Code	Title	Credit
IMST 421	Estimation and Testing of Hypotheses	4
IMST 422	Linear Models	4
IMST 423	Stochastic Models	4
IMST 424	Design of Experiments	4
IMST 425	Practicals	4

**Integrated M.Sc. IX Semester**

Course code	Title	Credit
MST 301	Decision Theory and Non Parametric Inference	4
MST 302	Time Series Analysis and Forecasting	4
MST 303	Multivariate Analysis	4
MST 306	Practicals	4
	Elective 1	4
	Elective 2	4

**Elective Courses**

Course Code	Title	Credit
MST 321	Statistical Quality Control	4
MST 322	Stochastic Finance	4
MST 323	Contingencies	4
MST 324	Principle and Practices of Insurance	4
MST 325	Data Mining	4

**Integrated M.Sc. IX Semester**

Course Code	Title	Credit
IMST 511	Time Series Analysis & Forecasting	4
IMST 512	Bayesian Inference	4
	Elective - 1	4
	Elective - 2	4
IMST 515	Practicals	4

**Elective Courses for IX-Semester**

Course Code	Title	Credit
IMST 531	Financial Mathematics	4
IMST 532	Modeling and Simulation	4
IMST 533	National Development Statistics	4
IMST 534	Population Studies	4
IMST 535	Principle and Practices of Insurance	4
IMST 536	Statistical Methods of Non-Life Insurance	4
IMST 537	Statistical Quality Control	4
IMST 538	Survival Analysis	4
IMST 539	Statistical Methods for Bio-Computing	4
IMST 5	Computer Intensive Statistical Methods	4

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**Integrated M. Sc. X Semester**

Paper code	Title	Credit
MST 401	National Development Statistics	4
MST 406	Practicals	4
MST 410	Project	4

**Integrated M. Sc. X Semester**

Course Code	Title	Credit
IMST 521	Multivariate Analysis	4
IMST 522	Practicals	4
	Elective-1	4
IMST 423	Project	8

**Elective Courses**

Paper Code	Title	Credit
MST 421	Survival Models and Analysis	4
MST 422	Advance Bayesian Inference	4
MST 423	Statistical Quality Management	4
MST 424	Statistical Methods for Non-life Insurance	4
MST 425	Life and Health Insurance	4
MST 426	Employee Benefit Plans	4
MST 427	Valuation and Loss Reserving	4
MST 428	Finance and Financial Reporting	4

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**Elective Courses for X-Semester**

Course Code	Title	Credit
IMST 541	Contingencies	4
IMST 542	Decision Theory and Non Parametric Inference	4
IMST 543	Econometrics	4
IMST 544	Extreme Value Theory	4
IMST 545	Life and Health Insurance	4
IMST 546	Statistical Methods for Reliability	4
IMST 547	Statistical Quality Management	4
IMST 548	Stochastic Finance	4
IMST 549	Valuation and Loss Reserving	4
IMST 550	Statistical Analysis of Clinical Trials	4

## UNIVERSITY GRANTS COMMISSION

## NOTIFICATION

New Delhi, the 18th July, 2018

**UGC REGULATIONS ON MINIMUM QUALIFICATIONS FOR APPOINTMENT OF TEACHERS AND OTHER ACADEMIC STAFF IN UNIVERSITIES AND COLLEGES AND MEASURES FOR THE MAINTENANCE OF STANDARDS IN HIGHER EDUCATION, 2018**

**No. F.1-2/2017(EC/PS).**—In exercise of the powers conferred under clause (e) and (g) of sub-section(I) of Section 26 read with Section 14 of the University Grants Commission Act, 1956 (3 of 1956), and in supersession of the “UGC Regulations on Minimum qualifications for Appointment of Teachers and other Academic Staff in Universities and Colleges and Measures for the Maintenance of Standards in Higher Education 2010” (Regulation No.F.3-1/2009 dated 30<sup>th</sup> June, 2010) together with all amendments made therein from time to time, the University Grants Commission, hereby, frames the following Regulations, namely:-

**1. Short title, application and commencement:**

- 1.1 These Regulations may be called the University Grants Commission (Minimum Qualifications for Appointment of Teachers and other Academic Staff in Universities and Colleges and other Measures for the Maintenance of Standards in Higher Education) Regulations, 2018.
- 1.2 These shall apply to every University established or incorporated by or under a Central Act, Provincial Act or a State Act, every Institution including a Constituent or an affiliated College recognized by the Commission, in consultation with the University concerned under Clause (i) of Section 2 of the University Grants Commission Act, 1956 and every Institution deemed to be a University under Section 3 of the said Act.
- 1.3 These shall come into force from the date of notification.
2. The Minimum Qualifications for appointment and other service conditions of University and College teachers, Librarians, and Directors of Physical Education and Sports as a measure for the maintenance of standards in higher education, shall be as provided in the Annexure to these Regulations.
3. If any University contravenes the provisions of these Regulations, the Commission after taking into consideration the cause, if any, shown by the University for such failure or contravention, may withhold from the University, the grants proposed to be made out of the Fund of the Commission.

**UGC REGULATIONS ON MINIMUM QUALIFICATIONS FOR APPOINTMENT OF TEACHERS AND OTHER ACADEMIC STAFF IN UNIVERSITIES AND COLLEGES AND OTHER MEASURES FOR THE MAINTENANCE OF STANDARDS IN HIGHER EDUCATION, 2018****Minimum qualifications for the posts of Senior Professor, Professors and Teachers, and other Academic Staff in Universities and Colleges and revision of pay scales and other Service Conditions pertaining to such posts.****1.0 Coverage**

These Regulations are issued for minimum qualifications for appointment and other service conditions of University and College teachers and cadres of Librarians, Directors of Physical Education and Sports for maintenance of standards in higher education and revision of pay-scales.

- 1.1 For the purposes of direct recruitment to teaching posts in disciplines relating to university and collegiate education, interalia in the fields of health, medicine, special education, agriculture, veterinary and allied fields, technical education, teacher education, norms or standards laid down by authorities established by the relevant Act of Parliament under article 246 of the Constitution for the purpose of co-ordination and determination of standards in institutions for higher education or research and scientific and technical institutions, shall prevail
  - i. Provided that where no such norms and standards have been laid down by any regulatory authority, UGC Regulations herein shall be applicable till such time as any norms or standards are prescribed by the appropriate regulatory authority.
  - ii. Provided further that for appointment to the post of Assistant Professor and equivalent positions pertaining to disciplines in which the National Eligibility Test (NET), conducted by the University Grants Commission or Council of Scientific and Industrial Research as the case may be, or State level



Eligibility Test (SLET) or the State Eligibility Test (SET), conducted by bodies accredited by the UGC for the said purpose, qualifying in NET/SLET/SET shall be an additional requirement.

- 1.2** Every university or institution deemed to be University, as the case may be, shall as soon as may be, but not later than within six months of the coming into force of these Regulations, take effective steps for the amendment of the statutes, ordinances or other statutory provisions governing it, so as to bring the same in accordance with these Regulations.

**2.0 Pay Scales, Pay Fixation, and Age of Superannuation**

**Pay scales as notified by the Government of India from time to time will be adopted by the University Grants Commission.**

- 2.1** Subject to the availability of vacant positions and fitness, teachers such as Assistant Professor, Associate Professor, Professor and Senior Professor only, may be re-employed on contract appointment beyond the age of superannuation, as applicable to the concerned University, college and Institution, up to the age of seventy years.

*Provided* further that all such re-employment shall be strictly in accordance with the guidelines prescribed by the UGC, from time to time.

- 2.2 The date of implementation of the revision of pay shall be 1<sup>st</sup> January, 2016.**

**3.0 Recruitment and Qualifications**

- 3.1** The direct recruitment to the posts of Assistant Professor, Associate Professor and Professor in the Universities and Colleges, and Senior Professor in the Universities, shall be on the basis of merit through an all-India advertisement, followed by selection by a duly-constituted Selection Committee as per the provisions made under these Regulations. These provisions shall be incorporated in the Statutes/Ordinances of the university concerned. The composition of such a committee shall be as specified in these Regulations.

- 3.2** The minimum qualifications required for the post of Assistant Professor, Associate Professor, Professor, Senior Professor, Principal, Assistant Librarian, Deputy Librarian, Librarian, Assistant Director of Physical Education and Sports, Deputy Director of Physical Education and Sports and Director of Physical Education and Sports, shall be as specified by the UGC in these Regulations.

**3.3**

- I.** The National Eligibility Test (NET) or an accredited test (State Level Eligibility Test SLET/SET) shall remain the minimum eligibility for appointment of Assistant Professor and equivalent positions wherever provided in these Regulations. Further, SLET/SET shall be valid as the minimum eligibility for direct recruitment to Universities/Colleges/Institutions in the respective state only:

*Provided* that candidates who have been awarded a Ph.D. Degree in accordance with the University Grants Commission (Minimum Standards and Procedure for Award of M.Phil./Ph.D. Degree) Regulation, 2009, or the University Grants Commission (Minimum Standards and Procedure for Award of M.Phil./Ph.D. Degree) Regulation, 2016, and their subsequent amendments from time to time, as the case may be, shall be exempted from the requirement of the minimum eligibility condition of NET/SLET/SET for recruitment and appointment of Assistant Professor or any equivalent position in any University, College or Institution.

*Provided* further that the award of degree to candidates registered for the M.Phil/Ph.D. programme prior to July 11, 2009, shall be governed by the provisions of the then existing Ordinances / Bye-laws / Regulations of the Institutions awarding the degree. All such Ph.D. candidates shall be exempted from the requirement of NET/SLET/SET for recruitment and appointment of Assistant Professor or equivalent positions in Universities/Colleges/Institutions subject to the fulfillment of the following conditions:

- a) The Ph.D. degree of the candidate has been awarded in regular mode only;
- b) The Ph.D. thesis has been awarded by at least two external examiners;
- c) An open Ph.D. viva voce of the candidate has been conducted;
- d) The candidate has published two research papers from his/her Ph.D. work out of which at least one is in a refereed journal;
- e) The candidate has presented at least two papers, based on his/her Ph.D. work in conferences/seminars sponsored/funded/supported by the UGC/ ICSSR/CSIR or any similar agency.

*The fulfilment of these conditions is to be certified by the Registrar or the Dean (Academic Affairs) of the University concerned.*

- II.** The clearing of NET/SLET/SET shall not be required for candidates in such disciplines for which NET/SLET/SET has not been conducted.
- 3.4** A minimum of 55% marks (or an equivalent grade in a point-scale, wherever the grading system is followed) at the Master's level shall be the essential qualification for direct recruitment of teachers and other equivalent cadres at any level.
- I.** A relaxation of 5% shall be allowed at the Bachelor's as well as at the Master's level for the candidates belonging to Scheduled Caste/Scheduled Tribe/Other Backward Classes (OBC)(Non-creamy Layer)/Differently-abled ((a) Blindness and low vision; (b) Deaf and Hard of Hearing; (c) Locomotor disability including cerebral palsy, leprosy cured, dwarfism, acid-attack victims and muscular dystrophy; (d) Autism, intellectual disability, specific learning disability and mental illness; (e) Multiple disabilities from amongst persons under (a) to (d) including deaf-blindness) for the purpose of eligibility and assessing good academic record for direct recruitment. The eligibility marks of 55% marks (or an equivalent grade in a point scale wherever the grading system is followed) and the relaxation of 5% to the categories mentioned above are permissible, based only on the qualifying marks without including any grace mark procedure.
- 3.5.** A relaxation of 5% shall be provided, (from 55% to 50% of the marks) to the Ph.D. Degree holders who have obtained their Master's Degree prior to 19 September, 1991.
- 3.6** A relevant grade which is regarded as equivalent of 55%, wherever the grading system is followed by a recognized university, at the Master's level shall also be considered valid.
- 3.7** The Ph.D. Degree shall be a mandatory qualification for appointment and promotion to the post of Professor.
- 3.8** The Ph.D. Degree shall be a mandatory qualification for appointment and promotion to the post of Associate Professor.
- 3.9** The Ph.D. Degree shall be a mandatory qualification for promotion to the post of Assistant Professor (Selection Grade/Academic Level 12) in Universities.
- 3.10** The Ph.D. Degree shall be a mandatory qualification for direct recruitment to the post of Assistant Professor in Universities with effect from 01.07.2021.
- 3.11** The time taken by candidates to acquire M.Phil. and / or Ph.D. Degree shall not be considered as teaching/ research experience to be claimed for appointment to the teaching positions. Further the period of active service spent on pursuing Research Degree simultaneously with teaching assignment without taking any kind of leave, shall be counted as teaching experience for the purpose of direct recruitment/ promotion. Regular faculty members upto twenty per cent of the total faculty strength (excluding faculty on medical / maternity leave) shall be allowed by their respective institutions to take study leave for pursuing Ph.D. degree.
- 3.12 Qualifications:**
- No person shall be appointed to the post of University and College teacher, Librarian or Director of Physical Education and Sports, in any university or in any of institutions including constituent or affiliated colleges recognised under clause (f) of Section 2 of the University Grants commission Act, 1956 or in an institution deemed to be a University under Section 3 of the said Act if such person does not fulfil the requirements as to the qualifications for the appropriate post as provided in the Schedule 1 of these Regulations.
- 4.0 Direct Recruitment**
- 4.1 For the Disciplines of Arts, Commerce, Humanities, Education, Law, Social Sciences, Sciences, Languages, Library Science, Physical Education, and Journalism & Mass Communication.**
- I. Assistant Professor:**
- Eligibility (A or B) :**
- A.**
- i) A Master's degree with 55% marks (or an equivalent grade in a point-scale wherever the grading system is followed) in a concerned/relevant/allied subject from an Indian University, or an equivalent degree from an accredited foreign university.

- ii) Besides fulfilling the above qualifications, the candidate must have cleared the National Eligibility Test (NET) conducted by the UGC or the CSIR, or a similar test accredited by the UGC, like SLET/SET or who are or have been awarded a Ph. D. Degree in accordance with the University Grants Commission (Minimum Standards and Procedure for Award of M.Phil./Ph.D. Degree) Regulations, 2009 or 2016 and their amendments from time to time as the case may be exempted from NET/SLET/SET :

*Provided*, the candidates registered for the Ph.D. programme prior to July 11, 2009, shall be governed by the provisions of the then existing Ordinances/Bye-laws/Regulations of the Institution awarding the degree and such Ph.D. candidates shall be exempted from the requirement of NET/SLET/SET for recruitment and appointment of Assistant Professor or equivalent positions in Universities/Colleges/Institutions subject to the fulfillment of the following conditions :-

- a) The Ph.D. degree of the candidate has been awarded in a regular mode;
- b) The Ph.D. thesis has been evaluated by at least two external examiners;
- c) An open Ph.D. viva voce of the candidate has been conducted;
- d) The Candidate has published two research papers from his/her Ph.D. work, out of which at least one is in a refereed journal;
- e) The candidate has presented at least two papers based on his/her Ph.D work in conferences/seminars sponsored/funded/supported by the UGC / ICSSR/ CSIR or any similar agency.

*The fulfilment of these conditions is to be certified by the Registrar or the Dean (Academic Affairs) of the University concerned.*

Note: NET/SLET/SET shall also not be required for such Masters Programmes in disciplines for which NET/SLET/SET is not conducted by the UGC, CSIR or similar test accredited by the UGC, like SLET/SET.

**OR**

- B.** The Ph.D degree has been obtained from a foreign university/institution with a ranking among top 500 in the World University Ranking (at any time) by any one of the following: (i) Quacquarelli Symonds (QS) (ii) the Times Higher Education (THE) or (iii) the Academic Ranking of World Universities (ARWU) of the Shanghai Jiao Tong University (Shanghai).

*Note: The Academic score as specified in Appendix II (Table 3A) for Universities, and Appendix II (Table 3B) for Colleges, shall be considered for short-listing of the candidates for interview only, and the selections shall be based only on the performance in the interview.*

**II. Associate Professor:**

**Eligibility:**

- i) A good academic record, with a Ph.D. Degree in the concerned/allied/relevant disciplines.
- ii) A Master's Degree with at least 55% marks (or an equivalent grade in a point-scale, wherever the grading system is followed).
- iii) A minimum of eight years of experience of teaching and / or research in an academic/research position equivalent to that of Assistant Professor in a University, College or Accredited Research Institution/industry with a minimum of seven publications in the peer-reviewed or UGC-listed journals and a total research score of Seventy five (75) as per the criteria given in Appendix II, Table 2.

**III. Professor:**

**Eligibility (A or B) :**

**A.**

- i) An eminent scholar having a Ph.D. degree in the concerned/allied/relevant discipline, and published work of high quality, actively engaged in research with evidence of published work with, a minimum of 10 research publications in the peer-reviewed or UGC-listed journals and a total research score of 120 as per the criteria given in Appendix II, Table 2.

- ii) A minimum of ten years of teaching experience in university/college as Assistant Professor/Associate Professor/Professor, and / or research experience at equivalent level at the University/National Level Institutions with evidence of having successfully guided doctoral candidate.

**OR**

- B.** An outstanding professional, having a Ph.D. degree in the relevant/allied/applied disciplines, from any academic institutions (not included in A above) / industry, who has made significant contribution to the knowledge in the concerned/allied/relevant discipline, supported by documentary evidence provided he/she has ten years' experience.

#### **IV. Senior Professor in Universities**

Up to 10 percent of the existing sanctioned strength of Professors in the university may be appointed as Senior Professor in the universities, through direct recruitment.

##### **Eligibility:**

- i) An eminent scholar with good track record of high-quality research publications in Peer-reviewed or UGC-listed journals, significant research contribution to the discipline, and engaged in research supervision.
- ii) A minimum of ten years of teaching/research experience as Professor or an equivalent grade in a University, College or an institute of national level.
- iii) The selection shall be based on academic achievements, favourable review from three eminent subject experts who are not less than the rank of Senior Professor or a Professor of at least ten years experience.
- iv) The selection shall be based on ten best publications in the Peer-reviewed or UGC -listed journals and award of Ph.D degrees to at least two candidates under his/her supervision during the last 10 years and interaction with the Selection Committee constituted as per the UGC Regulations.

#### **V. College Principal and Professor (Professor's Grade)**

##### **A. Eligibility:**

- (i) Ph.D. degree
- (ii) Professor/Associate Professor with a total service/ experience of at least fifteen years of teaching/research in Universities, Colleges and other institutions of higher education.
- (iii) A minimum of 10 research publications in peer-reviewed or UGC-listed journals.
- (iv) A minimum of 110 Research Score as per Appendix II, Table 2

##### **B. Tenure**

- i) A College Principal shall be appointed for a period of five years, extendable for another term of five years on the basis of performance assessment by a Committee appointed by the University, constituted as per these regulations.
- ii) After the completion of his/her term as Principal, the incumbent shall join back his/her parent organization with the designation as Professor and in the grade of the Professor.

#### **VI. Vice Principal**

An existing senior faculty member may be designated as Vice-Principal by the Governing Body of the College on the recommendation of the Principal, for a tenure of two years, who can be assigned specific activities, in addition to his/her existing responsibilities. During the absence of the Principal, for any reason, the Vice Principal shall exercise the powers of the Principal.

#### **4.2. Music, Performing Arts, Visual Arts and Other Traditional Indian Art Forms like Sculpture, etc.**

##### **I. Assistant Professor:**

##### **Eligibility (A or B):**

##### **A.**

- i) Master's Degree with 55% marks (or an equivalent grade in a point scale wherever grading system is followed) in the relevant subject or an equivalent degree from an Indian/foreign University.

- ii) Besides fulfilling the above qualifications, the candidate must have cleared the National Eligibility Test (NET) conducted by the UGC, CSIR or similar test accredited by the UGC like SLET/SET or who are or have been awarded a Ph. D. Degree in accordance with the University Grants Commission (Minimum Standards and Procedure for Award of M.Phil./Ph.D. Degree) Regulations, 2009 or 2016 and their amendments from time to time as the case may be.

*Provided* further, candidates registered for the Ph.D. programme prior to July 11, 2009, shall be governed by the provisions of the then existing Ordinances / Bye-laws / Regulations of the Institutions awarding the degree and such Ph.D. candidates shall be exempted from the requirement of NET/SLET/SET for recruitment and appointment of Assistant Professor or equivalent positions in Universities/Colleges /Institutions subject to the fulfilment of the following conditions:

- a) Ph.D. degree has been awarded to the candidate in a regular mode
- b) The Ph.D. thesis has been evaluated by at least two external examiners;
- c) An open Ph.D. viva voce of the candidate had been conducted;
- d) candidate has published two research papers from his/her Ph.D. work, out of which, at least one is in a refereed journal;
- e) The candidate has presented at least two research papers based on his/her Ph.D. work in conferences/seminars supported/funded/sponsored by the UGC/AICTE/ICSSR or any other similar agency.

*Note 1: The fulfilment of these conditions is to be certified by the Registrar or the Dean (Academic Affair) of the University concerned.*

Note 2: The clearance of NET/SLET/SET shall also not be required for such Masters Programmes in disciplines for which NET/SLET/SET is not conducted by the UGC, CSIR or similar test accredited by the UGC (like SLET/SET).

**OR**

- B.** A traditional or a professional artist with highly commendable professional achievement in the subject concerned having a Bachelor's degree, who has:
- i) studied under a noted/reputed traditional Master(s)/Artist(s)
  - ii) Has been 'A' grade artist of AIR/Doordarshan;
  - iii) Has the ability to explain, with logical reasoning the subject concerned; and
  - iv) Has adequate knowledge to teach theory with illustrations in the discipline concerned.

**II. Associate Professor :**

**Eligibility (A or B):**

**A.**

- i) Good academic record, with a doctoral degree.
- ii) Performing ability of a high professional standard.
- iii) Eight year's experience of teaching in a University or College and / or of research in a University/national level institution, equal to that of Assistant Professor in a University/College.
- iv) Has made a significant contribution to knowledge in the subject concerned, as evidenced by quality publications.

**OR**

- B.** A traditional or a professional artist with highly-commendable professional achievement having Master's degree in the subject concerned, who has:

- i) been 'A'-grade artist of AIR/Doordarshan;
- ii) eight years' experience of outstanding performing achievement in the

- field of specialisation;
- iii) experience in designing of new courses and /or curricula;
- iv) participated in National level Seminars/Conferences/Concerts in reputed institutions' and
- v) ability to explain, with logical reasoning, the subject concerned and adequate knowledge to teach theory with illustrations in the said discipline.

### III. Professor :

#### Eligibility (A or B):

##### A.

- i) An eminent scholar having a doctoral degree
- ii) Have been actively engaged in research with at least ten years of experience in teaching in University/College and / or research at the University/National level institutions
- iii) Minimum of 6 research publications in the peer-reviewed or UGC-listed journals,
- iv) Has a total research score of 120, as per Appendix II, Table 2.

#### OR

##### B. A traditional or a professional artist, with highly-commendable professional achievement, in the subject concerned,

- i) Having Masters degree, in the relevant subject
- ii) Has been 'A'-grade artist of AIR/Doordarshan
- iii) Has Ten years of outstanding performing achievements in the field of specialisation
- iv) Has made significant contributions in the field of specialisations and ability to guide research;
- v) Has participated in National/International Seminars/Conferences/ Workshops/Concerts and/ or recipient of National/International Awards/Fellowships;
- vi) Has the ability to explain with logical reasoning the subject concerned, and
- vii) Has adequate knowledge to teach theory with illustrations in the said discipline.

### 4.3 Drama Discipline:

#### I. Assistant Professor

##### Eligibility (A or B)

##### A.

- i) Master's Degree with 55% marks (or an equivalent grade in a point scale wherever grading system is followed) in the relevant subject or an equivalent degree from an Indian/foreign University.
- ii) Besides fulfilling the above qualifications, the candidate must have cleared the National Eligibility Test (NET) conducted by the UGC or the CSIR or a similar test accredited by the UGC, like SLET/SET or who are or have been awarded a Ph.D. Degree in accordance with the University Grants Commission (Minimum Standards and Procedure for Award of M.Phil./Ph.D. Degree) Regulations, 2009, or 2016, and their amendments from time to time as the case may be.

*Provided* further, candidates registered for the Ph.D. programme, prior to July 11, 2009, shall be governed by the provisions of the then existing Ordinances/Bye-laws/Regulations of the Institutions awarding the degree and such Ph.D. candidates shall be exempted from the requirement of NET/SLET/SET for recruitment and appointment of Assistant Professor or equivalent positions in Universities/Colleges/Institutions, subject to the fulfillment of the following conditions:-

- a) The Ph.D. degree of the candidate has been awarded in the regular mode;
- b) The Ph.D. thesis has been evaluated by at least two external examiners;
- c) An open Ph.D. viva voce of the candidate has been conducted;
- d) The candidate has published two research papers from his/her Ph.D. work out of which at least one must be in a refereed journal;
- e) The candidate has presented at least two research papers based on his/her Ph.D. work in conferences/seminars supported/funded/ sponsored by the UGC/CSIR/ICSSR or any other similar agency.

Note:

1. *The fulfilment of these conditions is to be certified by the Registrar or the Dean (Academic Affairs) of the University concerned.*
2. NET/SLET/SET shall also not be required for such Masters Programmes in disciplines for which the NET/SLET/SET is not conducted by the UGC, CSIR or similar test accredited by the UGC, like SLET/SET.

**OR**

- B.** A traditional or a professional artist with highly commendable professional achievement in the concerned subject, who has:
- i) been a professional artist with three years' Bachelor degree/Post Graduate Diploma, with 55% marks (or an equivalent grade in a point-scale wherever the grading system is followed), from the National School of Drama, or any other such Institution in India or abroad;
  - ii) five years of regular acclaimed performance at regional/ national/ international stage, supported by evidence; and
  - iii) the ability to explain, with logical reasoning, the subject concerned and adequate knowledge to teach theory with illustrations in the discipline concerned.

**II. Associate Professor:**

**Eligibility (A or B) :**

**A.**

- i) A good academic record, having a Ph.D degree with performing ability of high professional standard as certified by an Expert Committee constituted by the University concerned for the said purpose.
- ii) Eight years experience of teaching in a University/College and/ or research in a University/national-level institutions equal to that of Assistant Professor in a University/College.
- iii) A significant contribution to knowledge in the subject concerned, as evidenced by the quality publications.

**OR**

- B.** A traditional or a professional artist, having highly commendable professional achievement in the subject concerned, has a Master's degree, who has:
- i) Been recognised artist of Stage/ Radio/TV;
  - ii) Eight years of outstanding performance in the field of specialisation;
  - iii) Experience of designing new courses and /or curricula;
  - iv) Participated in Seminars/Conferences in reputed institutions; and
  - v) The ability to explain with logical reasoning the subject concerned and adequate knowledge to teach theory with illustrations in the said discipline.

**III. Professor****Eligibility (A or B) :**

- A.** An eminent scholar, having a doctoral degree, actively engaged in research with ten years of experience in teaching and /or research at a University/National-level institution, including experience of guiding research at the doctoral level, with outstanding performing achievement in the field of specialisation, with a minimum of 6 research publications in the peer-reviewed or UGC listed journals, and a total research score of 120, as per Appendix II, Table 2.

**OR**

- B.** A traditional and a professional artist, having highly commendable professional achievement in the subject concerned, who has:
- i) Master's degree, in the relevant subject::
  - ii) Ten years of outstanding performing achievements in the field of specialisation;
  - iii) Made significant contribution in the field of specialisation
  - iv) Guided research;
  - v) Participated in National/International Seminars/Conferences/Workshops and/or recipient of National/International Awards/Fellowships;
  - vi) Ability to explain with logical reasoning the subject concerned;
  - vii) Adequate knowledge to teach theory, with illustrations in the said discipline.

**4.4 Yoga Discipline****I. Assistant Professor :****Eligibility (A or B) :**

- A.** Good academic record, with at least 55% marks (or an equivalent grade in a point-scale wherever the grading system is followed) at the Master's degree in Yoga or any other relevant subject, or an equivalent degree from an Indian/foreign University.

Besides fulfilling the above qualifications, the candidate must have cleared the National Eligibility Test (NET) conducted by the UGC, CSIR or a similar test accredited by the UGC like SLET/SET or who are or have been awarded a Ph. D. Degree in accordance with the University Grants Commission (Minimum Standards and Procedure for Award of M.Phil./Ph.D. Degree) Regulations, 2009 or 2016 and their amendments from time to time.

**OR**

- B.** A Master's degree in any discipline with at least 55% marks (or an equivalent grade in a point-scale wherever the grading system is followed) and a Ph.D. Degree in Yoga\* in accordance with the University Grants Commission (Minimum Standards and Procedure for Award of M.Phil./Ph.D. Degree) Regulations, 2009 or 2016 and their amendments from time to time as the case may be.

\*Note: Considering the paucity of teachers in the newly-emerging field of Yoga, this alternative has been provided and shall be valid only for five years from the date of notification of these Regulations

**II. ASSOCIATE PROFESSOR**

- i) A good academic record, with a Ph.D. degree in the subject concerned or in a relevant discipline.
- ii) A Master's degree with at least 55% marks (or an equivalent grade in a point-scale, wherever the grading system is followed).
- iii) A minimum of eight years' experience of teaching and/ or research in an academic/research position equivalent to that of Assistant Professor in a University, College or Accredited Research Institutions/Industry with evidence of published work and a minimum of 7 publications as books and / or research/policy papers in peer-reviewed or UGC listed journals and a total research score of at least Seventy five (75), as per the criteria given in Appendix II, Table 2.



**III. PROFESSOR****Eligibility (A or B) :****A.**

- i) An eminent scholar with Ph. D. degree in the subject concerned or in an allied/relevant subject and published work of high quality, actively engaged in research with evidence of published work, with a minimum of 10 publications as books and/ or research/policy papers in the peer-reviewed or UGC listed journals and a total research score of at least 120 as per the criteria given in Appendix II, Table 2.
- ii) A minimum of ten years of teaching experience in a University/College and / or experience in research at the university/National level institution/Industries, with evidence of having successfully guided doctoral candidate.

**Or**

- B.** An outstanding professional, with established reputation in the relevant field, who has made significant contribution to the knowledge in the concerned/allied/relevant discipline, to be substantiated by credentials.

**4.5 QUALIFICATIONS, EXPERIENCE AND OTHER ELIGIBILITY REQUIREMENTS FOR APPOINTMENT OF OCCUPATIONAL THERAPY TEACHERS****I. ASSISTANT PROFESSOR:**

A Bachelor's Degree in Occupational Therapy (B.O.T./B. Th.O./B.O.Th.), Masters in Occupational Therapy (M.O.Th/M.Th.O./ M.Sc. O.T/M.OT.), with at least 55% marks (or an equivalent grade in a point-scale wherever the grading system is followed), from a recognised University

**II. ASSOCIATE PROFESSOR:**

- i) Essential : A Master's Degree in Occupational Therapy (M.O.T./M.O.Th./M.Sc. O.T.), with eight years' experience as Assistant Professor.
- ii) Desirable: Higher Qualification, including a Ph. D. degree in any discipline of occupational therapy recognised by the UGC, and published work of high standard in peer-reviewed or UGC- listed journals.

**III. PROFESSOR:**

- i) Essential : Master's Degree in Occupational Therapy (M.O.T./ M.O.Th./M.Th.O./M.Sc. O.T.), with Ten years of total experience in Occupational Therapy.
- ii) Desirable: Higher Qualification, such as Ph.D. degree in any discipline of occupational therapy recognised by the UGC, and published work of high standard in peer- reviewed or UGC- listed journals.

**IV. PRINCIPAL / DIRECTOR / DEAN:**

Essential: Master's Degree in Occupational Therapy (M.O.T./M.Th.O./M.Oth./M.Sc. O.T.), with fifteen years' experience, which shall include five years' experience as Professor (Occupational Therapy).

Note:

- (i) The senior-most Professor in the institution shall be designated as the Principal / Director / Dean.
- (ii) Desirable: Higher qualification, like a Ph. D. degree in any discipline of occupational therapy recognized by the UGC and published work of high standard in peer reviewed or UGC listed journals.

**4.6 QUALIFICATIONS, EXPERIENCE AND OTHER ELIGIBILITY REQUIREMENTS FOR APPOINTMENT OF PHYSIOTHERAPY TEACHERS****I. ASSISTANT PROFESSOR:**

Bachelor's Degree in Physiotherapy (B.P./T./B. Th./P./B.P.Th.), Master's Degree in Physiotherapy (M.&P.Th/M.Th.P./M.Sc. P.T/M.P.T.) with at least 55% marks (or an equivalent grade in a point scale wherever the grading system is followed) from a recognized University.

**II. ASSOCIATE PROFESSOR:**

- i) Essential: A Master's Degree in Physiotherapy (M.P.T./M.P.Th./M.Th.P/M.Sc. P.T.) with eight years' experience as Assistant Professor.

- ii) Desirable: Higher Qualification, such as Ph.D. degree in any discipline of Physiotherapy recognised by the U.G.C, and published work of high standard in peer-reviewed or UGC - listed journals.

### III. PROFESSOR:

Essential: Master's Degree in Physiotherapy (M.P.T. / M.P.Th./M.Th.P./M.Sc. P.T.), with ten years experience.

Desirable:

- (i) Higher Qualification like Ph. D. in any subject of Physiotherapy recognised by U.G.C, and  
(ii) Published work of high standard in peer -reviewed or UGC- listed journals.

### IV. PRINCIPAL / DIRECTOR / DEAN:

Essential: Master's Degree in Physiotherapy (M.P.T./M.Th.P./M.Pth./M.Sc. P.T.) with fifteen years total experience, including five years experience as Professor (Physiotherapy).

Note:

- (i) Senior-most Professor shall be designated as the Principal / Director / Dean.  
(ii) Desirable: Higher qualification like Ph.D. in any subject of Physiotherapy recognized by the UGC and published work of high standard in peer reviewed or UGC listed journals.

## 4.7 MINIMUM QUALIFICATIONS FOR DIRECT RECRUITMENT TO THE POSTS OF UNIVESRITY ASSISTANT LIBRARIAN / COLLEGE LIBRARIAN, UNIVERSITY DEPUTY LIBRARIAN AND UNIVERSITY LIBRARIAN

### I. UNIVERSITY ASSISTANT LIBRARIAN / COLLEGE LIBRARIAN

- i) A Master's Degree in Library Science, Information Science or Documentation Science or an equivalent professional degree, with at least 55% marks (or an equivalent grade in a point –scale, wherever the grading system is followed)  
ii) A consistently good academic record, with knowledge of computerization of a library.  
iii) Besides fulfilling the above qualifications, the candidate must have cleared the National Eligibility Test (NET) conducted by the UGC, CSIR or similar test accredited by the UGC like SLET/SET or who are or have been awarded a Ph.D. Degree in accordance with the University Grants Commission (Minimum Standards and Procedure for Award of M.Phil./Ph.D. Degree) Regulations, 2009 or 2016 and their amendments from time to time as the case may be:

*Provided* that the, candidates registered for the Ph.D. degree prior to July 11, 2009, shall be governed by the provisions of the then existing Ordinances / Bye-laws / Regulations of the Institution awarding the degree, and such Ph.D. candidates shall be exempted from the requirement of NET/SLET/SET for recruitment and appointment of Assistant Professor or equivalent positions in Universities/Colleges / Institutions subject to the fulfillment of the following conditions:-

- a) The Ph.D. degree of the candidate has been awarded in the regular mode  
b) The Ph.D. thesis has been evaluated by at least two external examiners;  
c) Open Ph.D. viva voce of the candidate has been conducted;  
d) The candidate has published two research papers from his/her Ph.D. work out of which at least one is in a refereed journal;  
e) The candidate has presented at least two papers based on his/her Ph.D work in conferences/seminars sponsored /funded/supported by the UGC/ICSSR/CSIR or any similar agency.

Note:

- (i) *The fulfilment of these conditions is to be certified by the Registrar or the Dean (Academic Affairs) of the University concerned.*  
(ii) NET/SLET/SET shall also not be required for candidates in such Master's Programmes for which NET/SLET/SET is not conducted by the UGC, CSIR or similar test accredited by the UGC like SLET/SET.

**II. UNIVERSITY DEPUTY LIBRARIAN**

- i) A Master's Degree in library science/information science/documentation science, with at least 55% marks or an equivalent grade in a point –scale, wherever grading system is followed.
- ii) Eight years experience as an Assistant University Librarian/College Librarian.
- iii) Evidence of innovative library services including integration of ICT in library.
- iv) A Ph.D. Degree in library science/ Information science / Documentation Science/Archives and manuscript keeping/computerization of library.

**III. UNIVERSITY LIBRARIAN**

- i) A Master's Degree in Library Science/Information Science/Documentation Science with at least 55% marks or an equivalent grade in a point -scale wherever the grading system is followed.
- ii) At least ten years as a Librarian at any level in University Library or ten years of teaching as Assistant/Associate Professor in Library Science or ten years' experience as a College Librarian.
- iii) Evidence of innovative library services, including the integration of ICT in a library.
- iv) A Ph.D. Degree in library science/information science/documentation /archives and manuscript-keeping.

**4.8 MINIMUM QUALIFICATIONS FOR THE POSTS OF ASSISTANT DIRECTORS OF PHYSICAL EDUCATION AND SPORTS, DEPUTY DIRECTOR OF PHYSICAL EDUCATION AND SPORTS AND DIRECTOR OF PHYSICAL EDUCATION AND SPORTS (DPES)****I. University Assistant Director of Physical Education and Sports / College Director of Physical Education and Sports****Eligibility (A or B) :****A.**

- i) A Master's Degree in Physical Education and Sports or Physical Education or Sports Science with 55% marks (or an equivalent grade in a point-scale, wherever the grading system is followed)
- ii) Record of having represented the university / college at the inter-university /inter-collegiate competitions or the State and/ or national championships.
- iii) Besides fulfilling the above qualifications, the candidate must have cleared the National Eligibility Test (NET), conducted by the UGC or CSIR, or a similar test accredited by the UGC, like SLET/SET, or who are or have been awarded a Ph.D. Degree in Physical Education or Physical Education and Sports or Sports Science, in accordance with the University Grants Commission (Minimum Standards and Procedure for Award of M.Phil./Ph.D. Degree) Regulations, 2009 or 2016 and their amendments from time to time, as the case may be:

*Provided that*, candidates registered for the Ph.D. degree prior to July 11, 2009, shall be governed by the provisions of the then existing Ordinances/ Bye-laws/Regulations of the Institutions awarding the degree and such Ph.D. degree holders shall be exempted from the requirement of NET/SLET/SET for recruitment and appointment of Assistant Professor or equivalent positions in Universities/Colleges / Institutions, subject to the fulfillment of the following conditions:-

- a) The Ph.D. degree of the candidate has been awarded in regular mode;
- b) The Ph.D. thesis has been evaluated by at least two external examiners;
- c) Open Ph.D. viva voce of the candidate has been conducted;
- d) The candidate has published two research papers from his/her Ph.D. work out of which at least one is in a refereed journal;
- e) The candidate has presented at least two research papers in conference/seminar, based on his/her Ph.D work.

*Note: The fulfilment of these conditions (a) to (e) is to be certified by the Registrar or the Dean (Academic Affairs) of the University concerned.*

- iv. NET/SLET/SET shall also not be required for such Masters Programmes in disciplines for which NET/SLET/SET is not conducted by the UGC, CSIR or similar test accredited by the UGC like SLET/SET.
- v. Passed the physical fitness test conducted in accordance with these Regulations.

OR

- B. An Asian game or commonwealth games medal winner who has a degree at least at Post-Graduation level.

## II. University Deputy Director of Physical Education and Sports

### Eligibility (A or B) :

#### A.

- i) A Ph.D. in Physical Education or Physical Education and Sports or Sports Science. Candidates from outside the university system, in addition, shall also possess at least 55% marks (or an equivalent grade in a point scale wherever grading system is followed) at the Master's Degree level by the university concerned.
- ii) Eight years experience as University Assistant DPES/College DPES.
- iii) Evidence of organizing competitions and conducting coaching camps of at least two weeks duration.
- iv) Evidence of having produced good performance of teams/athletes for competitions like state/national/inter-university/combined university, etc.
- v) Passed the physical fitness test in accordance with these Regulations.

OR

- B. An Olympic games/ world cup/ world Championship medal winner who has a degree at least at the Post-Graduation Level.

## III. University Director of Physical Education and Sports

- i) A Ph.D. in Physical Education or Physical Education and Sports or Sports Science.
- ii) Experience of at least ten years in Physical Education and Sports as University Assistant/Deputy DPES or ten years as College DPES or teaching for ten years in Physical Education and Sports or Sports Science as Assistant/Associate Professor.
- iii) Evidence of organising competitions and coaching camps of at least two weeks' duration.
- iv) Evidence of having produced good performance of teams/athletes for competitions like state/national/inter-university/combined university, etc.

## IV. Physical Fitness Test Norms

- (a) Subject to the provisions of these Regulations, all candidates who are required to undertake the physical fitness test are required to produce a medical certificate certifying that he/she is medically fit before undertaking such tests.
- (b) On the production of such certificate mentioned in sub-clause (a) above, the candidate would be required to undertake the physical fitness test in accordance with the following norms:

NORMS FOR MEN			
12 MINUTES RUN/WALK TEST			
Upto 30 Years	Upto 40 Years	Upto 45 Years	Upto 50 Years
1800 metres	1500 metres	1200 metres	800 metres

<b>NORMS FOR WOMEN</b>			
8 MINUTES RUN/WALK TEST			
Upto 30 Years	Upto 40 Years	Upto 45 Years	Upto 50 Years
1000 metres	800 metres	600 metres	400 metres

## **5.0 CONSTITUTION OF SELECTION COMMITTEES AND GUIDELINES ON SELECTION PROCEDURE:**

### **5.1 Selection Committee Composition**

#### **I. Assistant Professor in the University:**

- (a) The Selection Committee for the post of Assistant Professor in the University shall consist of the following persons :
- i) The Vice Chancellor or his/her nominee, who has at least ten years of experience as Professor, shall be the Chairperson of the Committee.
  - ii) An academician not below the rank of Professor to be nominated by the Visitor/Chancellor, wherever applicable.
  - iii) Three experts in the subject concerned nominated by the Vice Chancellor out of the panel of names approved by the relevant statutory body of the university concerned.
  - iv) Dean of the Faculty concerned, wherever applicable.
  - v) Head/Chairperson of the Department/School concerned.
  - vi) An academician representing SC/ST/OBC/Minority/Women/Differently-abled categories to be nominated by the Vice Chancellor, if any of the candidates from any of these categories is an applicant and if any of the above members of the selection committee does not belong to that category.
- (b) Four members, including two outside subject experts, shall constitute the quorum.

#### **II. Associate Professor in the University**

- (a) The Selection Committee for the post of Associate Professor in the University shall have the following composition:
- i) The Vice Chancellor or his/her nominee, who has at least ten years of experience as Professor, shall be the Chairperson of the Committee.
  - ii) An academician not below the rank of Professor to be nominated by the Visitor/Chancellor, wherever applicable.
  - iii) Three experts in the subject/field concerned nominated by the Vice-Chancellor, out of the panel of names approved by the relevant statutory body of the university.
  - iv) Dean of the faculty, wherever applicable.
  - v) Head/Chairperson of the Department/School.
  - vi) An academician representing SC/ST/OBC/ Minority / Women / Differently-abled categories, if any of candidates belonging to any of these categories is the applicant, to be nominated by the Vice Chancellor, if any of the above members of the selection committee does not belong to that category.
- (b) At least four members, including two outside subject experts, shall constitute the quorum

**III. Professor in the University**

- (a) The Selection Committee for the post of Professor in the University shall consist of the following persons :
- i) Vice-Chancellor who shall be the Chairperson of the Committee.
  - ii) An academician not below the rank of Professor to be nominated by the Visitor/Chancellor, wherever applicable.
  - iii) Three experts in the subject/field concerned to be nominated by the Vice-Chancellor out of the panel of names approved by the relevant statutory body of the university concerned.
  - iv) Dean of the faculty, wherever applicable.
  - v) Head/Chairperson of the Department/School.
  - vi) An academician belonging to the SC/ST/OBC/ Minority / Women / Differently-abled categories, if any of the candidates representing these categories is the applicant, to be nominated by the Vice-Chancellor, if any of the above members of the selection committee does not belong to that category.
- (b) At least four members, including two outside subject experts, shall constitute the quorum.

**IV. Senior Professor**

- (a) The Selection Committee for the post of Senior Professor in the University shall consist of the following persons:
- i) Vice Chancellor who shall be the Chairperson of the Committee.
  - ii) An academician not below the rank of Senior Professor/Professor with minimum ten years experience who is the nominee of the Visitor/Chancellor, wherever applicable.
  - iii) Three experts not below the rank of a Senior Professor/Professor with a minimum of ten years' experience in the subject/field concerned nominated by the Vice-Chancellor out of the panel of names approved by the relevant statutory body of the university.
  - iv) Dean (not below the rank of Senior Professor/Professor with minimum ten years experience) of the faculty, wherever applicable.
  - v) Head/Chairperson (not below the rank of Senior Professor/Professor with minimum ten years experience) or Senior-most Professor (not below the rank of Senior Professor/Professor, with a minimum of ten years' experience) of the Department/School.
  - vi) An academician (not below the rank of a Senior Professor/Professor with minimum ten years experience) representing SC/ST/OBC/ Minority / Women / Differently-abled categories, if any of candidates representing these categories is the applicant, to be nominated by the Vice Chancellor, if any of the above members of the selection committee do not belong to that category.
- (b) Four members, including two outside subject experts, shall constitute the quorum.

**V. Assistant Professor in Colleges, including Private and Constituent Colleges:**

- (a) The Selection Committee for the post of Assistant Professor in Colleges, including Private and constituent Colleges shall consist of the following persons:
- i) Chairperson of the Governing Body of the college or his/her nominee from amongst the members of the Governing body, who shall be the Chairperson of the Committee.
  - ii) The Principal of the College.
  - iii) Head of the Department/Teacher-in-charge of the subject concerned in the College.
  - iv) Two nominees of the Vice-Chancellor of the affiliating university, of whom one should be a subject-expert. In case of colleges notified/declared as a minority educational institution, two nominees of the Chairperson of the college from out of a panel of five names, preferably from the minority community, recommended by the Vice-Chancellor of the affiliating university, from the list of experts suggested by the relevant statutory body of the college, of whom one should be a subject-expert.

- v) Two subject-experts not connected with the college who shall be nominated by the Chairperson of the College governing body out of a panel of five names recommended by the Vice-Chancellor from the list of subject experts approved by the relevant statutory body of the university concerned. In case of colleges notified/declared as minority educational Institutions, two subject experts not connected with the University nominated by the Chairperson of the Governing Body of the College out of the panel of five names, preferably from the minority communities, recommended by the Vice-Chancellor from the list of subject experts approved by the relevant statutory body of the College.
- vi) An academician representing SC/ST/OBC/Minority/Women/Differently-abled categories, if any of candidates belonging to any of these categories is the applicant, to be nominated by the Vice-Chancellor, if any of the above members of the selection committee does not belong to that category.

(b) Five members, including two outside subject experts, shall constitute the quorum.

#### **VI. Associate Professor in Colleges, including Private and Constituent Colleges**

(a) The Selection Committee for the post of Associate Professor in Colleges including Private and Constituent Colleges, shall consist of the following persons:

- i) The Chairperson of the Governing Body or his/her nominee, from amongst the members of the Governing body, who shall be the Chairperson of the Selection Committee.
- ii) The Principal of the College.
- iii) The Head of the Department / Teacher-In charge of the concerned subject from the college.
- iv) Two University representatives nominated by the Vice-Chancellor, one of whom shall be the Dean of College Development Council or equivalent position in the University, and the other must be expert in the concerned subject. In case of Colleges notified/declared as minority educational institutions, two nominees of the Chairperson of the College from out of a panel of five names, preferably from minority communities, recommended by the Vice-Chancellor of the affiliating university from the list of experts suggested by the relevant statutory body of the college of whom one should be a subject expert.
- v) Two subject-experts not connected with the college to be nominated by the Chairperson of the governing body of the college out of a panel of five names recommended by the Vice Chancellor from the list of subject experts approved by the relevant statutory body of the university concerned. In case of colleges notified/declared as minority educational Institutions, two subject experts not connected with the University nominated by the Chairperson of the College Governing Body out of the panel of five names, preferably from minority communities, recommended by the Vice Chancellor from the list of subject experts approved by the relevant statutory body.
- vi) An academician belonging to the SC/ST/OBC/ Minority/Women/Differently-abled categories, if any of candidates belonging to these categories is the applicant, to be nominated by the Vice-Chancellor, if any of the above members of the selection committee does not belong to that category.

(b) The quorum for the meeting shall be five, including two subject experts.

#### **VII. Professor in Colleges, including Private and Constituent Colleges**

(a) The Selection Committee for the post of Professor in Colleges including Private and Constituent Colleges shall consist of the following persons:

- i) The Chairperson of the Governing Body or his/her nominee, from amongst the members of the Governing body, who shall be the Chairperson of the Selection Committee.
- ii) The Principal of the College.
- iii) The Head of the Department / Teacher-In charge of the concerned subject from the college not below the rank of Professor.
- iv) Two University representatives not below the rank of Professor nominated by the Vice-Chancellor, one of whom shall be the Dean of College Development Council or equivalent position in the University, and the other must be expert in the concerned subject. In case of Colleges notified/declared as minority

educational institutions, two nominees, not below the rank of Professor, of the Chairperson of the College from out of a panel of five names, preferably from minority communities, recommended by the Vice-Chancellor of the affiliating university from the list of experts suggested by the relevant statutory body of the college of whom one should be a subject expert.

- v) Two subject-experts not connected with the college to be nominated by the Chairperson of the governing body of the college out of a panel of five names recommended by the Vice Chancellor from the list of subject experts approved by the relevant statutory body of the university concerned. In case of colleges notified/declared as minority educational Institutions, two subject experts not connected with the University nominated by the Chairperson of the College Governing Body out of the panel of five names, preferably from minority communities, recommended by the Vice Chancellor from the list of subject experts approved by the relevant statutory body.
  - vi) An academician not below the rank of Professor belonging to the SC/ST/OBC/Minority/Women/Differently-abled categories, if any of candidates belonging to these categories is the applicant, to be nominated by the Vice-Chancellor, if any of the above members of the selection committee does not belong to that category.
- (b) The quorum for the meeting shall be five, including two subject experts.

### **VIII. College Principal and Professor**

#### **A. Selection Committee**

- (a) The Selection Committee for the post of College Principal and Professor shall have the following composition:
- i) Chairperson of the Governing Body to be the Chairperson.
  - ii) Two members of the Governing Body of the college to be nominated by the Chairperson of whom one shall be an expert in academic administration.
  - iii) Two nominees of the Vice-Chancellor who shall be Higher Education experts in the subject/field concerned out of which at least one shall be a person not connected in any manner with the affiliating University. In case of Colleges notified/declared as minority educational institutions, one nominee of the Chairperson of the College from out of a panel of five names, preferably from minority communities, recommended by the Vice-Chancellor of the affiliating university of whom one should be a subject expert.
  - iv) Three Higher Education experts consisting of the Principal of a College, a Professor and an accomplished educationist not below the rank of a Professor (to be nominated by the Governing Body of the college out of a panel of six experts approved by the relevant statutory body of the university concerned).
  - v) An academician representing SC/ST/OBC/Minority/Women/Differently-abled categories, if any of candidates representing these categories is the applicant, to be nominated by the Vice-Chancellor, if any of the above members of the selection committee does not belong to that category.
  - vi) Two subject-experts not connected with the college to be nominated by the Chairperson of the governing body of the college out of a panel of five names recommended by the Vice Chancellor from the list of subject experts approved by the relevant statutory body of the university concerned. In case of colleges notified/declared as minority educational institutions, two subject experts not connected with the University nominated by the Chairperson of the College governing body out of the panel of five names, preferably from minority communities, recommended by the Vice Chancellor from the list of subject experts approved by the relevant statutory body.
- (b) Five members, including two experts, shall constitute the quorum.
- (c) All the selection procedures of the selection committee shall be completed on the day/last day of the selection committee meeting itself, wherein, minutes are recorded along with the scoring Proforma and recommendation made on the basis of merit with the list of selected and waitlisted candidates/Panel of names in order of merit, duly signed by all members of the selection committee.



- (d) The term of appointment of the College Principal shall be five years, with eligibility for reappointment for one more term only after an assessment by a Committee appointed by the University as per the composition given in sub-clause (B) of 5.1 (VIII).
- (e) After the completion of his/her term as Principal, the incumbent shall join back his/her parent organisation with the designation as Professor and in the grade of the Professor..

**B. Committee for Assessment of College Principal and Professor for Second Term**

The Committee for assessment to the post of College Principal for second term shall have the following composition:

- i) Nominee of the Vice-Chancellor of the affiliating University.
- ii) Nominee of the Chairman, University Grants Commission.

The nominees shall be nominated from the Principals of the Colleges with Excellence/College with Potential of Excellence/Autonomous College/NAAC Grade 'A' accredited colleges.

**IX. Selection Committees for the posts of Directors, Deputy Directors, Assistant Directors of Physical Education and Sports, Librarians, Deputy Librarians and Assistant Librarians** shall be the same as that of Professor, Associate Professor and Assistant Professor, respectively, except that in Library and Physical Education and Sports or Sports Administration, respectively, practicing Librarian/Director Physical Education and Sports, as the case may be, shall be associated with the Selection Committee as one of the subject experts.

**X. The "Screening-cum-Evaluation Committee" for CAS promotion of Assistant Professors/equivalent cadres in Librarians/Physical Education and Sports from one level to the other higher level shall consist of:**

**A. For University teachers:**

- i) The Vice-Chancellor or his/her nominee shall be the Chairperson of the Committee;
- ii) The Dean of the Faculty concerned;
- iii) The Head of the Department /Chairperson of the School; and
- iv) One subject expert in the subject concerned nominated by the Vice-Chancellor from the University panel of experts.

**B. For College teachers:**

- i) The Principal of the college;
- ii) Head /Teacher-Incharge of the department concerned from the college;
- iii) Two subject experts in the subject concerned nominated by the Vice-Chancellor from the university panel of experts;

**C. For University Assistant Librarian:**

- i) The Vice-Chancellor shall be the Chairperson of the Committee;
- ii) The Dean of the Faculty concerned;
- iii) The Librarian, University Library; and
- iv) One expert who is a working Librarian nominated by the Vice-Chancellor from the University panel of experts.

**D. For College Assistant Librarian:**

- i) The Principal shall be the Chairperson of the Committee;
- ii) The Librarian, University Library; and
- iii) Two experts who are working Librarians nominated by the Vice-Chancellor from the University panel of experts.

**E. For University Assistant Director, Physical Education and Sports:**

- i) The Vice-Chancellor shall be the Chairperson of the Committee;

- ii) The Dean of the Faculty concerned;
- iii) The University Director, Physical Education and Sports; and
- iv) One expert in Physical Education and Sports Administration from University system nominated by the Vice-Chancellor from the University panel of experts.

**F. For College Director, Physical Education and Sports:**

- i) The Principal shall be the Chairperson of the Committee;
- ii) The University Director, Physical Education and Sports; and
- iii) Two experts in Physical Education and Sports Administration from University system nominated by the Vice-Chancellor from the University panel of experts.

**Note:** The quorum for these committees in all categories shall be three which will include one subject expert/university nominee.

**5.2.** The Screening-cum-Evaluation Committee on verification/evaluation of grades secured by the candidate through the Assessment Criteria and Methodology Proforma designed by the respective university based on these Regulations and as per the minimum requirement specified:

- (a) In Appendix II, Table 1 for each of the cadre of Assistant Professor;
- (b) In Appendix II, Table 4 for each of the cadre of Librarian; and
- (c) In Appendix II, Table 5 for each of the cadre of Physical Education and Sports

shall recommend to the Syndicate/ Executive Council /Board of Management of the University/College about the suitability for the promotion of the candidate(s) under CAS for implementation.

**5.3** The selection process shall be completed on the day/last day of the selection committee meeting, wherein the minutes are recorded and recommendation made on the basis of the performance of the interview are duly signed by all members of the selection committee.

**5.4** For all Selection Committees specified in these Regulations, Head of Department / Teacher-Incharge should be either in the same or higher rank/ position than the rank/position for which the interview is to be held.

**6.0 SELECTION PROCEDURE:**

**I.** The overall selection procedure shall incorporate transparent, objective and credible methodology of analysis of the merits and credentials of the applicants based on the weightage given to the performance of the candidate in different relevant parameters and his/her performance on a grading system proforma, based on Appendix II, Tables 1, 2, 3A, 3B, 4, and 5.

In order to make the system more credible, universities may assess the ability for teaching and / or research aptitude through a seminar or lecture in a classroom situation or discussion on the capacity to use the latest technology in teaching and research at the interview stage. These procedures can be followed for both the direct recruitment and the CAS promotions, wherever selection committees are prescribed in these Regulations.

**II.** The universities shall adopt these Regulations for selection committees and selection procedure through their respective statutory bodies incorporating Appendix II, Table 1, 2, 3A, 3B, 4, and 5 at the institutional level for University Departments and their Constituent colleges/ affiliated colleges (Government/Government-aided/Autonomous/ Private Colleges) to be followed transparently in all the selection processes. The universities may devise their own self-assessment-cum-performance appraisal forms for teachers in strict adherence to the Appendix II, Table 1, 2, 3A, 3B, 4, and 5 specified in these Regulations.

**III.** In all the Selection Committees of direct recruitment of teachers and other academic staff in universities and colleges provided herein, an academician belonging to the Scheduled Caste/Scheduled Tribe/OBC/Minority/Women/Differently-abled categories, if any of candidates belonging to these categories is the applicant and if any of the members of the selection committee does not belong to that category, shall be nominated by the Vice-Chancellor of the University, and in case of a College, Vice-Chancellor of the University to which the college is affiliated to. The academician, so nominated for this purpose, shall be one level above the cadre level of the applicant, and such nominee shall ensure that the norms of the Central Government or concerned State Government, in relation to the categories mentioned above, are strictly followed during the selection process.

- IV. The process of selection of a Professor shall involve the inviting of the application developed by the respective university, based on the Assessment Criteria and Methodology guidelines set out in these Regulations in Appendix II, Table 1 and 2 and reprints of all significant publications of the candidates.

*Provided* that the publications submitted by the candidate shall have been published during the qualifying period.

*Provided* further that such publications shall be made available to the subject experts for assessment before holding the interview. The evaluation of the publications by the experts shall be taken into consideration while finalizing the outcome of selection.

- V. In the case of selection of faculty members who are from outside the academic field and are considered under Clause 4.1 (III.B), 4.2 (I.B, II.B, III.B), 4.3 (I.B, II.B, III.B) and 4.4 (III.B) of these Regulations, the university's statutory bodies must lay down clear and transparent criteria and procedure so that only outstanding professionals who can contribute substantially to the university knowledge system are selected.

- VI. In the selection process for the posts involving different nature of responsibilities in certain disciplines/areas, such as Music and Fine Arts, Visual Arts and Performing Arts, Physical Education and Sports, and Library, greater emphasis may be laid on the nature of deliverables indicated against each of the posts in these Regulations which need to be taken up by the institution while developing the Proforma for both the direct recruitment and the CAS promotion.

- VII. The Internal Quality Assurance Cell (IQAC) shall be established in all Universities/Colleges as per the UGC/ National Assessment Accreditation Council (NAAC) guidelines with the Vice-Chancellor, as Chairperson (in the case of Universities), and Principal, as Chairperson (in case of Colleges). The IQAC shall act as the documentation and record-keeping Cell for the institution, including assistance in the development of Assessment Criteria and Methodology Proforma based on these Regulations. The IQAC may also introduce, wherever feasible, the student feedback system as per the NAAC guidelines on institutional parameters without incorporating the component of the students' assessment of individual teachers in the Assessment Criteria and Methodology Proforma.

- A. The Assessment of the performance of College and University teachers for the CAS promotion is based on the following criteria:

- i. **Teaching-Learning and Evaluation:** The commitment to teaching based on observable indicators such as being regular to class, punctuality to class, remedial teaching and clarifying doubts within and outside the class hours, counselling and mentoring, additional teaching to support the college/university as and when the need arises, etc. Examination and evaluation activities like performing of examination supervision duties, question-papers setting for university/college examinations, participation in the evaluation of examination answer scripts, conducting examinations for internal assessment as per the schedule to be announced by the institution at the beginning of each Academic Session and returning and discussing the answers in the class.
- ii. **Personal Development Related to Teaching and Research Activities:** Attending orientation/refresher/methodology courses, development of e-contents and MOOC's, organising seminar/conference/ workshop / presentation of papers and chairing of sessions/guiding and carrying out research projects and publishing the research output in national and international journals etc.
- iii. **Administrative Support and Participation in Students' Co- curricular and Extra-curricular Activities.**

#### B. Assessment Process

The following **three-step** process is recommended for carrying out assessment for promotion under the CAS at all levels:

**Step 1:** The college/university teachers shall submit to college/university an annual self-appraisal report in the prescribed Proforma to be designed based on Tables 1 to 5 of Appendix II. The report should be submitted at the end of every academic year, within the stipulated time. The teacher will provide documentary evidence for the claims made in the annual self-appraisal report, which is to be verified by the HOD/Teacher- in-charge etc. The submission should be through the Head of the Department (HOD)/teacher-in-charge.

**Step: 2:** After completion of the required years of experience for promotion under CAS and fulfilment of other requirements indicated below, the teacher shall submit an application for promotion under CAS.

**Step 3:** A CAS Promotion shall be granted as mentioned in Clauses 6.4 of these Regulations.

**6.1 Assessment Criteria and Methodology:**

- (a) Tables 1 to 3 of Appendix II are applicable to the selection of Assistant Professors/ Associate Professors/ Professors/Senior Professor in Universities and Colleges;
- (b) Table 4 of Appendix II is applicable to Assistant Librarians/ College Librarians and Deputy Librarians for promotion under Career Advancement Scheme; and
- (c) Table 5 of Appendix II is applicable to Assistant Directors/ College Director of Physical Education sports and Deputy Directors/Directors of Physical Education and Sports for promotions under Career Advancement Scheme

**6.2** The constitution of the Selection Committees and Selection Procedure as well as the Assessment Criteria and Methodology for the above cadres, either through direct recruitment or through Career Advancement Scheme, shall be in accordance with these Regulations.

**6.3** The criteria for promotions under Career Advancement Scheme laid down under these Regulations shall be effective from the date of notification of these Regulations. However, to avoid hardship to those faculty members who have already qualified or are likely to qualify shortly under the existing regulations, a choice may be given to them, for being considered for promotions under the existing Regulations. This option can be exercised only within three years from the date of notification of these Regulations.

- I.** A teacher who wishes to be considered for promotion under the CAS may submit in writing to the university/college, within three months in advance of the due date, that he/she fulfils all the requirements under the CAS and submit to the university/college the Assessment Criteria and Methodology Proforma as evolved by the university concerned supported by all credentials as per the Assessment Criteria and Methodology guidelines set out in these Regulations. In order to avoid any delay in holding the Selection Committee meetings for various positions under the CAS, the University/College may initiate the process of screening/selection, and complete the process within six months from the receipt of application. Further, in order to avoid any hardship, the candidates who fulfil all other criteria mentioned in these Regulations, as on and till the date on which these regulations are notified, can be considered for promotion from the date, on or after the date, on which they fulfil these eligibility conditions.
- II.** The Selection Committee specifications as contained in Clauses 5.1 to 5.4 shall be applicable to all direct recruitments of faculty positions and equivalent cadres and Career Advancement promotions from Assistant Professor to Associate Professor, from Associate Professor to Professor, Professor to Senior Professor (in University) and for equivalent cadres.
- III.** The CAS promotion from a lower stage to a higher stage of Assistant Professor shall be conducted through a "Screening-cum-Evaluation Committee", following the criteria laid down in Table 1 of Appendix II.
- IV.** The promotion under the CAS being a personal promotion to a teacher holding a substantive sanctioned post, on his/her superannuation, the said post shall revert back to its original cadre.
- V.** For the promotion under the CAS, the applicant teacher must be on the role and in active service of the University/College on the date of consideration by the Selection Committee.
- VI.** The candidate shall offer himself/herself for assessment for promotion, if he/she fulfils the minimum grading specified in the relevant Assessment Criteria and Methodology Tables, by submitting an application and the required Assessment Criteria and Methodology Proforma. He/she can do so three months before the due date. The university shall send a general circular twice a year, inviting applications for the CAS promotions from the eligible candidates.
- i) If a candidate applies for promotion on completion of the minimum eligibility period and is successful, the date of promotion shall be from that of minimum period of eligibility.
- ii) If, however, the candidate finds that he/she would fulfil the CAS promotion criteria, as defined in Tables 1, 2, 4, and 5 of Appendix II at a later date and applies on that date and is successful, his/her promotion shall be effected from that date of the candidate fulfilling the eligibility criteria.
- iii) The candidate who does not succeed in the first assessment, he/she shall have to be re-assessed only after one year. When such a candidate succeeds in the eventual assessment, his/her promotion shall be deemed to be one year from the date of rejection.

**VII.** Regarding the cases pending for promotions from one Academic Level/Grade Pay to another Academic Level/Grade Pay under the Career Advancement Scheme provided under the UGC Regulations on Minimum Qualifications for Appointment of Teachers and other Academic Staff in Universities and Colleges and Measures for the Maintenance of Standards in Higher Education 2010 and its subsequent amendments, the teachers shall be given the option to be considered for the promotion from one Academic Level/Grade Pay to another Academic Level/Grade Pay as per the following:

(a) The teachers shall be considered for promotion from one Academic Level/Grade Pay to another as per the CAS under these Regulations.

**OR**

(b) The faculty members shall be considered for the promotion from one Academic Level/Grade Pay to another as per the CAS provided under the UGC Regulations on Minimum Qualifications for Appointment of Teachers and other Academic Staff in Universities and Colleges and Measures for the Maintenance of Standards in Higher Education 2010 and its amendments with relaxation in the requirements of Academic Performance Indicators (API) based Performance Based Appraisal System (PBAS) upto the date of notification of these Regulations.

The relaxation in the requirements of Academic Performance Indicators (API) based Performance Based Appraisal System (PBAS) upto the date of notification of these Regulations for the promotion from one Academic Level/Grade Pay to another under CAS as provided in UGC Regulations on Minimum Qualifications for Appointment of Teachers and other Academic Staff in Universities and Colleges and Measures for the Maintenance of Standards in Higher Education 2010 and its amendments, is defined as under :

- i. Exemption from scoring under Category I, as defined in Appendix III of said above mentioned UGC Regulations on Minimum Qualifications for Appointment of Teachers and other Academic Staff in Universities and Colleges and Measures for the Maintenance of Standards in Higher Education 2010 and its amendments including University Grants Commission (Minimum Qualifications for Appointment of Teachers and other Academic Staff in Universities and Colleges and Measures for the Maintenance of Standards in Higher Education) (4<sup>th</sup> Amendment), Regulations, 2016, for faculty and other equivalent cadre positions.
- ii. Scoring in Category II and Category III for faculty and other equivalent cadre positions shall be as provided for in the UGC Regulations on Minimum Qualifications for Appointment of Teachers and other Academic Staff in Universities and Colleges and Measures for the Maintenance of Standards in Higher Education 2010 with the following combined minimum API score requirement for Category II and Category III taken together, as mentioned below.

Note: There shall be no minimum API score requirement for Category II and Category III individually.

**TABLE-A**

**(Minimum API requirement for the promotion of teachers under CAS in university departments)**

S.No.		Assistant Professor (Stage 1/ AGP Rs.6000/- to Stage 2/AGP Rs.7000/-)	Assistant Professor (Stage 2/ AGP Rs.7000/- to Stage 3/AGP Rs.8000/-)	Assistant Professor (Stage 3/ AGP Rs.8000/) to Associate Professor (Stage 4/AGP Rs.9000/-)	Associate Professor (Stage 4/ AGP Rs.9000/- to Professor (Stage 5/AGP Rs.10000/-)
1	Research and Academic contribution (Category III)	40/assessment period	100/assessment period	90/assessment period	120/assessment period
2	Expert assessment system	Screening Committee	Screening Committee	Selection Committee	Selection Committee

Table-B

(Minimum API requirement for the promotion of teachers under CAS in colleges (UG &amp; PG))

S.No.		Assistant Professor (Stage 1/ AGP Rs.6000/- to Stage 2/AGP Rs.7000/-)	Assistant Professor (Stage 2/ AGP Rs.7000/- to Stage 3/AGP Rs.8000/-)	Assistant Professor (Stage 3/ AGP Rs.8000/-) to Associate Professor (Stage 4/AGP Rs.9000/-)	Associate Professor (Stage 4/ AGP Rs.9000/- to Professor (Stage 5/AGP Rs.10000/-)
1	Research and Academic contribution (Category III)	20/assessment period	50/assessment period	45/assessment period	60/assessment period
2	Expert assessment system	Screening Committee	Screening Committee	Selection Committee	Selection Committee

Table-C

(Minimum API requirement for the promotion of Library staff under CAS in Universities)

S.N		Assistant Librarian (Stage 1/ AGP Rs.6000/- to Stage 2/AGP Rs.7000/-)	Assistant Librarian (Stage 2/ AGP Rs.7000/- to Stage 3/AGP Rs.8000/-)	Assistant Librarian (Selection Grade/Deputy Librarian) (Stage 3/ AGP Rs.8000/-) to Deputy Librarian (Stage 4/AGP Rs.9000/-)	Deputy Librarian (Stage 4/AGP Rs. 9000/-) to Deputy Librarian (Stage 5 AGP Rs10,000/-)
1	Research and Academic contribution (Category III)	40/assessment period	100/assessment period	90/assessment period	120 per assessment period
2	Expert assessment system	Screening Committee	Screening Committee	Selection Committee	Selection committee

Table-D

(Minimum API requirement for the promotion of Library staff under CAS in Colleges)

S.No.		Assistant Librarian (Stage 1/ AGP Rs.6000/- to Stage 2/AGP Rs.7000/-)	Assistant Librarian (Stage 2/ AGP Rs.7000/- to Stage 3/AGP Rs.8000/-)	Assistant Librarian (Selection Grade/Deputy Librarian) (Stage 3/ AGP Rs.8000/-) to Deputy Librarian (Stage 4/AGP Rs.9000/-)
1	Research and Academic contribution (Category III)	20/assessment period	50/assessment period	45/assessment period
2	Expert assessment system	Screening Committee	Screening Committee	Selection Committee

Table-E

(Minimum API requirement for the promotion of University Director/Deputy Director/Assistant Director, Physical Education and Sports)

S.No.		Assistant Director (Stage 1/ AGP Rs.6000/- to Stage 2/AGP Rs.7000/-)	Assistant Director (Stage 2/ AGP Rs.7000/-) to Assistant Director (Selection Grade)/Deputy Director (Stage 3/AGP Rs.8000/-)	Assistant Director (Selection Grade)/Deputy Director (Stage 3/ AGP Rs.8000/-) to Deputy Director (Stage 4/AGP Rs.9000/-)	Deputy Director (Stage 4/AGP Rs. 9000/-) to Deputy Director (Stage 5 AGP Rs10,000/-)
1	Research and Academic contribution (Category III)	40/assessment period	100/assessment period	90/assessment period	120 per assessment period
2	Expert assessment system	Screening Committee	Screening Committee	Selection Committee	Selection committee

Table-F

(Minimum API requirement for the promotion of College Director, Physical Education and Sports)

S.No.		Assistant Director (Stage 1/ AGP Rs.6000/- to Stage 2/AGP Rs.7000/-)	Assistant Director (Stage 2/ AGP Rs.7000/-) to Assistant Director (Selection Grade)/Deputy Director (Stage 3/AGP Rs.8000/-)	Assistant Director (Selection Grade)/Deputy Director (Stage 3/ AGP Rs.8000/-) to Deputy Director (Stage 4/AGP Rs.9000/-)
1	Research and Academic contribution (Category III)	20/assessment period	50/assessment period	45/assessment period
2	Expert assessment system	Screening Committee	Screening Committee	Selection Committee

VIII. The requirement for Orientation course and Refresher course for promotions due under the CAS shall not be mandatory upto 31<sup>st</sup> December, 2018.

#### 6.4 STAGES OF PROMOTION UNDER THE CAREER ADVANCEMENT SCHEME OF INCUMBENT AND NEWLY-APPOINTED ASSISTANT PROFESSORS/ASSOCIATE PROFESSORS/PROFESSORS

A. The entry-level Assistant Professors (Level 10) shall be eligible for promotion under the Career Advancement Scheme (CAS) through two successive levels (Level 11 and Level 12), provided they are assessed to fulfill the eligibility and performance criteria as laid down in Clause 6.3. of these Regulations.

#### B. Career Advancement Scheme (CAS) for Colleges teachers

##### I. Assistant Professor (Academic Level 10) to Assistant Professor (Senior Scale/Academic Level 11)

**Eligibility:** Assistant Professors who have completed four years of service and having a Ph.D. degree or five years of service and having a M.Phil. / PG Degree in Professional Courses, such as LLM, M.Tech.,M.V.Sc., M.D., or six years of service for those without Ph.D./M.Phil./ PG Degree in Professional courses.

- i. Attended one Orientation course of 21 days' duration on teaching methodology; and
- ii. Any one of the following: Completed one Refresher / Research Methodology Course

OR

Any two of the following: Workshop, Syllabus Up-gradation Workshop, Training Teaching-Learning-Evaluation, Technology Programmes and Faculty Development Programmes of at least one week (5 days) duration,

OR

Completed one MOOCs course (with e-certification) or development of e-contents in four-quadrants / MOOC's course during the assessment period.

**CAS Promotion Criteria:**

A teacher shall be promoted if;

- i. He/she gets 'satisfactory' or 'good' grade in the annual performance assessment reports of at least three/four/five of the last four/five/six years of the assessment period as the case may be, as specified in Appendix II, Table 1, and;
- ii. The promotion is recommended by the screening-cum-evaluation committee.

**II. Assistant Professor (Senior Scale/Academic Level 11) to Assistant Professor (Selection Grade/Academic Level 12)**

**Eligibility:**

- 1) Assistant Professors who have completed five years of service in Academic Level 11/Senior Scale.
- 2) Any two of the following in the last five years of Academic Level-11/ Senior Scale: Completed courses/programmes from among the categories of Refresher Courses/Research Methodology course/Workshops/Syllabus Up Gradation Workshop/ Teaching-Learning-Evaluation/ Technology Programmes/ Faculty Development Programme/ Syllabus Up-gradation Workshop/ Teaching-Learning-Evaluation/ Technology Programmes/ Faculty Development Programmes of at least two weeks (ten days) duration (or completed two courses of at least one week (five days) duration in lieu of every single course/programme of at least two weeks (ten days) duration); or completed MOOCs course in the relevant subject (with e-certification); or Contribution towards development of e-content in 4-quadrant (at least one quadrant) minimum of 10 modules of a course/contribution towards development of at least 10 modules of MOOCs course/ contribution towards conducting of a MOOCs course during the period of assessment.

**CAS Promotion Criteria:**

A teacher shall be promoted if;

- i) The teacher gets 'satisfactory' or 'good' grade in the annual performance assessment reports of at least four of the last five years of the assessment period, (as prescribed in Appendix II, Table 1) and
- ii) The promotion is recommended by the Screening-cum-evaluation committee.

**III. Assistant Professor (Selection Grade/Academic Level 12) to Associate Professor (Academic Level 13A)**

**Eligibility:**

- 1) Assistant Professor who has completed three years of service in Academic Level 12/Selection-Grade.
- 2) A Ph.D. degree in subject relevant /allied/relevant discipline.
- 3) Any one of the following during the last three years: completed one course / programme from amongst the categories of Refresher Courses/ Methodology Workshop/Syllabus Up-gradation Workshop/ Teaching-Learning-Evaluation Technology Programme/ Faculty Development Programme of at least two weeks (ten days) duration (or completed two courses of at least one week (five days) duration in lieu of every single course/programme of at least two weeks (ten days) duration); or completed one MOOCs course (with e-certification); or contribution towards development of e-contents in 4-quadrant(at least one quadrant) minimum of 10 modules of a course/contribution towards development of at least 10 modules of MOOCs course/ contribution towards conduct of a MOOCs course during the period of assessment.

**CAS Promotion Criteria:**

A teacher may be promoted if;

- i) He/she gets a 'satisfactory' or 'good' grade in the annual performance assessment reports of at least two of the last three years of the assessment period as prescribed in Appendix II, Table 1, and
- ii) The promotion to the post of Associate Professor is recommended by the selection committee in accordance with these Regulations.



**IV. Associate Professor (Academic Level 13A) to Professor (Academic Level 14)****Eligibility:**

1. Associate Professors who have completed three years of service in Academic Level 13A.
2. A Ph.D. degree in subject relevant/allied/relevant discipline.
3. A minimum of 10 research publications in peer-reviewed or UGC-listed journals out of which three research papers shall be published during the assessment period.
4. A minimum of 110 Research Score as per Appendix II, Table 2

**CAS Promotion Criteria:**

A teacher shall be promoted if;

- i) The teacher gets 'satisfactory' or 'good' grade in the annual performance assessment reports of at least two of the last three years of the assessment period, as per Appendix II, Table 1 and at least 110 research score as per Appendix II, Table 2.
- ii) The promotion to the post of Professor is recommended by selection committee constituted in accordance with these Regulations.

**C. Career Advancement Scheme (CAS) for University teachers****I. Assistant Professor (Academic Level 10) to Assistant Professor (Senior Scale/Academic Level 11)****Eligibility:**

- i) An Assistant Professor who has completed four years of service with a Ph.D. degree or five years of service with a M.Phil. / PG Degree in Professional Courses, such as LLM, M.Tech, M.V.Sc. and M.D., or six years of service in case of those without a Ph.D./M.Phil./ PG Degree in a Professional course and satisfies the following conditions:
  - ii) Attended one Orientation course of 21 days duration on teaching methodology;
  - iii) Any one of the following: Completed Refresher/ Research Methodology Course/ Workshop/ Syllabus Up-gradation Workshop/ Training Teaching-Learning-Evaluation, Technology Programmes/ Faculty Development Programmes of at least one week (5 days) duration, or taken one MOOCs course (with e-certification) or development of e-contents in four-quadrants / MOOC's course during the assessment period; and
  - iv) Published one research publication in the peer-reviewed journals or UGC-listed journals during assessment period.

**CAS Promotion Criteria :**

**A teacher shall be promoted if;**

- i) He/she gets a 'satisfactory' or 'good' grade in the annual performance assessment reports of at least three/four/five of the last four/five/six years of the assessment period as the case may be (as provided in Appendix II, Table 1), and;
- ii) The promotion is recommended by the screening-cum evaluation committee.

**II. Assistant Professor (Senior Scale/Academic Level 11) to Assistant Professor (Selection Grade/Academic Level 12)****Eligibility:**

- i) Assistant Professors who has completed five years of service in Academic Level 11/Senior Scale.
- ii) A Ph.D. Degree in the subject relevant/allied/relevant discipline.
- iii) Has done any two of the following in the last five years of Academic Level 11/Senior Scale: Completed a course / programme from amongst the categories of Refresher Courses/Research Methodology/ Workshops/ Syllabus Up-gradation Workshop/ Teaching-Learning-Evaluation/ Technology Programmes / Faculty Development Programme of at least two weeks (ten days) duration (or completed two courses of at least one week (five days) duration in lieu of every single course/programme of at least two weeks (ten

days) duration), or, completed one MOOCs course in the relevant subject (with e-certification); or contribution towards the development of e-content in 4-quadrant (at least one quadrant) minimum of 10 modules of a course/contribution towards the development of at least 10 modules of MOOCs course/ contribution towards conduct of a MOOCs course during the period of assessment.

- iv) Published three research papers in the peer-reviewed journals or UGC-listed journals during assessment period.

**CAS Promotion Criteria:**

A teacher shall be promoted if;

- i) The teacher gets a 'satisfactory' or 'good' grade in the annual performance assessment reports of at least four of the last five years of the assessment period, (as prescribed in Appendix II, Table 1) and;
- ii) The promotion is recommended by the Screening-cum-evaluation committee.

**III. Assistant Professor (Selection Grade/Academic Level 12) to Associate Professor (Academic Level 13A)**

- 1) Assistant Professor who has completed three years of service in Academic Level 12/ Selection grade.
- 2) A Ph.D Degree in the subject concerned/allied/relevant discipline.
- 3) Any one of the following during last three years: completed one course / programme from amongst the categories of Refresher Courses/ Research Methodology Workshops/Syllabus Up-gradation Workshop/ Teaching-Learning-Evaluation Technology Programme/ Faculty Development Programme of at least two weeks (ten days) duration (or completed two courses of at least one week (five days) duration in lieu of every single course/programme of at least two weeks (ten days) duration); or completed one MOOCs course (with e-certification); or contribution towards the development of e-content in 4-quadrant (at least one quadrant) minimum of 10 modules of a course/contribution towards development of at least 10 modules of MOOCs course/ contribution towards conduct of a MOOCs course during the period of assessment.
- 4) A minimum of seven publications in the peer-reviewed or UGC-listed journals out of which three research papers should have been published during the assessment period.
- 5) Evidence of having guided at least one Ph.D. candidate.

**CAS Promotion Criteria:**

A teacher shall be promoted if;

- i) He/she gets a 'satisfactory' or 'good' grade in the annual performance assessment reports of at least two of the last three years of the assessment period as specified in Appendix II, Table 1, and has a research score of at least 70 as per Appendix II, Table 2.
- ii) The promotion is recommended by a selection committee constituted in accordance with these Regulations.

**IV. Associate Professor (Academic Level 13A) to Professor (Academic Level 14)**

**Eligibility:**

- 1) An Associate Professor who has completed three years of service in Academic Level 13 A.
- 2) A Ph.D degree in the subject concerned/allied/relevant discipline.
- 3) A minimum of ten research publications in the peer- reviewed or UGC-listed journals out of which three research papers should have been published during the assessment period.
- 4) Evidence of having successfully guided doctoral candidate.
- 5) A minimum of 110 Research Score as per Appendix II, Table 2.

**CAS Promotion Criteria:**

A teacher shall be promoted if;

- i) He/she gets 'satisfactory' or 'good' grade in the annual performance assessment reports of at least two of the last three years of the assessment period, as per Appendix II, Table 1, and at least 110 research score, as per Appendix II, Table 2.
- ii) The promotion is recommended by a selection committee constituted in accordance with these Regulations.

**V. Professor (Academic Level 14) to Senior Professor (Academic Level 15)**

A Professor can be promoted to the post of Senior Professor under the CAS. The promotion shall be based on academic achievement, favourable review from three eminent subject -experts who are not of the rank lower than the rank of a Senior Professor or a Professor having at least ten years' of experience. The selection shall be based on 10 best publications during the last 10 years and interaction with a Selection Committee constituted in accordance with these Regulations.

**Eligibility:**

- i) Ten years' experience as a Professor.
- ii) A minimum of ten publications in the peer-reviewed or UGC-listed journals and Ph.D. degree has been successfully awarded to two candidates under his/her supervision during the assessment period.

**D. Career Advancement Scheme (CAS) for Librarians****Note:**

- i) **The following provisions apply only to those persons who are not involved in the teaching of Library Science. Teachers in institutions where Library Science is a teaching department shall be covered by the provisions given under sections 6.4 (B) and 6.4 (C), of these Regulations for Colleges/Institutions and for Universities, respectively.**
- ii) **The Deputy Librarian in Universities shall have two levels i.e. Academic Level 13A and Academic Level 14 while College Librarians shall have five levels i.e. Academic Level 10, Academic Level 11, Academic Level 12, Academic Level 13A and Academic Level 14.**

**I. From University Assistant Librarian (Academic level 10)/College Librarian (Academic level 10) to University Assistant Librarian (Senior Scale/Academic level 11)/ College Librarian (Senior Scale/Academic level 11):****Eligibility:**

An Assistant Librarian/ College Librarian who is in Academic Level 10 and has completed four years of service having a Ph.D. degree in Library Science/ Information Science/ Documentation Science or an equivalent degree or five years' of experience, having at least a M.Phil.degree, or six years of service for those without a M.Phil or a Ph.D. degree.

- (i) He/she has attended at least one Orientation course of 21 days' duration; and
- (ii) Training, Seminar or Workshop on automation and digitalisation, maintenance and related activities, of at least 5 days, as per Appendix II, Table 4.

**CAS Promotion Criteria:**

An Assistant Librarian/College Librarian may be promoted if:

- i) He/she gets a 'satisfactory' or 'good' grade in the annual performance assessment reports of at least three/four/five out of the last four/five/six years of the assessment period as the case may be as specified in Appendix II, Table 4, and
- ii) The promotion is recommended by a screening-cum-evaluation committee.

**II. From University Assistant Librarian (Senior Scale/Academic level 11)/College Librarian (Senior Scale/Academic level 11) to University Assistant Librarian (Selection Grade/ Academic level 12/ College Librarian (Selection Grade/Academic level 12)****Eligibility:**

- 1) He/she has completed five years of service in that grade.
- 2) He/she has done any two of the following in the last five years: (i) Training/Seminar/Workshop/Course on automation and digitalisation, (ii) Maintenance and other activities as per Appendix II, Table 4 of at least two weeks (ten days) duration (or completed two courses of at least one week (five days) duration in lieu of every single course/programme of at least two weeks (ten days) duration), (iii) Taken/developed one MOOCs course in the relevant subject (with e-certification), or (iv) Library up-gradation course.

**CAS Promotion Criteria:**

An individual shall be promoted if:

- i) He/she gets a 'satisfactory' or 'good' grade in the annual performance assessment reports of at least four out of the last five years of the assessment period, as specified in Appendix II, Table 4, and;
- ii) The promotion is recommended by a screening-cum-evaluation committee.

**III. From University Assistant Librarian (Selection Grade/Academic level 12)/ College Librarian (Selection Grade/Academic level 12) to University Deputy Librarian (Academic Level 13A)/College Librarian (Academic Level 13A)**

- 1) He/she has completed three years of service in that grade.
- 2) He/she has done any one of the following in the last three years: (i) Training/Seminar/Workshop/Course on automation and digitalization, (ii) Maintenance and related activities as per Appendix II, Table 4 of at least two weeks' (ten days) duration, (iii) Completed two courses of at least one week (five days) duration in lieu of every single course/programme of at least two weeks (ten days) duration, (iv) Taken/developed one MOOCs course in the relevant subject (with e-certification), and (v) Library up-gradation course.

**CAS Promotion Criteria:**

An individual shall be promoted if:

- i) He/she gets a 'satisfactory' or 'good' grade in the annual performance assessment reports of at least two out of the last three years of the assessment period, as specified in Appendix II, Table 4; and
- ii) The promotion is recommended by a Selection Committee constituted as per these Regulations on the basis of the interview performance.

**IV. The criteria for CAS Promotions from University Deputy Librarian/College Librarians (Academic Level 13A) to University Deputy Librarian/College Librarians (Academic Level 14) shall be the following:**

- 1) He/she has completed three years of service in that grade.
- 2) He/she has done any one of the following in the last three years: (i) Training/Seminar/Workshop/Course on automation and digitalization, (ii) Maintenance and related activities as per Appendix II, Table 4 of at least two weeks' (ten days) duration, (iii) Completed two courses of at least one week (five days) duration in lieu of every single course/programme of at least two weeks (ten days) duration, (iv) Taken/developed one MOOCs course in the relevant subject (with e-certification), and (v) Library up-gradation course.
- 3) Evidence of innovative library services, including the integration of ICT in a library.
- 4) A Ph.D. Degree in Library Science/Information Science/Documentation /archives and Manuscript-Keeping

**CAS Promotion Criteria:**

An individual shall be promoted if:

- i) He/she gets a 'satisfactory' or 'good' grade in the annual performance assessment reports of at least two out of the last three years of the assessment period, as specified in Appendix II, Table 4; and
- ii) The promotion is recommended by a Selection Committee constituted as per these Regulations on the basis of the interview performance.

**E. Career Advancement Scheme (CAS) for Directors of Physical Education and Sports****Note:**

- i) **The following provisions apply only to those personnel who are not involved in teaching physical education and sports. Teachers in institutions where Physical Education and Sports is a teaching department shall be covered by the provisions given under sections 6.4 (B) and 6.4 (C), of these Regulations for Colleges/Institutions and for Universities, respectively.**
- ii) **The Deputy Director Physical Education and Sports in Universities shall have two levels i.e. Academic Level 13A and Academic Level 14 while College Director Physical Education and Sports shall have five levels i.e. Academic Level 10, Academic Level 11, Academic Level 12, Academic Level 13A and Academic Level 14.**

**I. From Assistant Director of Physical Education and Sports (Academic Level 10)/College Director of Physical Education and Sports (Academic Level 10) to Assistant Director of Physical Education and Sports (Senior Scale/Academic Level 11) / College Director of Physical Education and Sports (Senior Scale/Academic Level 11)**

**Eligibility:**

- i) He/she has completed four years of service with a Ph.D. degree in Physical Education or Physical Education & Sports or Sports Science or five years of service with an M.Phil. degree or six years of service for those without an M.Phil or Ph.D. degree.
- ii) He/she has attended one Orientation course of 21 days' duration; and
- iii) He/she has done any one of the following: (a)Completed Refresher / Research Methodology Course/ workshop, (b)Training Teaching-Learning-Evaluation Technology Programme/ Faculty Development Programme of at least 5 days duration and (c) Taken/developed one MOOCs course (with e-certification).

**CAS Promotion Criteria:**

An individual may be promoted if:

- i) He/she gets a 'satisfactory' or 'good' grade in the annual performance assessment reports of at least three/four/five of the last four/five/six years of the assessment period as the case may be, as specified in Appendix II, Table 5; and
- ii) The promotion is recommended by a screening-cum-evaluation committee.

**II. From Assistant Director of Physical Education and Sports (Senior Scale/Academic Level 11)/ College Director of Physical Education And Sports (Senior Scale/Academic Level 11) to University Assistant Director of Physical Education and Sports (Selection Grade/Academic Level 12) / College Director of Physical Education and Sports (Selection Grade/Academic Level 12)**

- 1) He/she has completed five years of service in that grade.
- 2) He/she has done any two of the following in the last five years: (i)Completed one course / programme from among the categories of refresher courses, research methodology workshops, (ii)Teaching-Learning-Evaluation Technology Programmes / Faculty Development Programmes of at least two weeks (ten days) duration, (iii)Completed two courses of at least one week(five days) duration in lieu of every single course/programme of at least two weeks (ten days) duration), and (iv) Taken/developed one MOOCs course in the relevant subject (with e-certification).

**CAS Promotion Criteria:**

An individual may be promoted if;

- i) He/she gets a 'satisfactory' or 'good' grade in the annual performance assessment reports of at least four out of the last five years' of the assessment period as specified in Appendix II,Table 5, and;
- ii) The promotion is recommended by a screening-cum-evaluation committee .

**III. From University Assistant Director of Physical Education and Sports (Selection Grade/Academic Level 12)/ College Director of Physical Education and Sports (Selection Grade/Academic Level 12) to University Deputy Director of Physical Education and Sports (Academic Level 13 A)/ College Director of Physical Education and Sports (Academic Level 13A)**

- 1) He/she has completed three years of service.
- 2) He/she has done any one of the following during last three years: (i)Completed one course / programme from among the categories of Refresher Courses, Research Methodology Workshop, (ii)Teaching-Learning-Evaluation Technology Programmes / Faculty Development Programmes of at least two weeks (ten days) duration (or completed two courses of at least one week (five days) duration in lieu of every single course/programme of at least two weeks (ten days) duration), (iii) Taken / developed one MOOCs course in relevant subject (with e-certification).

**CAS Promotion Criteria:**

An individual may be promoted if;

- i) He/she gets a 'satisfactory' or 'good' grade performance assessment reports of at least two out of the last three years of the assessment period as specified in Appendix II,Table 5, and;
- ii) The promotion is recommended by a selection committee constituted as per these Regulations on the basis of the interview performance.

**IV. The criteria for CAS Promotions from University Deputy Director Physical Education and Sports/College Director Physical Education and Sports (Academic Level 13A) to University Deputy Director Physical Education and Sports/College Director Physical Education and Sports (Academic Level 14) shall be the following:**

- 1) He/she has completed three years of service.
- 2) He/she has done any one of the following during last three years: (i) Completed one course / programme from among the categories of Refresher Courses, Research Methodology Workshop, (ii) Teaching-Learning-Evaluation Technology Programmes / Faculty Development Programmes of at least two weeks (ten days) duration (or completed two courses of at least one week (five days) duration in lieu of every single course/programme of at least two weeks (ten days) duration), (iii) Taken / developed one MOOCs course in relevant subject (with e-certification).
- 3) Evidence of organising competitions and coaching camps of at least two weeks' duration.
- 4) Evidence of having produced good performance of teams/athletes for competitions like state/national/inter-university/combined university, etc.
- 5) A Ph.D. in Physical Education or Physical Education and Sports or Sports Science.

**CAS Promotion Criteria:**

An individual may be promoted if;

- i) He/she gets a 'satisfactory' or 'good' grade performance assessment reports of at least two out of the last three years of the assessment period as specified in Appendix II, Table 5, and;
- ii) The promotion is recommended by a selection committee constituted as per these Regulations on the basis of the interview performance.

**6.5.** Discretionary award of advance increments for those who enter the profession as Associate Professor or Professor with higher merit, high number of research publications of high quality and experience at the appropriate level, shall be within the competence of the appropriate authority of the University concerned or recruiting institution based on the recommendations of a selection committee while considering the case of individual candidates in the context of the merits of each case, taking into account the pay structure of other teachers in the faculty and other merit-specific factors. Discretionary award of advance increments is not applicable to those entering the profession as Assistant Professor/Assistant Librarian/Assistant Director of Physical Education and Sports and to those who are entitled for grant of advance increments for having acquired a Ph. D., M. Phil. or M.Tech. and LL.M. degree. However, those entering the service as Assistant Professor/Assistant Librarian/Assistant Director of Physical Education and Sports, having a post-doctoral teaching/research experience, after obtaining a Ph.D. degree and proven credentials, may be eligible for discretionary award of advanced increments to be given to the person, as decided and recorded by the Selection Committee in the minutes of its meeting.

**7.0 SELECTION OF PRO-VICE CHANCELLOR / VICE - CHANCELLOR OF UNIVERSITIES:**

**7.1 PRO-VICE-CHANCELLOR:**

The Pro-Vice-Chancellor shall be appointed by the Executive Council on the recommendation of the Vice-Chancellor.

**7.2** It shall be the prerogative of the Vice-Chancellor to recommend a person to be the Pro-Vice-Chancellor to the Executive Council. The Pro-Vice-Chancellor shall hold office for a period, which is co-terminus with that of the Vice-Chancellor.

**7.3. VICE CHANCELLOR:**

- i. A person possessing the highest level of competence, integrity, morals and institutional commitment is to be appointed as Vice-Chancellor. The person to be appointed as a Vice-Chancellor should be a distinguished academician, with a minimum of ten years' of experience as Professor in a University or ten years' of experience in a reputed research and / or academic administrative organisation with proof of having demonstrated academic leadership.
- ii. The selection for the post of Vice-Chancellor should be through proper identification by a Panel of 3-5 persons by a Search-cum-Selection-Committee, through a public notification or nomination or a talent search process or a combination thereof. The members of such Search-cum-Selection Committee shall be

persons' of eminence in the sphere of higher education and shall not be connected in any manner with the University concerned or its colleges. While preparing the panel, the Search cum-Selection Committee shall give proper weightage to the academic excellence, exposure to the higher education system in the country and abroad, and adequate experience in academic and administrative governance, to be given in writing along with the panel to be submitted to the Visitor/Chancellor. One member of the Search cum-Selection Committee shall be nominated by the Chairman, University Grants Commission, for selection of Vice Chancellors of State, Private and Deemed to be Universities.

- iii. The Visitor/Chancellor shall appoint the Vice Chancellor out of the Panel of names recommended by the Search-cum-Selection Committee.
- iv. The term of office of the Vice-Chancellor shall form part of the service period of the incumbent making him/her eligible for all service related benefits.

## **8.0 DUTY LEAVE, STUDY LEAVE, SABBATICAL LEAVE**

### **8.1 DUTY LEAVE:**

- i. Duty leave upto 30 days in an academic year may be granted for the following purposes:
  - (a) Attending Orientation Programme, Refresher Course, Research Methodology Workshop, Faculty Induction Programme, Conference, Congresses, Symposia and Seminar, as a delegate nominated by the university or with the permission of the university/college ;
  - (b) Delivering lectures in institutions and universities at the invitation of such institutions or universities received by the university, and accepted by the Vice- Chancellor/Principal of the College;
  - (c) Working in another Indian or foreign university, any other agency, institution or organisation, when so deputed by the university/College;
  - (d) Participating in a delegation or working on a committee appointed by the Central Government, State Government, the UGC, a sister university or any other similar academic body; and
  - (e) For performing any other duty assigned to him/her by the university/college.
- ii. The duration of leave should be such as may be considered necessary by the sanctioning authority on each occasion.
- iii. The leave may be granted on full pay, provided, that if the teacher receives a fellowship or honorarium or any other financial assistance beyond the amount needed for normal expenses, he/she may be sanctioned duty leave on reduced pay and allowances.
- iv. Duty leave may be combined with earned leave, half pay leave or extraordinary leave, or Casual leave.
- v. Duty leave should be given also for attending meetings in the UGC, DST, etc. where a teacher is invited to share his/her expertise with an academic body, government agency or NGO.

### **8.2 STUDY LEAVE:**

- i. The scheme of Study Leave provides an opportunity to avail of scholarships/fellowships awarded to the faculty who wish to acquire new knowledge and to improve analytical skills. When a teacher is awarded a scholarship or stipend (by whatever nomenclature called), for pursuing further studies, leading to a Ph.D./Post- doctoral qualification or for undertaking a research project in a higher education institution abroad, the amount of the scholarship/fellowship shall not be linked to the recipient's pay/salary paid to him/her by his /her parent institution. The awardee shall be paid salary for the entire duration of fellowship/scholarship, provided, that he/she does not take up any other remunerative jobs, like teaching, in the host country.
- ii. A teacher on Study Leave shall not take up, during the period of that leave, any regular or part-time appointment under an organisation in India or abroad. He/she may, however, be allowed to accept a fellowship or a research scholarship or an ad-hoc teaching and research assignment with an honorarium or any other form of assistance, other than the regular employment in an institution either in India or abroad, provided, that the Executive Council/Syndicate of his/her parent institution may, if it so desires, sanction study leave on reduced pay and allowances to the extent of any receipt in this regard, in-lieu of teaching etc., which may be determined by his/her employer.

- iii. The study leave shall be granted to an entry-level appointee as Assistant Professor/Assistant Librarian/Assistant Director of Physical Education and Sport/College DPE&S (other than as Associate Professor or Professor of a University/College/Institution, who is otherwise eligible for sabbatical leave) after a minimum of three years of continuous service, to pursue a special line of study or research directly related to his/her work in the University/College/Institution or to make a special study of the various aspects of University organisation and methods of education, giving full plan of the work.
- iv. The study leave shall be granted by the Executive Council/Syndicate on the recommendation of the Head of the Department concerned. The leave shall not be granted for more than three years in one spell, save in exceptional cases, in which the Executive Council/Syndicate is satisfied that such extension is unavoidable on academic grounds and necessary in the interest of the University/College/Institution.
- v. The study leave shall not be granted to a teacher who is due to retire within five years of the date on which he/she is expected to return to duty after the expiry of study leave.
- vi. The study leave shall be granted not more than twice during one's entire career. However, the maximum period of study leave admissible during the entire service shall not exceed five years.
- vii. The study leave may be granted more than once, provided, that not less than five years have elapsed after the teacher/returned to duty on completion of the earlier spell of study leave. For subsequent spell of study leave, the teacher shall indicate the work done during the period of earlier leave as also give details of work to be done during the proposed spell of study leave.
- viii. No teacher who has been granted study leave shall be permitted to alter substantially the course of study or the programme of research without the permission of the Executive Council/Syndicate, in the event the course of study falls short of study leave sanctioned, the teacher shall resume duty on the conclusion of the course of study unless the previous approval of the Executive Council/Syndicate to treat the period of short-fall as Extra-Ordinary leave has been obtained.
- ix. Subject to the maximum period of absence from duty, on leave not exceeding three years, the study leave may be combined with the earned leave, half-pay leave, extra-ordinary leave of vacation provided that the earned leave at the credit of the teacher shall be availed of at the discretion of the teacher. When the study leave is taken in continuation of vacation, the period of study leave shall be deemed to begin to run on the expiry of the vacation. A teacher, who is selected to a higher post during the study leave, shall be placed in that position and shall get the higher scale only after joining the post.
- x. The period of study leave shall count as service for purpose of the retirement benefits (pension/contributory provident fund), provided that the teacher rejoins the University/College/Institution on the expiry of his/her study leave, and serve the institution for the period for which the Bond has been executed.
- xi. The study leave granted to a teacher shall be deemed to have been cancelled in case it is not availed of within 12 months of its sanction, provided, that where the study leave granted has been so cancelled. The teacher may apply again for such leave.
- xii. A teacher availing himself/herself of the study leave, shall undertake that he/she shall serve the University/College/Institution for a continuous period of at least three years to be calculated from the date of his/her resuming duty on the expiry of the study leave.
- xiii. A teacher -
  - (a) who is unable to complete his/her studies within the period of study leave granted to him/her or
  - (b) who fails to rejoin the services of the University on the expiry of his/her study leave or
  - (c) who rejoins the service of the university but leaves the service without completing the prescribed period of service after rejoining the service or
  - (d) who, within the said period, is dismissed or removed from the service by the University shall be liable to refund, to the University/College/Institution, the amount of the leave salary and allowances and other expenses, incurred on the teacher or paid to him/her or on his/her behalf in connection with the course of study.



**Explanation:**

If a teacher asks for extension of the study leave and is not granted the extension but does not rejoin duty on the expiry of the leave originally sanctioned, he/she shall be deemed to have failed to rejoin the service on the expiry of his/her leave for the purpose of recovery of dues under these Regulations.

Notwithstanding the above provision, the Executive Council/Syndicate may order that nothing in these Regulations shall apply to a teacher who, within three years of return to duty from study leave is permitted to retire from service on medical grounds, provided further that the Executive Council/Syndicate may, in any other exceptional case, waive or reduce, for reasons to be recorded the amount refundable by a teacher under these Regulations.

- xiv. After the leave has been sanctioned, the teacher shall, before availing himself/herself of the leave, execute a bond in favour of the University/College/Institution, binding himself/herself for the due fulfillment of the conditions laid down in paragraph (x) to (xiii) above and give security of immovable property to the satisfaction of the Finance Officer/Treasurer or a fidelity bond of an insurance company or a guarantee by a scheduled bank or furnish security of two permanent teachers for the amount which might become refundable to the University/College/Institutions in accordance with paragraph (x) to (xiii) above.
- xv. The teacher on study leave shall submit to the Registrar/Principal of his/her parent University/College/Institution six-monthly reports of progress in his/her studies from his/her supervisor or the Head of the institution. Such report shall reach the Registrar/Principal within one month of the expiry of every six months of the period of the study leave. If the report does not reach the Registrar/Principal within the specified time, the payment of leave salary may be deferred till the receipt of such report.
- xvi. The teacher on leave shall submit a comprehensive report on the completion of the study leave period. A copy of the research document/monograph/academic paper produced during the period of the study leave shall be put in the public domain, preferably on the website of the University/College/Institution.
- xvii. With a view to enhancing the knowledge and skills of the faculty members, especially the junior faculty, at the level of Assistant Professor, the Heads of universities/Colleges/Institutions and their subordinate Departments are enjoined to be generous in the award of study leave in the interest of faculty improvement, thereby impacting the academic standards of the University/College/Institution in the long run.

**8.3 Sabbatical Leave:**

- i) The permanent, whole-time teachers of the university and colleges who have completed seven years' of service as a Reader/Associate Professor or a Professor may be granted sabbatical leave to undertake study or research or any other academic pursuit solely for the object of increasing their proficiency and usefulness to the university and higher education system. The duration of leave shall not exceed one year, at a time, and two years in the entire career of the teacher.
- ii) A teacher, who has availed himself/herself of study leave, would not be entitled to the sabbatical leave, until after the expiry of five years from the date of the teacher's return from previous study leave or any other kind of training programme of duration of one year or more.
- iii) A teacher shall, during the period of sabbatical leave, be paid full pay and allowances (subject to the prescribed conditions being fulfilled) at the rates applicable to him/her immediately prior to his/her proceeding on sabbatical leave.
- iv) A teacher on sabbatical leave shall not take up, during the period of that leave, any regular appointment under another organisation in India or abroad. He/she may, however, be allowed to accept a fellowship or a research scholarship or ad hoc teaching and research assignment with honorarium or any other form of assistance, other than the regular employment in an institution of advanced studies, *provided* that in such cases the Executive Council/Syndicate may, if it so desires, sanction the sabbatical leave on reduced pay and allowances.
- v) During the period of sabbatical leave, the teacher shall be allowed to draw the increment on the due date. The period of leave shall also count as service for purposes of pension/contributory provident fund, *provided* that the teacher rejoins the university on the expiry of his/her leave.

#### 8.4 Other Kinds of Leave Rules for Permanent Teachers of the Universities / Colleges

The following kinds of leave would be admissible to permanent teachers:

- (i) Leave treated as duty, viz. casual leave, special casual leave, and duty leave;
  - (ii) Leave earned by duty, viz. earned leave, half-pay leave, and commuted leave;
  - (iii) Leave not earned by duty, viz. extraordinary leave; and leave not due;
  - (iv) Leave not debited to leave account
  - (v) Leave for academic pursuits, viz. study leave, sabbatical leave and academic leave;
  - (vi) Leave on grounds of health, viz., maternity leave and quarantine leave.
- (b) The Executive Council/Syndicate may grant, *in exceptional cases*, for the reasons to be recorded, any other kind of leave, subject to such terms and conditions as it may deem fit to impose.

##### I. Casual Leave

- (i) The total casual leave granted to a teacher shall not exceed eight days in an academic year.
- (ii) Casual leave cannot be combined with any other kind of leave except special casual leave. However, such casual leave may be combined with holidays including Sundays. Holidays or Sundays falling within the period of casual leave shall not be counted as casual leave.

##### II. Special Casual Leave

- (i) Special casual leave, not exceeding 10 days in an academic year, may be granted to a teacher:
  - (a) To conduct examination of a university/Public Service Commission/Board of Examination or any other similar body/institution; and
  - (b) To inspect academic institutions attached to a statutory board.
- (ii) In computing the 10 days' leave admissible, the days of actual journey, if any, to and from the places where activities specified above, take place, will be excluded.
- (iii) In addition, special casual leave to the extent mentioned below, may also be granted;
  - (a) To undergo sterilization operation (vasectomy or salpingectomy) under family welfare programme. Leave in this case shall be restricted to six working days; and
  - (b) To a female teacher who undergoes non-puerperal sterilization. Leave in this case shall be restricted to 14 days.
- (iv) The special casual leave shall not accumulate, nor can it be combined with any other kind of leave except the casual leave. It may be granted in combination with holidays or vacation by the sanctioning authority on each occasion.

##### III. Earned Leave

- (i) Earned leave admissible to a teacher shall be:
  - (a) 1/30th of the actual service, including vacation; *plus*
  - (b) 1/3rd of the period, if any, during which he/she is required to perform duty during the vacation.

For purposes of computation of the period of actual service, all periods' of leave except casual, special casual, and duty leave, shall be excluded.
- (ii) Earned leave at the credit of a teacher shall not accumulate beyond 300 days. The maximum period of earned leave that may be sanctioned at a time shall not exceed 60 days. Earned leave exceeding 60 days may, however, be sanctioned in the case of higher study, or training, or leave with medical certificate, or when the entire leave, or a portion thereof, is spent outside India.

For removal of doubt, it may be clarified :

1. When a teacher combines vacation with earned leave, the period of vacation shall be reckoned as leave in calculating the maximum amount of leave on average pay which may be included in the particular period of leave.

2. In case where only a portion of the leave is spent outside India, the grant of leave in excess of 120 days shall be subject to the condition that the portion of the leave spent in India shall not, in the aggregate, exceed 120 days.
3. Encashment of earned leave shall be allowed to members of the teaching staff as applicable to the employees of the Central Government or State Government.

#### IV. Half-pay Leave

Half-pay leave may be sanctioned for a period of 20 days to a permanent teacher for each completed year of service. Such leave may be granted on the basis of a medical certificate from a registered medical practitioner, for any private affairs or for any academic purpose.

##### *Explanation:*

A "completed year of service" means the continuous service of a specified duration under the university, and includes the periods of absence from duty as well as leave, including the extraordinary leave.

Note : Half-pay leave shall be combined with earned leave for calculating the number of earned leaves in case the number of earned leaves are less than 300 for purpose of encashment of leave at the time of superannuation as applicable to the employees of Government of India/State Government.

#### V. Commuted Leave

Commuted leave, not exceeding half the amount of half-pay leave due, may be granted to a permanent teacher on the basis of medical certificate from a registered medical practitioner subject to the following conditions:

- (i) Commuted leave during the entire service shall be limited to a maximum of 240 days;
- (ii) When commuted leave is granted, twice the amount of such leave shall be debited against the half-pay leave account; and
- (iii) The total duration of earned leave and commuted leave taken in conjunction shall not exceed 240 days, at a time;

*Provided* that no commuted leave shall be granted under these Regulations, unless the authority competent to sanction leave has reason to believe that the teacher would return to duty on its expiry.

#### VI. Extraordinary Leave

- (i) A permanent teacher may be granted extraordinary leave when:
  - (a) No other leave is admissible; or
  - (b) Other leave is admissible and the teacher applies in writing for the grant of extraordinary leave.
- (ii) The extraordinary leave shall always be without pay and allowances. It shall not count for an increment except in the following cases:
  - (a) Leave taken on the basis of medical certificates;
  - (b) Cases where the Vice-Chancellor/Principal is satisfied that the leave was taken due to causes beyond the control of the teacher, such as inability to join or rejoin duty due to civil commotion or a natural calamity, and the teacher has no other kind of leave to his credit;
  - (c) Leave taken for pursuing higher studies; and
  - (d) Leave granted to accept an invitation to a teaching post or fellowship or research-cum-teaching post or on assignment for technical or academic work of importance.
- (iii) Extraordinary leave may be combined with any other leave except the casual leave and special casual leave, provided that the total period of continuous absence from duty on leave (including periods of vacation when such vacation is taken in conjunction with leave) shall not exceed three years, except in cases where the leave is taken on medical certificate. The total period of absence from duty shall in no case, exceed five years in the entire service period of the individual.
- (iv) The authority empowered to grant leave may commute retrospectively the periods of absence without the leave into extraordinary leave.

**VII. 'Leave Not Due'**

- (i) 'Leave not due', may, at the discretion of the Vice-Chancellor/Principal, be granted to a permanent teacher for a period not exceeding 360 days during the entire period of service, out of which not more than 90 days at a time and 180 days, in all, may be otherwise than on a medical certificate. Such leave shall be debited against the half-pay leave earned by him/her subsequently.
- (ii) 'Leave not due' shall not be granted, unless the Vice-Chancellor/Principal is satisfied that as far as can reasonably be foreseen, the teacher will return to duty on the expiry of the leave and earn the leave granted.
- (iii) A teacher to whom 'leave not due' is granted shall not be permitted to tender his/her resignation from service so long as the debit balance in his/her leave account is not wiped off by active service, or he/she refunds the amount paid to him/her as pay and allowances for the period not so earned. In a case where retirement is unavoidable on account of reason of ill-health, incapacitating the teacher for further service, refund of leave salary for the period of leave yet to be earned may be waived by the Executive Council/College Governing Body.

*Provided* that the Executive Council/College Governing Body may waive off, in any other exceptional case, for reasons to be recorded in writing, the refund of leave salary for the period of leave yet to be earned.

**VIII. Maternity Leave**

- (i) Maternity leave on full pay may be granted to a woman teacher for a period not exceeding 180 days, to be availed of twice in the entire career. Maternity leave may also be granted in case of miscarriage, including abortion, subject to the condition that the total leave granted in respect of this to a woman teacher in her career is not more than 45 days, and the application for leave is supported by a medical certificate.
- (ii) Maternity leave may be combined with any earned leave, half-pay leave or extraordinary leave, but any leave applied for in continuation of the maternity leave may be granted if the request is supported by a medical certificate.

**IX. Child-care Leave**

Woman teachers having any minor child/children may be granted leave up to a period of two years for taking care of the minor child/children. The child-care leave for a maximum period of two years (730 days) may be granted to the woman teachers during entire service period in lines with the Central Government woman employees. In the cases, where the child-care leave is granted for more than 45 days, the University/College/Institution may appoint a part-time / guest substitute teacher with intimation to the UGC.

**X. Paternity Leave**

Paternity leave of 15 days may be granted to male teachers during the confinement of their wife, and such leave shall be granted only up to two children.

**XI. Adoption leave**

Adoption leave may be provided as per the rules of the Central Government.

**XII. Surrogacy leave**

Leave for Surrogacy shall be applicable as per the Rules, Regulations and Norms as laid down by the Government of India.

**9. Research Promotion Grant**

The UGC or the respective agency (Central/State Governments) may provide a start-up grant at the level of Rs. 3.0 lakhs in Social Sciences, Humanities and Languages and Rs. 6.0 lakhs in Sciences and Technology to teachers and other non-vocational academic staff to take up research immediately after their appointment.

**9.1 Consultancy Assignments**

The consultancy rules, terms, conditions and the model of revenue sharing between institutions and consultant-teachers shall be as per the UGC Consultancy Rules to be provided separately.

**10.0 Counting of Past Services for Direct Recruitment and Promotion under CAS**

Previous regular service, whether national or international, as Assistant Professor, Associate Professor or Professor or equivalent in a University, College, National Laboratories or other scientific/professional organisations such as the CSIR, ICAR, DRDO, UGC, ICSSR, ICHR, ICMR and DBT, should count for the direct recruitment and promotion under the CAS of a teacher as Assistant Professor, Associate Professor, Professor or any other nomenclature, provided that:

- (a) The essential qualifications of the post held were not lower than the qualifications prescribed by the UGC for Assistant Professor, Associate Professor and Professor, as the case may be.
- (b) The post is/was in an equivalent grade or of the pre-revised scale of pay as the post of Assistant Professor (Lecturer) Associate Professor (Reader) and Professor.
- (c) The concerned Assistant Professor, Associate Professor and Professor should possess the same minimum qualifications as prescribed by the UGC for appointment to the post of Assistant Professor, Associate Professor and Professor, as the case may be.
- (d) The post was filled in accordance with the prescribed selection procedure as laid down in the Regulations of the University/State Government/Central Government/ Institutions concerned, for such appointments.
- (e) The previous appointment was not as guest lecturer for any duration.
- (f) The previous Ad-hoc or Temporary or contractual service (by whatever nomenclature it may be called) shall be counted for direct recruitment and for promotion, provided that:
  - (i) the essential qualifications of the post held were not lower than the qualifications prescribed by the UGC for Assistant Professor, Associate Professor and Professor, as the case may be
  - (ii) the incumbent was appointed on the recommendation of a duly constituted Selection Committee/Selection Committee constituted as per the rules of the respective university;
  - (iii) the incumbent was drawing total gross emoluments not less than the monthly gross salary of a regularly appointed Assistant Professor, Associate Professor and Professor, as the case may be; and
- (g) No distinctions shall be made with reference to the nature of management of the institution where previous service was rendered (private/local body/Government), while counting the past service under this clause.

**11.0 Period of Probation and Confirmation**

- 11.1** The minimum period of probation of a teacher shall be one year, extendable by a maximum period of one more year in case of unsatisfactory performance.
- 11.2** The teacher on probation shall be confirmed at the end of one year, unless extended by another year through a specific order, before expiry of the first year.
- 11.3** Subject to Clause 11 of this Regulation, it is obligatory on the part of the university/the concerned institution to issue an order of confirmation to the incumbents within 45 days of completion of the probation period after following the due process of verification of satisfactory performance.
- 11.4** The probation and confirmation rules shall be applicable only at the initial stage of recruitment, issued from time to time, by the Central Government.
- 11.5** All other Central Government rules on probation and confirmation shall be applicable *mutatis mutandis*.

**12.0 Creation and Filling-up of Teaching Posts**

- 12.1** Teaching posts in universities, as far as feasible, may be created in a pyramidal order, for instance, for one post of Professor, there shall be two posts of Associate Professors and four posts of Assistant Professor, per department.
- 12.2** All the sanctioned/approved posts in the university system shall be filled up on an urgent basis.

**13.0 Appointments on Contract Basis**

The teachers should be appointed on contract basis only when it is absolutely necessary and when the student-teacher ratio does not satisfy the laid-down norms. In any case, the number of such appointments should not exceed 10% of the total number of faculty positions in a College/University. The qualifications and selection procedure for appointing them should be the same as those applicable to a regularly-appointed teacher. The

fixed emoluments paid to such contract teachers should not be less than the monthly gross salary of a regularly-appointed Assistant Professor. Such appointments should not be made initially for more than one academic session, and the performance of any such entrant teacher should be reviewed for academic performance before reappointing him/her on contract basis for another session. Such appointments on contract basis may also be resorted to when absolutely necessary to fill vacancies arising due to maternity leave, child-care leave, etc.

#### 14.0 Teaching Days

**14.1** The Universities/Colleges must have at least 180 teaching, i.e., there should be a minimum of 30 weeks of actual teaching in a 6-day week. Of the remaining period, 12 weeks may be devoted to admission and examination activities, and non-instructional days for co-curricular, sports, college day, etc., 8 weeks for vacations and 2 weeks may be attributed to various public holidays. If the University adopts a 5 day week pattern, then the number of weeks should be increased correspondingly to ensure the equivalent of 30 weeks of actual teaching, with a 6-day week.

The above provision is summarised as follows:

Categorisation	Number of weeks : 6-days a week pattern		Number of weeks : 5-days a week pattern	
	University	College	University	College
Teaching and Learning Process	30 (180 days) weeks	30 (180 days) weeks	36 (180 days) weeks	36 (180 days) weeks
Admissions, Examinations, and preparation for Examination	12	10	8	8
Vacations	8	10	6	6
Public Holidays (to increase and adjust teaching days accordingly)	2	2	2	2
<b>Total</b>	52	52	52	52

**14.2** In-lieu of the curtailment of vacation by 2 weeks, the university teachers may be credited with 1/3<sup>rd</sup> of the period of their earned leave. However, colleges may have an option of a total vacation of 10 weeks in a year and no earned leave except when required to work during the vacations for which, as in the case of University teachers, 1/3<sup>rd</sup> of the period shall be credited as Earned Leave.

#### 15.0 Workload

**15.1** The workload of the teachers in full employment should not be less than Forty hours a week for Thirty working weeks (One Hundred and Eighty teaching days) in an academic year. It should be necessary for the teacher to be available for at least Five hours daily in the University/College. Teachers shall devote at least Two hours per day for mentoring of students (minimum Fifteen students per coordinator) for Community Development/Extra-Curricular Activities/library consultation/research in case of Under-Graduate Courses and/or at least Two hours per day for research in case of Post-Graduate courses, for which the necessary space and infrastructure shall be provided by the University/College. The direct teaching-learning work load should be as follows:

Assistant Professor	-	16 hours per week
Associate Professor/Professor	-	14 hours per week

**15.2** Professors/ Associate Professors/ Assistant Professors involved in administration/ extension work can devote two hours per week from the teaching and learning hours.

#### 16.0 Service Agreement and Fixing of Seniority

**16.1** At the time of recruitment in Universities and Colleges, a service agreement should be executed between the University/College and the teacher concerned and a copy thereof shall be deposited with the Registrar/Principal. Such service agreement shall be duly stamped as per the government rates applicable.

**16.2.** The self-appraisal methodology, as per Clause 6.0 and its sub-clauses and Clauses 6.1 to 6.4 and all the sub-clauses contained therein and as per Tables 1 to 5 of Appendix II, as per eligibility, shall form part of the service agreement/record.

**16.3 Inter-se seniority between the direct recruited and teachers promoted under CAS**

The inter-se seniority of a direct recruit shall be determined with reference to the date of joining and for the teachers promoted under the CAS with reference to the date of eligibility as indicated in the recommendations of the selection committee of the respective candidates. The rules and regulations of the respective Central/State Government shall apply, for all other matters of seniority.

**17.0 Code of Professional Ethics**

**I. Teachers and their Responsibilities :**

Whoever adopts teaching as a profession assumes the obligation to conduct himself / herself in accordance with the ideal of the profession. A teacher is constantly under the scrutiny of his students and the society at large. Therefore, every teacher should see that there is no incompatibility between his precepts and practice. The national ideals of education which have already been set forth and which he/she should seek to inculcate among students must be his/her own ideals. The profession further requires that the teacher should be calm, patient and communicative by temperament and amiable in disposition.

**Teacher should:**

- (i) Adhere to a responsible pattern of conduct and demeanor expected of them by the community;
- (ii) Manage their private affairs in a manner consistent with the dignity of the profession;
- (iii) Seek to make professional growth continuous through study and research;
- (iv) Express free and frank opinion by participation at professional meetings, seminars, conferences etc., towards the contribution of knowledge;
- (v) Maintain active membership of professional organisations and strive to improve education and profession through them;
- (vi) Perform their duties in the form of teaching, tutorials, practicals, seminars and research work, conscientiously and with dedication;
- (vii) Discourage and not indulge in plagiarism and other non ethical behaviour in teaching and research;
- (viii) Abide by the Act, Statute and Ordinance of the University and to respect its ideals, vision, mission, cultural practices and tradition;
- (ix) Co-operate and assist in carrying out the functions relating to the educational responsibilities of the college and the university, such as: assisting in appraising applications for admission, advising and counselling students as well as assisting the conduct of university and college examinations, including supervision, invigilation and evaluation; and
- (x) Participate in extension, co-curricular and extra-curricular activities, including the community service.

**II. Teachers and Students**

**Teachers should:**

- (i) Respect the rights and dignity of the student in expressing his/her opinion;
- (ii) Deal justly and impartially with students regardless of their religion, caste, gender, political, economic, social and physical characteristics;
- (iii) Recognise the difference in aptitude and capabilities among students and strive to meet their individual needs;
- (iv) Encourage students to improve their attainments, develop their personalities and at the same time contribute to community welfare;
- (v) Inculcate among students scientific temper, spirit of inquiry and ideals of democracy, patriotism, social justice, environmental protection and peace;
- (vi) Treat the students with dignity and not behave in a vindictive manner towards any of them for any reason;

- (vii) Pay attention to only the attainment of the student in the assessment of merit;
- (viii) Make themselves available to the students even beyond their class hours and help and guide students without any remuneration or reward;
- (ix) Aid students to develop an understanding of our national heritage and national goals; and
- (x) Refrain from inciting students against other students, colleagues or administration.

### III. Teachers and Colleagues

#### Teachers should:

- (i) Treat other members of the profession in the same manner as they themselves wish to be treated;
- (ii) Speak respectfully of other teachers and render assistance for professional betterment;
- (iii) Refrain from making unsubstantiated allegations against colleagues to higher authorities; and
- (iv) Refrain from allowing considerations of caste, creed, religion, race or sex in their professional endeavour.

### IV. Teachers and Authorities :

#### Teachers should:

- (i) Discharge their professional responsibilities according to the existing rules and adhere to procedures and methods consistent with their profession in initiating steps through their own institutional bodies and / or professional organisations for change of any such rule detrimental to the professional interest;
- (ii) Refrain from undertaking any other employment and commitment, including private tuitions and coaching classes which are likely to interfere with their professional responsibilities;
- (iii) Co-operate in the formulation of policies of the institution by accepting various offices and discharge responsibilities which such offices may demand;
- (iv) Co-operate through their organisations in the formulation of policies of the other institutions and accept offices;
- (v) Co-operate with the authorities for the betterment of the institutions keeping in view the interest and in conformity with the dignity of the profession;
- (vi) Adhere to the terms of contract;
- (vii) Give and expect due notice before a change of position takes place; and
- (viii) Refrain from availing themselves of leave except on unavoidable grounds and as far as practicable with prior intimation, keeping in view their particular responsibility for completion of academic schedule.

### V. Teachers and Non-Teaching Staff :

#### Teachers should :

- (i) Treat the non-teaching staff as colleagues and equal partners in a cooperative undertaking, within every educational institution;
- (ii) Help in the functioning of joint-staff councils covering both the teachers and the non-teaching staff.

### VI. Teachers and Guardians

#### Teachers should:

- (i) Try to see through teachers' bodies and organisations, that institutions maintain contact with the guardians, their students, send reports of their performance to the guardians whenever necessary and meet the guardians in meetings convened for the purpose for mutual exchange of ideas and for the benefit of the institution.

### VII. Teachers and Society

#### Teachers should:

- (i) Recognise that education is a public service and strive to keep the public informed of the educational programmes which are being provided;



- (ii) Work to improve education in the community and strengthen the community's moral and intellectual life ;
- (iii) Be aware of social problems and take part in such activities as would be conducive to the progress of society and hence the country as a whole;
- (iv) Perform the duties of citizenship, participate in community activities and shoulder responsibilities of public offices;
- (v) Refrain from taking part in or subscribing to or assisting in any way activities, which tend to promote feeling of hatred or enmity among different communities, religions or linguistic groups but actively work for national integration.

**The Vice-Chancellor/Pro-Vice-Chancellor/Rector**

**The Vice-Chancellor/Pro-Vice-Chancellor/Rector should :**

- (a) Provide inspirational and motivational value-based academic and executive leadership to the university through policy formation, operational management, optimization of human resources and concern for environment and sustainability;
- (b) Conduct himself/herself with transparency, fairness, honesty, highest degree of ethics and decision making that is in the best interest of the university;
- (c) Act as steward of the university's assets in managing the resources responsibility, optimally, effectively and efficiently for providing a conducive working and learning environment;
- (d) Promote the collaborative, shared and consultative work culture in the university, paving way for innovative thinking and ideas;
- (e) Endeavour to promote a work culture and ethics that brings about quality, professionalism, satisfaction and service to the nation and society.
- (f) Refrain from allowing considerations of caste, creed, religion, race, gender or sex in their professional endeavour.

**College Principal should;**

- (a) Provide inspirational and motivational value-based academic and executive leadership to the college through policy formation, operational management, optimization of human resources and concern for environment and sustainability;
- (b) Conduct himself/herself with transparency, fairness, honesty, highest degree of ethics and decision making that is in the best interest of the college;
- (c) Act as steward of the College's assets in managing the resources responsibility, optimally, effectively and efficiently for providing a conducive working and learning environment;
- (d) Promote the collaborative, shared and consultative work culture in the college, paving way for innovative thinking and ideas;
- (e) Endeavour to promote a work culture and ethics that brings about quality, professionalism, satisfaction and service to the nation and society.
- (f) Adhere to a responsible pattern of conduct and demeanor expected of them by the community;
- (g) Manage their private affairs in a manner consistent with the dignity of the profession;
- (h) Discourage and not indulge in plagiarism and other non ethical behaviour in teaching and research;
- (i) Participate in extension, co-curricular and extra-curricular activities, including the community service.
- (j) Refrain from allowing considerations of caste, creed, religion, race, gender or sex in their professional endeavour.

**Director Physical Education and Sports (University/College)/Librarian (University/College) should;**

- (a) Adhere to a responsible pattern of conduct and demeanor expected of them by the community;
- (b) Manage their private affairs in a manner consistent with the dignity of the profession;
- (c) Discourage and not indulge in plagiarism and other non ethical behaviour in teaching and research;
- (d) Participate in extension, co-curricular and extra-curricular activities, including the community service.

(e) Refrain from allowing considerations of caste, creed, religion, race, gender or sex in their professional endeavour.

### **18.0 Maintenance of Standards in Higher-Education Institutions:**

In order to maintain the academic standards in higher education, the following recommendations shall be adopted by the respective Universities/Colleges/Institutions:

- i. The process of evaluation for Ph.D shall be uniform in all the universities in accordance with the respective UGC Regulations and their amendments from time to time, in this regard. The Universities shall adopt these Regulations within six months of their notification.
- ii. There shall be special provision of supernumerary Ph.D seats not exceeding 10% of the total seats available in the department, if there is no vacant seat available with the eligible Supervisors in that department, to the in-service teachers for encouraging the faculty members of colleges and universities for getting a Ph.D. degree.
- iii. In order to encourage research and increase country's research output, Universities shall accord permission and provide need-based facility for college teachers to supervise Ph.D./M.Phil. scholars. Universities shall amend their Statutes and Ordinances accordingly.
- iv. All newly-recruited faculty members shall be provided one-time seed money/start up grant/research grant for establishing a basic research/computational facility as per the provisions laid down in these regulations.
- v. The Ph.D. degree shall be made a mandatory requirement for recruitment and promotions in accordance with the provisions laid down in these Regulations.
- vi. Research clusters shall be created amongst the universities/colleges/research institutions within the state for sharing research facilities, human resources, skills and infrastructure to ensure optimal utilisation of resources and to create synergies among higher education institutions.
- vii. An induction programme of one month shall be introduced for all newly-recruited Assistant Professors in the universities /colleges/institutions ideally before the starting of their teaching work, but definitely within one year of the recruitment of the new faculty member. In addition to the Human Resource Development Centres of the UGC, Universities/Institutions with the Pandit Madan Mohan Malviya National Mission on Teachers and Teaching(PMMMNMTT) scheme shall also organize such induction programmes as per their mandate.
- viii. These induction programmes shall be treated at par with the Orientation Programmes already being run by the Human Resource Development Centres of the UGC for the purpose of the CAS requirements. Universities/Colleges/Institutions shall send the faculty members to such programmes in a phased manner so that the teaching work does not suffer.
- ix. All short-term and long-duration capacity-building programmes for teachers/faculty ranging from one week to one month as well as seminars, workshops in different pedagogic and discipline-specific areas being conducted by centres such as Schools of Education (SoEs), Teaching Learning Centres (TLCs), Faculty Development Centres (FDCs), Centres for Excellence in Science and Mathematics (CESMEs), Centres for Academic Leadership and Education Management (CALEMs) under the PMMMNMTT scheme shall be taken into consideration for fulfilment of the requirements as laid down in Career Advancement Scheme of these Regulations.

### **19.0 Other Terms and Conditions**

#### **19.1 Incentives for Ph.D./M.Phil. and other Higher Qualification**

- i. Five non-compounded advance increments shall be admissible at the entry level of recruitment as Assistant Professor to persons possessing the degrees of Ph.D. awarded in a relevant discipline by the University following the process of admission, registration, course work and external evaluation as prescribed by the UGC.
- ii. M.Phil degree holders at the time of recruitment to the post of Assistant Professor shall be entitled to two non-compounded advance increments.
- iii. Those possessing Post-graduate degree in the professional course such as LL.M./M.Tech/M.Arch./M.E./M.V.Sc./M.D., etc. recognized by the relevant statutory body/ council, shall also be entitled to two non-compounded advance increments at the entry level.
- iv.
  - a) Teachers who complete their Ph.D. degree while in service shall be entitled to three non-compounded increments fixed at increment applicable at entry level only if such Ph.D. is in a relevant discipline of the

- discipline of employment and has been awarded by a University complying with the process prescribed by the UGC for enrolment, course work, evaluation, etc.
- b) However, teachers in service who have already been awarded Ph.D. by the time of coming into force of these Regulations or having been enrolled for Ph.D. have already undergone course-work as well as evaluation, if any, and only Notification in regard to the award of Ph.D. is awarded, shall also be entitled to the award of three non-compounded increments fixed at increment applicable at entry level only, even if the university awarding such Ph.D. has not yet been notified by the UGC as having complied with the process prescribed by the Commission.
- v. In respect of every other case, a teacher who is already enrolled for Ph.D. shall avail the benefit of three non-compounded increments fixed at increment applicable at entry level only if the university awarding the Ph.D. has been notified by the UGC to have complied with the process prescribed by the Commission for the award of Ph.D. in respect of either course-work or evaluation or both, as the case may be.
- vi. Teachers in service who have not yet enrolled for Ph.D. shall therefore, derive the benefit of three non-compounded increments fixed at increment applicable at entry level only on award of Ph.D. , while in service only if such enrolment is with a university which complies with the entire process including that of enrolment as prescribed by the UGC.
- vii. Teachers who acquire M.Phil. Degree or a post-graduate degree in a professional course recognised by the relevant Statutory Body / Council, while in service, shall be entitled to one advance increment fixed at increment applicable at entry level only.
- viii. Five non-compounded advance increments shall be admissible to Assistant Librarian / College Librarian who are recruited at entry level with Ph.D. degree in the discipline of library science from a university complying with the process prescribed by the UGC in respect of enrolment, course-work and evaluation process for the award of Ph.D. in Library Science.
- ix. (a) Assistant Librarian/College Librarian acquiring the degree of Ph.D. at any time while in service, in the discipline of library science from a university complying with the process prescribed by the UGC in respect of enrolment, course-work and evaluation shall be entitled to three non-compounded advance increments fixed at increment applicable at entry level only.
- (b) However, persons in posts of Assistant Librarian/College Librarian on higher positions who have already been awarded Ph.D. in library science at the time of coming into force of these Regulations or having already undergone course-work as well as evaluation, if any, and only Notification in regard to the award of Ph.D. is awaited, shall also be entitled to the award of three non-compounded increments fixed at increment applicable at entry level only.
- x. In respect of every other case of persons in the post of Assistant Librarian / College Librarian or higher positions who are already enrolled for Ph.D. shall avail the benefit three non-compounded increments fixed at increment applicable at entry level only if the university awarding the Ph.D. has been notified by the UGC to have complied with the process prescribed by the Commission for the award of Ph.D.in respect of either course-work or evaluation or both as the case may be.
- xi. Assistant Librarian/College librarian and others in higher library positions in service who have not yet enrolled for Ph.D. shall therefore, derive the benefit of three non-compounded increments fixed at increment applicable at entry level only on award of Ph.D. while in service only if such enrolment is with a university which complies with the entire process, including that of enrolment as prescribed by the UGC.
- xii. Two non-compounded advance increments shall be admissible for Assistant Librarian/College Librarian with M.Phil. degree in Library Science at the entry level. Assistant Librarian/College Librarian and those in higher positions acquiring M.Phil degree in library science at any time during the course of their service shall be entitled to one advance increment fixed at increment applicable at entry level only.
- xiii. Five non-compounded advance increments shall be admissible to Assistant Director of Physical Education and Sports / College Director of Physical Education and Sports who are recruited at entry level with Ph.D. degree in the discipline of Physical Education/Physical Education and Sports / Sports Science from a university complying with the process prescribed by the UGC in respect of enrolment, course-work and evaluation process for the award of Ph.D. in Physical Education/Physical Education and Sports / Sports Science.

xiv. Notwithstanding anything in the forgoing clauses, those who have already availed the benefit of advance increments for possessing Ph.D./M.Phil at the entry level or in service once either under this regulation or under the earlier schemes/regulations shall not be entitled to the benefit of advance increments under these Regulations.

xv. Teachers, library and Physical Education and Sports cadres who have already availed the benefits of increments as per the then existing policy for acquiring Ph.D./M.Phil. while in service shall not be entitled to advance increments under these Regulations.

xvi. For posts at the entry level where no such advance increments were admissible for possessing Ph.D./M.Phil. under the earlier schemes/regulations, the benefit of advance of increments for possessing Ph.D./M.Phil shall be available to only those appointments which have been made on or after the coming into force of these Regulations.

### 19.2 Promotion

When an individual gets a promotion, his new pay on promotion would be fixed in the Pay Matrix as follows:

On promotion, the teacher or equivalent position would be given a notional increment in his/her existing Academic Level of Pay, by moving him/her to the next higher Cell at that Level; and the pay shown in this Cell would now be located in the new Academic Level corresponding to the post to which he/she has been promoted. If a Cell identical with that pay is available in the new Level, that Cell shall be the new pay, otherwise the next higher Cell in that Level shall be the new pay of the teacher or equivalent position. If the pay arrived at in this manner is less than the first Cell in the new Level, then the pay shall be fixed at the first Cell of the new Level.

### 19.3 Allowances and Benefits

- I. Other allowances and benefits, such as Hometown Travel Concession, Leave Travel Concession, Special Compensatory Allowances, Children's Education Allowance, Transport Allowance, House Rent Allowance, House Building Allowance, Deputation Allowance, Travelling Allowance, Dearness Allowance, Area-based Special Compensatory Allowance etc. for teachers and Library and Physical Education and Sports Cadres, shall be as applicable to the Central Government employees and be governed by the relevant rules as notified by the Government of India from time to time.
- II. Pension, Gratuity, ex-gratia compensation etc. as applicable to Central/State Government employees shall also be applicable to teachers and Library and Physical Education and Sports Cadres of Central/State Universities and Colleges including affiliated and constituent Colleges as the case may be.
- III. Medical Benefits: All medical benefits for teachers and Library and Physical Education Cadres, shall be as applicable to the Central Government employees. Further, the Teachers and Library and Physical Education Cadres may be placed under Central Government Health Scheme or any other such scheme of the Central Government/ Health Scheme of respective State Government, as the case may be, for Central/State Universities/Colleges respectively.

### APPENDICES

<b>Appendix I</b>	<b>Fitment Tables for fixation of pay of the existing incumbents, who were in position as on 01.01.2016, in various categories of posts indicated in the tables (MHRD Notification MHRD letters No. Corrigendum F.No.1-7/2015-U.II(1) dated 08.11.2017</b>
<b>Appendix II</b>	<b><u>Assessment Criteria and Methodology</u></b> <b>Table 1 to 3 - For University and College Teachers</b> <b>Table 4 - For Assistant Librarian, Deputy Librarian, Librarian etc.</b> <b>Table 5 - For Assistant Director/Deputy Director/Director Physical Education and Sports etc.</b>

SANJEEV KUMAR NARAYAN, Under Secy.

[ADVT.-III/4/Exty./147/18]

**Appendix I**

**Fitment Tables for fixation of pay of the existing incumbents, who were in position as on 01.01.2016, in various categories of posts indicated in the tables**

F.No.1-7/2015-U.II(1)  
Government of India  
Ministry of Human Resource Development  
Department of Higher Education  
University & Section

Shastri Bhavan, New Delhi  
Dated 2<sup>nd</sup> November, 2017

**Corrigendum**

**Subject:** Scheme of revision of pay of teachers and equivalent cadres in universities and colleges following the revision of pay scales of Central Government employees on the recommendations of the 7<sup>th</sup> Central Pay Commission (CPC).

In the order of the Government of India in the Ministry of Human Resource Development (Department of Higher Education) no. 1-7/2015-U.II(1) dated 2.11.2017 in the Annexure (Page 8) appended to the said order, figures mentioned as:

- (a) Cell Academic level 12, row 9 may be read as "24,700" instead of "24,100"  
(b) Cell Academic level 13A, row 18 may be read as "2,04,100" instead of "2,04,100"  
(c) Cell Academic level 14, row 9 may be read as "1,82,700" instead of "1,82,100"

2. The rest of the content of the above order remains the same.

K. K. Tripathy  
(Dr. K.K. Tripathy) Director

To,

1. The Secretary, University Grants Commission, Bahadurshah Zafar Marg, New Delhi - 110 002.
2. Vice-Chancellors of all Central Universities/ Institutions Deemed to be Universities fully funded by the Central Government.
3. Principal Secretary to Public Minister, South Block, Central Secretariat, New Delhi.
4. Secretary (Communications), Cabinet Secretariat, Bahadurshah Zafar Marg, New Delhi.
5. Secretary, Department of Expenditure, North Block, New Delhi.
6. Secretary, Department of Personnel & Training, North Block, New Delhi.
7. Secretary, Department of Agriculture Research and Education, North Block, New Delhi.
8. Secretary, Ministry of Health and Family Welfare (Medical Education), Shastri Bhavan, New Delhi.
9. Member Secretary, All India Council for Technical Education, New Delhi.
10. Chief Secretaries of all State Governments.
11. Web Master, Ministry of Human Resource Development for publication on the website of the Ministry, hosted by the National Informatics Centre.

Annexure-I

Pay Matrix

Pay Band (Rs.)	15,600-39,100			37,400-67,000		67,000-79,000
Grade Pay (Rs.)	6,000	7,000	8,000	9,000	10,000	0
Index of Rationalization	2.67	2.67	2.67	2.67	2.72	2.72
Entry Pay (Rs.)	21,600	25,790	29,900	49,200	53,000	67,000
Academic Level	10	11	12	12A	14	16
Rationalized Entry Pay (Rs.)	57,700	68,900	78,800	1,31,400	1,44,200	1,82,300
1	59,400	71,000	82,200	1,35,200	1,48,500	1,87,700
2	61,200	73,180	84,700	1,38,400	1,52,000	1,92,000
3	63,000	75,300	87,200	1,41,600	1,55,500	1,95,500
4	64,900	77,600	89,800	1,44,900	1,59,200	2,00,100
5	66,800	79,900	92,500	1,48,300	1,63,000	2,11,300
6	68,800	82,300	95,300	1,51,900	1,72,200	2,17,600
7	70,900	84,800	98,200	1,55,600	1,77,400	2,24,100
8	73,000	87,300	1,01,100	1,59,400	1,82,700	
9	75,200	89,900	1,04,100	1,71,400	1,89,200	
10	77,500	92,600	1,07,200	1,78,500	1,96,800	
11	79,800	95,400	1,10,400	1,85,800	2,04,600	
12	82,200	98,300	1,13,700	1,93,300	2,12,700	
13	84,700	1,01,300	1,17,100	2,01,000	2,21,000	
14	87,200	1,04,400	1,20,600	2,08,900	2,29,300	
15	89,800	1,07,600	1,24,200	2,17,000	2,38,000	
16	92,500	1,10,900	1,27,900	2,25,300	2,47,000	

K. K. Tripathi  
21/10

Pay Band (Rs.)	15,600-39,100			37,400-67,000		67,000-79,000
18	95,300	1,13,800	1,31,700	2,17,100		
19	98,200	1,17,200	1,35,700			
20	1,01,100	1,20,700	1,39,800			
21	1,04,100	1,24,300	1,44,000			
22	1,07,200	1,28,000	1,48,300			
23	1,10,400	1,31,800	1,52,700			
24	1,13,700	1,35,800	1,57,300			
25	1,17,100	1,39,900	1,62,000			
26	1,20,600	1,44,100	1,66,800			
27	1,24,200	1,48,400	1,71,800			
28	1,27,900	1,52,800	1,77,000			
29	1,31,700	1,57,300	1,82,400			
30	1,35,700	1,62,200	1,87,900			
31	1,39,800	1,67,100	1,93,500			
32	1,44,000	1,72,100	1,99,300			
33	1,48,300	1,77,300	2,05,300			
34	1,52,700	1,82,600	2,11,500			
35	1,57,300	1,88,100				
36	1,62,000	1,93,700				
37	1,66,800	1,99,500				
38	1,71,800	2,05,500				
39	1,77,000					
40	1,82,400					

K. K. Tripathi  
21/11

**Appendix II****Table 1****Assessment Criteria and Methodology for University/College Teachers**

S.No.	Activity	Grading Criteria
1.	Teaching: (Number of classes taught/total classes assigned)x100% (Classes taught includes sessions on tutorials, lab and other teaching related activities)	80% & above - Good Below 80% but 70% & above-Satisfactory Less than 70% - Not satisfactory
2.	Involvement in the University/College students related activities/research activities:  (a) Administrative responsibilities such as Head, Chairperson/ Dean/ Director/ Co-ordinator, Warden etc.  (b) Examination and evaluation duties assigned by the college / university or attending the examination paper evaluation.  (c) Student related co-curricular, extension and field based activities such as student clubs, career counselling, study visits, student seminars and other events, cultural, sports, NCC, NSS and community services.  (d) Organising seminars/ conferences/ workshops, other college/university activities.  (e) Evidence of actively involved in guiding Ph.D students.  (f) Conducting minor or major research project sponsored by national or international agencies.  (g) At least one single or joint publication in peer-reviewed or UGC list of Journals.	Good - Involved in at least 3 activities Satisfactory - 1-2 activities Not-satisfactory - Not involved / undertaken any of the activities <b>Note:</b> Number of activities can be within or across the broad categories of activities
<p><b>Overall Grading:</b></p> <p><b>Good:</b> Good in teaching and satisfactory or good in activity at Sl.No.2. Or</p> <p><b>Satisfactory:</b> Satisfactory in teaching and good or satisfactory in activity at Sl.No.2.</p> <p><b>Not Satisfactory:</b> If neither good nor satisfactory in overall grading</p> <p><b>Note:</b> For the purpose of assessing the grading of Activity at Serial No. 1 and Serial No. 2, all such periods of duration which have been spent by the teacher on different kinds of paid leaves such as Maternity Leave, Child Care Leave, Study Leave, Medical Leave, Extraordinary Leave and Deputation shall be excluded from the grading assessment. The teacher shall be assessed for the remaining period of duration and the same shall be extrapolated for the entire period of assessment to arrive at the grading of the teacher. The teacher on such leaves or deputation as mentioned above shall not be put to any disadvantage for promotion under CAS due to his/her absence from his/her teaching responsibilities subject to the condition that such leave/deputation was undertaken with the prior approval of the competent authority following all procedures laid down in these regulations and as per the acts, statutes and ordinances of the parent institution.</p>		

**Table 2****Methodology for University and College Teachers for calculating Academic/Research Score**

(Assessment must be based on evidence produced by the teacher such as: copy of publications, project sanction letter, utilization and completion certificates issued by the University and acknowledgements for patent filing and approval letters, students' Ph.D. award letter, etc.,)

S.N.	Academic/Research Activity	Faculty of Sciences /Engineering / Agriculture / Medical /Veterinary Sciences	Faculty of Languages / Humanities / Arts / Social Sciences / Library /Education / Physical Education / Commerce / Management & other related disciplines
1.	<b>Research Papers in Peer-Reviewed or UGC listed Journals</b>	08 per paper	10 per paper
2.	<b>Publications (other than Research papers)</b>		
	<b>(a) Books authored which are published by ;</b>		
	International publishers	12	12
	National Publishers	10	10
	Chapter in Edited Book	05	05
	Editor of Book by International Publisher	10	10
	Editor of Book by National Publisher	08	08
	<b>(b) Translation works in Indian and Foreign Languages by qualified faculties</b>		
	Chapter or Research paper	03	03
	Book	08	08
3.	<b>Creation of ICT mediated Teaching Learning pedagogy and content and development of new and innovative courses and curricula</b>		
	<b>(a) Development of Innovative pedagogy</b>	05	05
	<b>(b) Design of new curricula and courses</b>	02 per curricula/course	02 per curricula/course
	<b>(c) MOOCs</b>		
	Development of complete MOOCs in 4 quadrants (4 credit course)(In case of MOOCs of lesser credits 05 marks/credit)	20	20
	MOOCs (developed in 4 quadrant) per module/lecture	05	05
	Content writer/subject matter expert for each module of MOOCs (at least one quadrant)	02	02
	Course Coordinator for MOOCs (4 credit course)(In case of MOOCs of lesser credits 02 marks/credit)	08	08
	<b>(d) E-Content</b>		
	Development of e-Content in 4 quadrants for a complete course/e-book	12	12
	e-Content (developed in 4 quadrants) per module	05	05
	Contribution to development of e-content module in complete course/paper/e-book (at least one quadrant)	02	02
	Editor of e-content for complete course/ paper /e-book	10	10
4	<b>(a) Research guidance</b>		



	Ph.D.	10 per degree awarded 05 per thesis submitted	10 per degree awarded 05 per thesis submitted
	M.Phil./P.G dissertation	02 per degree awarded	02 per degree awarded
	<b>(b) Research Projects Completed</b>		
	More than 10 lakhs	10	10
	Less than 10 lakhs	05	05
	<b>(c) Research Projects Ongoing :</b>		
	More than 10 lakhs	05	05
	Less than 10 lakhs	02	02
	<b>(d) Consultancy</b>	03	03
5	<b>(a) Patents</b>		
	International	10	10
	National	07	07
	<b>(b) *Policy Document (Submitted to an International body/organisation like UNO/UNESCO/World Bank/International Monetary Fund etc. or Central Government or State Government)</b>		
	International	10	10
	National	07	07
	State	04	04
	<b>(c) Awards/Fellowship</b>		
	International	07	07
	National	05	05
6.	<b>*Invited lectures / Resource Person/ paper presentation in Seminars/ Conferences/full paper in Conference Proceedings (Paper presented in Seminars/Conferences and also published as full paper in Conference Proceedings will be counted only once)</b>		
	International (Abroad)	07	07
	International (within country)	05	05
	National	03	03
	State/University	02	02

**The Research score for research papers would be augmented as follows :**

Peer-Reviewed or UGC-listed Journals (Impact factor to be determined as per Thomson Reuters list) :

- i) Paper in refereed journals without impact factor - 5 Points
  - ii) Paper with impact factor less than 1 - 10 Points
  - iii) Paper with impact factor between 1 and 2 - 15 Points
  - iv) Paper with impact factor between 2 and 5 - 20 Points
  - v) Paper with impact factor between 5 and 10 - 25 Points
  - vi) Paper with impact factor >10 - 30 Points
- (a) Two authors: 70% of total value of publication for each author.
  - (b) More than two authors: 70% of total value of publication for the First/Principal/Corresponding author and 30% of total value of publication for each of the joint authors.

Joint Projects: Principal Investigator and Co-investigator would get 50% each.

**Note:**

- Paper presented if part of edited book or proceeding then it can be claimed only once.
- For joint supervision of research students, the formula shall be 70% of the total score for Supervisor and Co-supervisor. Supervisor and Co-supervisor, both shall get 7 marks each.
- \*For the purpose of calculating research score of the teacher, the combined research score from the categories of 5(b). Policy Document and 6. Invited lectures/Resource Person/Paper presentation shall have an upper capping of thirty percent of the total research score of the teacher concerned.
- The research score shall be from the minimum of three categories out of six categories.

**Table: 3 A****Criteria for Short-listing of Candidates for Interview for the Post of Assistant Professors in Universities**

S.N.	Academic Record	Score			
1.	<b>Graduation</b>	80% & Above = 15	60% to less than 80% = 13	55% to less than 60% = 10	45% to less than 55% = 05
2.	<b>Post-Graduation</b>	80% & Above = 25	60% to less than 80% = 23	55% (50% in case of SC/ST/OBC (non-creamy layer)/PWD) to less than 60% = 20	
3.	<b>M.Phil.</b>	60% & above = 07	55% to less than 60% = 05		
4.	<b>Ph.D.</b>	30			
5.	<b>NET with JRF</b>	07			
	<b>NET</b>	05			
	<b>SLET/SET</b>	03			
6.	<b>Research Publications ( 2 marks for each research publications published in Peer-Reviewed or UGC-listed Journals)</b>	10			
7.	<b>Teaching / Post Doctoral Experience (2 marks for one year each)#</b>	10			
8.	<b>Awards</b>				
	International / National Level (Awards given by International Organisations/ Government of India / Government of India recognised National Level Bodies)	03			
	State-Level (Awards given by State Government)	02			

*#However, if the period of teaching/Post-doctoral experience is less than one year then the marks shall be reduced proportionately.*

**Note:**

- (A) (i) M.Phil + Ph.D Maximum - 30 Marks  
(ii) JRF/NET/SET Maximum - 07 Marks  
(iii) In awards category Maximum - 03 Marks
- (B) Number of candidates to be called for interview shall be decided by the concerned universities.

(C)

Academic Score	-	80
Research Publications	-	10
Teaching Experience	-	10
<b>Total</b>	<b>-</b>	<b>100</b>

(D) Score shall be valid for appointment in respective State SLET/SET Universities/ Colleges/ Institutions only

**Table: 3 B****Criteria for Short-listing of candidates for Interview for the Post of Assistant Professors in Colleges**

S.N.	Academic Record	Score			
1.	<b>Graduation</b>	80% & Above = 21	60% to less than 80% = 19	55% to less than 60% = 16	45% to less than 55% = 10
2.	<b>Post-Graduation</b>	80% & Above = 25	60% to less than 80% = 23	55% (50% in case of SC/ST/OBC (non-creamy layer)/PWD) to less than 60% = 20	
3.	<b>M.Phil.</b>	60% & above = 07	55% to less than 60% = 05		
4.	<b>Ph.D.</b>	25			
5.	<b>NET with JRF</b>	10			
	<b>NET</b>	08			
	<b>SLET/SET</b>	05			
6.	<b>Research Publications ( 2 marks for each research publications published in Peer-Reviewed or UGC-listed Journals)</b>	06			
7.	<b>Teaching / Post Doctoral Experience (2 marks for one year each)#</b>	10			
8.	<b>Awards</b>				
	International / National Level (Awards given by International Organisations/ Government of India / Government of India recognised National Level Bodies)	03			
	State-Level (Awards given by State Government)	02			

# However, if the period of teaching/post-doctoral experience is less than one year then the marks shall be reduced proportionately.

Note :

(A)

- |       |                    |         |   |          |
|-------|--------------------|---------|---|----------|
| (i)   | M.Phil. + Ph.D.    | Maximum | - | 25 Marks |
| (ii)  | JRF/NET/SET        | Maximum | - | 10 Marks |
| (iii) | In awards category | Maximum | - | 03 Marks |

- (B) Number of candidates to be called for interview shall be decided by the college.
- (C) Academic Score - 84  
 Research Publications - 06  
Teaching Experience - 10  
TOTAL - 100
- (D) SLET/SET score shall be valid for appointment in respective State Universities/Colleges/institutions only.

**Table 4**  
**Assessment Criteria and Methodology for Librarians**

S.No.	Activity	Grading Criteria
1	<p>Regularity of attending library (calculated in terms of percentage of days attended to the total number of days he/she is expected to attend)</p> <p>While attending in the library, the individual is expected to undertake, inter alia, following items of work:</p> <ul style="list-style-type: none"> <li>• Library Resource and Organization and maintenance of books, journals and reports.</li> <li>• Provision of Library reader services such as literature retrieval services to researchers and analysis of report.</li> <li>• Assistance towards updating institutional website</li> </ul>	<p>90% and above - Good</p> <p>Below 90% but 80% and above - Satisfactory</p> <p>Less than 80% - Not satisfactory</p>
2.	Conduct of seminars/workshops related to library activity or on specific books or genre of books.	<p>Good – 1 National level seminar/ workshop + 1 State/institution level workshop/Seminar</p> <p>Satisfactory - 1 National level seminar/ workshop or 1 state level seminar/ workshop + 1 institution level seminar/ workshop or 4 institution seminar / workshop</p> <p>Unsatisfactory – Not falling in above two categories</p>
3.	<p>If library has a computerized database then OR If library does not have a computerized database</p>	<p>Good – 100% of physical books and journals in computerized database.</p> <p>Satisfactory – At least 99% of physical books and journals in computerized database.</p> <p>Unsatisfactory – Not falling under good or satisfactory.</p> <p>OR</p> <p>Good – 100% Catalogue database made up to date</p> <p>Satisfactory- 90% catalogue database made up to date</p> <p>Unsatisfactory - Catalogue database not upto mark.</p> <p>(To be verified in random by the CAS Promotion Committee)</p>

4.	Checking inventory and extent of missing books	Good : Checked inventory and missing book less than 0.5% Satisfactory - Checked inventory and missing book less than 1% Unsatisfactory - Did not check inventory Or Checked inventory and missing books 1% or more.
5.	(i) Digitisation of books database in institution having no computerized database. (ii) Promotion of library network. (iii) Systems in place for dissemination of information relating to books and other resources. (iv) Assistance in college administration and governance related work including work done during admissions, examinations and extracurricular activities. (v) Design and offer short-term courses for users. (vi) Publications of at least one research paper in UGC approved journals.	Good : Involved in any two activities Satisfactory : At least one activity Not Satisfactory : Not involved/ undertaken any of the activities.
Overall Grading	Good : Good in Item 1 and satisfactory/good in any two other items including Item 4. Satisfactory : Satisfactory in Item 1 and satisfactory /good in any other two items including Item 4. Not satisfactory : If neither good nor satisfactory in overall grading.	
Note :		
<p>(1) It is recommended to use ICT technology to monitor the attendance of library staff and compute the criteria of assessment.</p> <p>(2) The Librarian must submit evidence of published paper, participation certificate for refresher or methodology course, successful research guidance from Head of Department of the concerned department, project completion.</p> <p>(3) The system of tracking user grievances and the extent of grievances redressal details may also be made available to the CAS promotion committee.</p>		

**Table 5****Assessment Criteria and Methodology for Directors of Physical Education and Sports**

S. No.	Activity	Grading Criteria
1	Attendance calculated in terms of percentage of days attended to the total number of days he is expected to attend.	90 and above - Good Above 80 but below 90- Satisfactory. Less than 80 - Not satisfactory.
2.	Organizing intra college competition	Good - Intra college competition in more than 5 disciplines. Satisfactory - Intra college competition in 3-5 disciplines. Unsatisfactory - Neither good nor satisfactory.

3.	Institution participating in external competitions	<p>Good - National level competition in at least one discipline plus State/District level competition in at least 3 disciplines.</p> <p>Satisfactory- State level competition in at least one discipline plus district level competition in at least 3 disciplines.</p> <p>Or District level competition in at least 5 disciplines.</p> <p>Unsatisfactory - Neither good nor satisfactory.</p>
4.	<p>Up-gradation of sports and physical training infrastructure with scientific and technological inputs.</p> <p>Development and maintenance of playfields and sports and physical Education facilities.</p>	Good/Satisfactory/Not-Satisfactory to be assessed by the Promotion committee.
5.	<p>(i)At least one student of the institution participating in national/ state/ university (for college levels only) teams. Organizing state/national/inter university/inter college level competition.</p> <p>(ii)Being invited for coaching at state/national level.</p> <p>(iii)Organizing at least three workshops in a year.</p> <p>(iv)Publications of at least one research paper in UGC approved journal. Assistance in college administration and governance related work including work done during admissions, examinations and extracurricular college activities.</p>	<p>Good: Involved in any two activities.</p> <p>Satisfactory: 1 activity</p> <p>Not Satisfactory : Not involved/ undertaken any of the activities.</p>
Overall Grading	<p>Good: Good in Item 1 and satisfactory/good in any two other items.</p> <p>Satisfactory: Satisfactory in Item 1 and satisfactory/good in any other two items.</p> <p>Not Satisfactory: If neither good nor satisfactory in overall grading.</p>	
<p><b>Note:</b></p> <p>i)It is recommended to use ICT technology to monitor the attendance of sports and physical education and compute the criteria of assessment.</p> <p>ii)The institution must obtain student feedback. The feed-backs must be shared with the concerned Director of Physical and Education and Sports and also the CAS Promotion committee.</p> <p>iii)The system of tracking user grievances and the extent of grievance redressal details may also be made available to the CAS Promotion Committee.</p>		

Students' Council Elections 2018-19

Group	No. of Rep.	Name of <u>Nominated</u> Candidate
04 students will be nominated on the basis of academic merit from 5 year Integrated M.Sc. programmes, preferably one from each year (Batch 2 year to 5th year). Academic merit means highest CGPA till the commencement of the current academic year.	04	<ol style="list-style-type: none"> <li>1. Ms. Ankita Bhatt , Department of Microbiology (2014 Batch)</li> <li>2. Mr. Mohit Sharma, Department of Mathematics (2015 Batch)</li> <li>3. Mr. Shivam Rai, Department of Statistics (2016 Batch)</li> <li>4. Ms. Santosh Kumari, Department of Chemistry (2017 Batch)</li> </ol>
10 students will be nominated on the basis of academic merit from different schools of studies, preferably <b>One</b> from each school. Academic merit means highest CGPA till the commencement of the current academic year among students in programmes other than Integrated M.Sc. course and Ph.D. course. Departments which are not represented by elected members will be given preference.	10	<ol style="list-style-type: none"> <li>1. Ms. Shubhangi Soni, Department of Hindi, School of Humanities and Languages</li> <li>2. Mr. Vishal Sharma, Department of PPLG, School of Social Sciences</li> <li>3. Mr. Rakesh Kumar Sahoo, Department of Pharmacy, School of Chemical Sciences and Pharmacy</li> <li>4. Ms. Pallavi Sharma, Department of Biochemistry, School of Life Sciences</li> <li>5. Mr. Ashish Shaji, Department of Atmospheric Science, School of Earth Sciences</li> <li>6. Ms. Gracy H David, Department of Architecture, School of Architecture</li> <li>7. Ms. Ambali Jain, Department of Management, School of Commerce and Management</li> <li>8. Ms. Anjali Mittal, Department of Statistics, School of Mathematics, Statistics and Computational Sciences</li> <li>9. Mr. Dushyant Soni, Department of Yoga Therapy, School of Education</li> <li>10. Ms. Shweta Arora, Department of Computer &amp; Engineering, School of Engineering and Technology</li> </ol>
One student will be nominated from NSS Cell.	01	Mr. Hemang Mittal (2015IMSST006), Department of Statistics
Two Students will be nominated on the basis of merit in Sports.	02	<ol style="list-style-type: none"> <li>1. Mr. Vijay Kumar (2013IMSBEC023), Department of Economics</li> <li>2. Mr. Sachin Yadav (2014IMSPH020), Department of Physics</li> </ol>
Two students will be nominated on the basis of other extra-curricular activities such as cultural activities.	02	<ol style="list-style-type: none"> <li>1. Ms. Shivanshi Sharma (2018IMSBC021), Department of Biochemistry</li> <li>2. Mr. Hansraj Arya (2014IMSMT007), Department of Mathematics</li> </ol>
One student will be nominated from International Students.	01	Ms. Shahuza Abdul Kareem, Department of CS

*[Handwritten signatures]*

# Central University of Rajasthan

Students' Council Elections 2018-19

Group	No. of Rep.	Name of <b>Elected</b> Candidate
Ph.D	02	1. Mr. Himanshu Kumar Bairwa (2017PHDMB01), Department of Microbiology 2. Mr. Shankar Lal Choudhary (2015PHDEN04), Department of English
M.Tech, M.Pharm, M. Arch	01	Mr. Akshay Gupta (2018MARCH009), Department of Architecture
Architecture	01	<b>NIL</b>
Chemistry	01	Mr. Vivek Meena (2018MSBCH016), Department of Chemistry
Physics	01	<b>NIL</b>
Mathematics	01	Mr. Vikash (2017MSM013), Department of Mathematics
Economics	01	Ms. Shimla (2014IMSEC022), Department of Economics
Biochemistry + School of Sports Sciences	01	<b>NIL</b>
Microbiology	01	Ms. Shubhangini Singh (2015IMSMB020), Department of Microbiology
Biotechnology	01	Mr. Shivam Singh (2017MSBT005), Department of Biotechnology
Computer Science	01	Mr. Bharat Dadwaria (2014IMSCS008), Department of CS
Statistics	01	Mr. Pradhumn Katara (2014IMSST015), Department of Statistics
Social Work + CMS + PPLG + Society – Technology Interface	01	<b>Election Cancelled</b>
Hindi	01	Mr. Mukesh (2017MAH004), Department of Hindi
English	01	Mr. Rajendra Choudhary (2017MAEN009), Department of English
Commerce	01	Ms. Preeti Kumari (2017MCOM003), Department of Commerce
Management	01	Mr. Vishal (2017MBA021), Department of Management
Env. Science + Atmospheric Science	01	<b>NIL</b>
Education	01	<b>NIL</b>



**MINISTRY OF HUMAN RESOURCE DEVELOPMENT**

UNIVERSITY GRANTS COMMISSION

**NOTIFICATION**

New Delhi, the 5th May, 2016

**University Grants Commission (Minimum Standards and Procedure for Award of M.PHIL./PH.D Degrees) Regulations, 2016****{In supersession of the UGC (Minimum Standards and Procedure for Awards of M.Phil./Ph.D. Degree) Regulation, 2009, notified in The Gazette of India [No. 28, Part III- Section 4] for the week July 11-July 17, 2009}**

**No. F. 1-2/2009(EC/PS)V(I) Vol. II** - In exercise of the powers conferred by clauses (f) and (g) of sub-section (1) of Section 26 of the University Grants Commission Act, 1956 (3 of 1956), and in supersession of the UGC (Minimum Standards and Procedure for Awards of M.Phil./Ph.D. Degree) Regulation, 2009, notified in The Gazette of India [No. 28, Part III-Section 4] for the week July 11 — July 17, 2009, the University Grants Commission hereby makes the following Regulations, namely:-

**1. Short title, Application and Commencement:**

- 1.1 These Regulations may be called University Grants Commission (Minimum Standards and Procedure for Award of M.Phil./Ph.D. Degrees) Regulations, 2016.
- 1.2 They shall apply to every University established or incorporated by or under a Central Act, a Provincial Act, or a State Act, every affiliated college, and every Institution Deemed to be a University under Section 3 of UGC Act, 1956.
- 1.3 They shall come into force from the date of their publication in the Gazette of India.

**2. Eligibility criteria for admission to the M.Phil. programme:**

- 2.1 Candidates for admission to the M.Phil. programme shall have a Master's degree or a professional degree declared equivalent to the Master's degree by the corresponding statutory regulatory body, with at least 55% marks in aggregate or its equivalent grade 'B' in the UGC 7-point scale (or an equivalent grade in a point scale wherever grading system is followed) or an equivalent degree from a foreign educational Institution accredited by an Assessment and Accreditation Agency which is approved, recognized or authorized by an authority, established or incorporated under a law in its home country or any other statutory authority in that country for the purpose of assessing, accrediting or assuring quality and standards of educational institutions.
- 2.2 A relaxation of 5% of marks, from 55% to 50%, or an equivalent relaxation of grade, may be allowed for those belonging to SC/ST/OBC(non-creamy layer)/Differently-Abled and other categories of candidates as per the decision of the Commission from time to time, or for those who had obtained their Master's degree prior to 19<sup>th</sup> September, 1991. The eligibility marks of 55% (or an equivalent grade in a point scale wherever grading system is followed) and the relaxation of 5% to the categories mentioned above are permissible based only on the qualifying marks without including the grace mark procedures.

**3. Eligibility criteria for admission to Ph.D. programme:**

Subject to the conditions stipulated in these Regulations, the following persons are eligible to seek admission to the Ph.D. programme:

- 3.1 Master's Degree holders satisfying the criteria stipulated under Clause 2 above.
- 3.2 Candidates who have cleared the M.Phil. course work with at least 55% marks in aggregate or its equivalent grade 'B' in the UGC 7-point scale (or an equivalent grade in a point scale wherever grading system is followed) and successfully completing the M.Phil. Degree shall be eligible to proceed to do research work leading to the Ph. D. Degree in the same Institution in an integrated programme. A relaxation of 5% of marks, from 55% to 50%, or an equivalent relaxation of grade, may be allowed for those belonging to SC/ST/OBC(non-creamy layer)/differently-abled and other categories of candidates as per the decision of the Commission from time to time.

- 3.3 A person whose M.Phil. dissertation has been evaluated and the viva voce is pending may be admitted to the Ph.D. programme of the same Institution;
- 3.4 Candidates possessing a Degree considered equivalent to M.Phil. Degree of an Indian Institution, from a Foreign Educational Institution accredited by an Assessment and Accreditation Agency which is approved, recognized or authorized by an authority, established or incorporated under a law in its home country or any other statutory authority in that country for the purpose of assessing, accrediting or assuring quality and standards of educational institutions, shall be eligible for admission to Ph.D. programme.

**4. Duration of the Programme:**

- 4.1 M.Phil. programme shall be for a minimum duration of two (2) consecutive semesters / one year and a maximum of four (4) consecutive semesters / two years.
- 4.2 Ph.D. programme shall be for a minimum duration of three years, including course work and a maximum of six years.
- 4.3 Extension beyond the above limits will be governed by the relevant clauses as stipulated in the Statute/Ordinance of the individual Institution concerned.
- 4.4 The women candidates and Persons with Disability (more than 40% disability) may be allowed a relaxation of one year for M.Phil and two years for Ph.D. in the maximum duration. In addition, the women candidates may be provided Maternity Leave/Child Care Leave once in the entire duration of M.Phil/Ph.D. for up to 240 days.

**5. Procedure for admission:**

- 5.1 All Universities and Institutions Deemed to be Universities shall admit M.Phil/Ph.D. students through an Entrance Test conducted at the level of Individual University/Institution Deemed to be a University. The University/Institution Deemed to be a University may decide separate terms and conditions for Ph.D. Entrance Test for those students who qualify UGC-NET (including JRF)/UGC-CSIR NET (including JRF)/SLET/GATE/teacher fellowship holder or have passed M.Phil programme. Similar approach may be adopted in respect of Entrance Test for M.Phil programme.
- 5.2 Higher Educational Institutions (HEIs) referred to in sub-clause 1.2 above and Colleges under them which are allowed to conduct M.Phil. and/or Ph.D. programmes, shall:
- 5.2.1 decide on an annual basis through their academic bodies a predetermined and manageable number of M.Phil. and/or Ph.D. scholars to be admitted depending on the number of available Research Supervisors and other academic and physical facilities available, keeping in mind the norms regarding the scholar- teacher ratio (as indicated in Para 6.5), laboratory, library and such other facilities;
- 5.2.2 notify well in advance in the institutional website and through advertisement in at least two (2) national newspapers, of which at least one (1) shall be in the regional language, the number of seats for admission, subject/discipline-wise distribution of available seats, criteria for admission, procedure for admission, examination centre(s) where entrance test(s) shall be conducted and all other relevant information for the benefit of the candidates;
- 5.2.3 adhere to the National/State-level reservation policy, as applicable.
- 5.3 The admission shall be based on the criteria notified by the Institution, keeping in view the guidelines/norms in this regard issued by the UGC and other statutory bodies concerned, and taking into account the reservation policy of the Central/State Government from time to time.
- 5.4 HEIs as mentioned in Clause 1.2 shall admit candidates by a two stage process through:
- 5.4.1 An Entrance Test shall be qualifying with qualifying marks as 50%. The syllabus of the Entrance Test shall consist of 50% of research methodology and 50% shall be

subject specific. The Entrance Test shall be conducted at the Centre(s) notified in advance (changes of Centres, if any, also to be notified well in advance) at the level of the individual HEI as mentioned in clause 1.2; and

- 5.4.2 An interview/*viva-voce* to be organized by the HEI as mentioned in clause 1.2 when the candidates are required to discuss their research interest/area through a presentation before a duly constituted Department Research Committee.
- 5.5 The interview/*viva voce* shall also consider the following aspects, viz. whether:
- 5.5.1 the candidate possesses the competence for the proposed research;
- 5.5.2 the research work can be suitably undertaken at the Institution/College;
- 5.5.3 the proposed area of research can contribute to new/additional knowledge.
- 5.6 The University shall maintain the list of all the M.Phil. / Ph.D. registered students on its website on year-wise basis. The list shall include the name of the registered candidate, topic of his/her research, name of his/her supervisor/co-supervisor, date of enrolment/registration.
- 6. Allocation of Research Supervisor:** Eligibility criteria to be a Research Supervisor, Co- Supervisor, Number of M.Phil./Ph.D. scholars permissible per Supervisor, etc.
- 6.1 Any regular Professor of the University/Institution Deemed to be a University/College with at least five research publications in refereed journals and any regular Associate/Assistant Professor of the university/institution deemed to be a university/college with a Ph.D. degree and at least two research publications in refereed journals may be recognized as Research Supervisor.
- Provided that in areas/disciplines where there is no or only a limited number of refereed journals, the Institution may relax the above condition for recognition of a person as Research Supervisor with reasons recorded in writing.
- 6.2 Only a full time regular teacher of the concerned University/Institution Deemed to be a University/College can act as a supervisor. The external supervisors are not allowed. However, Co-Supervisor can be allowed in inter-disciplinary areas from other departments of the same institute or from other related institutions with the approval of the Research Advisory Committee.
- 6.3 The allocation of Research Supervisor for a selected research scholar shall be decided by the Department concerned depending on the number of scholars per Research Supervisor, the available specialization among the Supervisors and research interests of the scholars as indicated by them at the time of interview/*viva voce*.
- 6.4 In case of topics which are of inter-disciplinary nature where the Department concerned feels that the expertise in the Department has to be supplemented from outside, the Department may appoint a Research Supervisor from the Department itself, who shall be known as the Research Supervisor, and a Co-Supervisor from outside the Department/ Faculty/College/Institution on such terms and conditions as may be specified and agreed upon by the consenting Institutions/Colleges.
- 6.5 A Research Supervisor/Co-supervisor who is a Professor, at any given point of time, cannot guide more than three (3) M.Phil. and Eight (8) Ph.D. scholars. An Associate Professor as Research Supervisor can guide up to a maximum of two (2) M.Phil. and six (6) Ph.D. scholars and an Assistant Professor as Research Supervisor can guide up to a maximum of one (1) M.Phil. and four (4) Ph.D. scholars.
- 6.6 In case of relocation of an M.Phil./Ph.D. woman scholar due to marriage or otherwise, the research data shall be allowed to be transferred to the University to which the scholar intends to relocate provided all the other conditions in these regulations are followed in letter and spirit and the research work does not pertain to the project secured by the parent institution/ supervisor from any funding agency. The scholar will however give due credit to the parent guide and the institution for the part of research already done.
- 7. Course Work:** Credit Requirements, number, duration, syllabus, minimum standards for completion, etc.
- 7.1 The credit assigned to the M.Phil. or Ph.D. course work shall be a minimum of 08 credits and a maximum of 16 credits.

(C) Now the final course structure for the Integrated M.Sc. five year (10 Semester) Programme will be as per the following table:-

Mathematics	Physics	Chemistry	Biology	Comp. Sc.	Statistics	Economic	English	Env. Sc.	Open Elec-01	Open Elec-02	Total Credits
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	Own sub. + Mathematics+02 out of (1 to 7) + (8)= 18
MT-101(4)	PH-101(3) <del>PH-101(3)</del> PH-102(2) PH-202(2)	CH-101(3) CH-102(1)*P CH-202(1)*P	BI-101(3) BI-102(1)*P	CS-101(3) CS-102(1)*P	ST-101(3) ST-102(1)*P	EC-101(4)	EN-101(3)	---	---	---	Own sub. + Mathematics+02 out of (1 to 7) + (8)= 18
MT-201(4)	PH-201(2) <del>PH-201(2)</del> PH-202(2)	CH-201(3) CH-202(1)*P	BI-201(3) BI-202(1)*P	CS-201(3) CS-202(1)*P	ST-201(3) ST-202(1)*P	EC-201(4)	EN-201(3) +ICT101(1)	---	---	---	Own sub. + Mathematics+02 out of (1 to 7) + (8)= 18
MT-301(4)	PH-301(2) <del>PH-301(2)</del> PH-302(2)	CH-301(3) CH-302(1)*P	BI-301(3) BI-302(1)*P	CS-301(3) CS-302(1)*P	ST-301(3) ST-302(1)*P	EC-301(4)	---	ENV-301(3)	Social Science(3)	Social Science(3)	Own sub. + 2 out of (1 to 7) + (9)+(11)=18
MT-401(4)	PH-401(2) <del>PH-401(2)</del> PH-402(2)	CH-401(3) CH-402(1)*P	BI-401(3)/Env-401(4) BI-402(1)*P	CS-401(3) CS-402(1)*P	ST-401(3) ST-402(1)*P	EC-401(4)	---	---	Science (3)	Social Science(3)	Own sub. + 2 out of (1 to 7) + (10)+(11)=18
MT(12)	PH(12)	CH(12)	BI/Env.(12)	CS(12)	ST(12)	EC(12)	---	---	Science (3)+(3)	Science (1to7)	1 out (1to7) + (10)=18
MT(12)	PH(12)	CH(12)	BI/Env.(12)	CS(12)	ST(12)	EC(12)	---	---	Science (3)+(3)	Science (1to7)	1 out (1to7) + (10)=18
MT(20)	PH(20)	CH(20)	Micro/Bio-Tech./Bio-Chem /Env.Sc. (20)	CS(20)	ST(20)	EC(20)	---	---	---	---	1 out (1to7)=20

*Handwritten signatures and initials:*  
 PH-101(3) → PH-102(2)  
 PH-201(2) → PH-202(2)  
 PH-301(2) → PH-302(2)  
 PH-401(2) → PH-402(2)  
 Initials: PH, CH, BI, CS, ST, EC, ENV, and others.

MT(20)	PH(20)	CH(20)	Micro/Bio-Tech./Bio-Chem /Env.Sc. (20)	CS(20)	ST(20)	EC(20)				I out (1to7)=20
MT(20)	PH(20)	CH(20)	Micro/Bio-Tech./Bio-Chem /Env.Sc. (20)	CS(20)	ST(20)	EC(20)				I out (1to7)=20
MT(20)	PH(20)	CH(20)	Micro/Bio-Tech./Bio-Chem /Env.Sc. (20)	CS(20)	ST(20)	EC(20)				I out (1to7)=20

(D) The elective courses of different subjects will be available semester wise, according to the following table:-

Semester	Subject elective(3 credits each) available
Odd Sem.	Mathematics, Chemistry, Economics and Life Sciences, Env. Sc.
Even Sem.	Physics, Computer Science, Statistics and Life Science, Env. Sc.
Similarly, the open elective courses of different subjects will available semester wise, according to the following table:-	
Semester	Subject open elective (3 credits each) available
Odd Sem.	Management and Commerce, Culture & Media Studies(CMS) and English
Even Sem.	Public Policy Law & Governance(PPLG), Social Work and Hindi

(E) It was resolved that the student will have to complete minimum 108 credits to be eligible to exit from this programme for getting the B.Sc degree, provided that he/she has completed all required core courses of his/her subject.

Since, the course syllabi of the subject required to be discussed with concerned head of the departments, therefore the deans of schools have to discuss with head of the departments of their schools.

(F) As per the discussion in the previous meetings, students may opt any four courses including their own course in which he/she has taken admission. Any course for which student has registered may have up to the maximum limit of students that is 250 or as lowest as 25, therefore examination evaluation is to be properly clarified.

The Evaluation is done by the concern teacher for the course he/she is teaching.



(C) Now the final course structure for the Integrated M.Sc. five year (10 Semester) Programme will be as per the following table:-

Mathematics	Physics	Chemistry	Biology	Comp. Sc.	Statistics	Economic cs.	English + ICT(1)	Env. Sc.	Open Elec-01 (10)	Open Elec-02 (11)	Total Credits
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	Own sub. + Mathematics+02 out of (1 to 7) + (8)= 18
MT-101(4)	PH-101(4) <del>PH-101(4)</del> PH202(2)	CH-101(3) CH-102(1)*P WA	BI-101(3) BI-102(1)*P	CS-101(3) CS-102(1)*P	ST-101(3) ST-102(1)*P	EC-101(4)	EN-101(2)		---		Own sub. + Mathematics+02 out of (1 to 7) + (8)= 18
MT-201(4)	PH-201(4) <del>PH-201(4)</del> PH202(2)	CH-201(3) CH-202(1)*P WA	BI-201(3) BI-202(1)*P	CS-201(3) CS-202(1)*P	ST-201(3) ST-202(1)*P	EC-201(4)	EN-201(2) -ICT10(1)		---		Own sub. + Mathematics+02 out of (1 to 7) + (8)= 18
MT-301(4)	PH-301(4) <del>PH-301(4)</del> PH302(2)	CH-301(3) CH-302(1)*P WA	BI-301(3) BI-302(1)*P	CS-301(3) CS-302(1)*P	ST-301(3) ST-302(1)*P	EC-301(4)	---	ENV-301(3)	---	Social Science(3)	Own sub. + 2 out of (1 to 7) + (9)+(11)=18
MT-401(4)	PH-401(4) <del>PH-401(4)</del> WA	CH-401(3) CH-402(1)*P WA	BI-401(3)/Env-401(4) BI-402(1)*P	CS-401(3) CS-402(1)*P	ST-401(3) ST-402(1)*P	EC-401(4)		Social Science(3)	Science (3)	Social Science(3)	Own sub. + 2 out of (1 to 7) + (10)+(11)=18
MT(12)	PH(12)	CH(12)	BI/Env.(12)	CS(12)	ST(12)	EC(12)			Science (3)+(3)	Science (1 to 7) +(10)=18	
MT(12)	PH(12)	CH(12)	BI/Env.(12)	CS(12)	ST(12)	EC(12)			Science (3)+(3)	Science (1 to 7) +(10)=18	
MT(20)	PH(20)	CH(20)	Micro/Bio- Tech./Bio-Chem /Env.Sc. (20)	CS(20)	ST(20)	EC(20)				Science (1 to 7) +(10)=20	

MT(20)	PH(20)	CH(20)	Micro/Bio-Tech./Bio-Chem /Env.Sc. (20)	CS(20)	ST(20)	EC(20)				I out (1 to 7)=20
MT(20)	PH(20)	CH(20)	Micro/Bio-Tech./Bio-Chem /Env.Sc. (20)	CS(20)	ST(20)	EC(20)				I out (1 to 7)=20
MT(20)	PH(20)	CH(20)	Micro/Bio-Tech./Bio-Chem /Env.Sc. (20)	CS(20)	ST(20)	EC(20)				I out (1 to 7)=20

(D) The elective courses of different subjects will be available semester wise, according to the following table:-

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Odd Sem.	Management and Commerce, Culture & Media Studies(CMS) and English
Even Sem.	Public Policy Law & Governance(PPLG), Social Work and Hindi

(E) It was resolved that the student will have to complete minimum 108 credits to be eligible to exit from this programme for getting the B.Sc degree, provided that he/she has completed all required core courses of his/her subject.

Since, the course syllabi of the subject required to be discussed with concerned head of the departments, therefore the deans of schools have to discuss with head of the departments of their schools.

(F) As per the discussion in the previous meetings, students may opt any four courses including their own course in which he/she has taken admission. Any course for which student has registered may have up to the maximum limit of students that is 250 or as lowest as 25, therefore examination evaluation is to be properly clarified.

The Evaluation is done by the concern teacher for the course he/she is teaching.








**Central University of Rajasthan  
School of Education**



**COURSE STRUCTURE AND SYLLABUS  
Ph.D Pre-Course Work**

*Thanna*



## Course Structure for Pre PhD Course Work

**Total Credit: 12**

### First Semester

Course	Course Code	Course Name	Credit (CR)
Course I	PED101	Research Methodology in Education	4 credits
Course II	PED102	Recent Trends in Education	4 credits
Course III	PED103	Emerging Issues of Teacher Education	4 credits
<b>Total Credit</b>			<b>12 Credits</b>

### Detail Course Structure of PhD in Education Programme

Course Code	Course Title	L T P	CH	CR
<b>Semester I</b>				
Course I	Research Methodology in Education	3 1 0	4	4
Course II	Recent Trends in Education	3 1 0	4	4
Course III	Emerging Issues of Teacher Education	3 1 0	4	4

**Total Credit (4+4+4) : 12**

*Alhann*

**Central University of Rajasthan**  
**School of Education**  
**Ph.D Course Work Syllabus**

**Course I: Research Methodology in Education**  
**Course Code: PED 101**

**Credits : Four (04)**

L	T	P
3	1	0

**Objective:** The researcher would be able to

- Develop understanding about the various research methods
- Analyse and interpret the qualitative data
- Construct various types of tools.
- Understand sampling technique

**Unit I: Educational Research and Research Methods**

**a) Introduction to Research in Education**

- i) The Nature of Research: Nature of Knowledge and Scientific Inquiry; Inter disciplinarily in Educational Research, Generalisation in educational research
- ii) Role of Assumptions, Paradigms and Approaches in Research
- iii) Perspective of educational research: Positivism, Realism, Empiricism, Symbolic interactionism, Phenomenology

- b) Research Methods:** Historical, Philosophical, Experimental & Ex-Post Facto, Survey: Normative, Co-relational, Evaluative, Ethnographic Study, Biographical, Grounded Theory analysis, conversational discourse analysis, Case Study

**Unit II: Tools and Sampling**

**a) Development of Tools for Educational Research**

- i) Questionnaire
- ii) Interview Schedule
- iii) Observation Schedule
- iv) Sociometry
- v) Psychological Tests & Inventories
- vi) Document Analysis

**b) Sampling**

- i) Process of Sampling
- ii) Sampling Errors
- iii) Probability and Non-Probability Techniques

**Unit III: Qualitative Analysis and Interpretation**

- a) Qualitative research in education
- b) Tools used for qualitative research
- c) Theoretical frames and basis and review of empirical studies
- d) Inductive Logical Analysis



- e) Content Analysis
- f) Codes & Coding
- g) Theory Building
- h) Reliability and Validity

#### **Unit IV: Modern Trends in Educational Research**

- a) Trends in Educational Research
- b) Computer in Educational Research
  - i) Quantitative and qualitative analysis of data
  - ii) Use of computer in data analysis with special reference to SPSS.
  - iii) Introduction to UGC infonet, INFLIBNET and ERNET etc.
  - iv) Online Citation Tools: EasyLib, Biblio, Endnote etc.
  - v) Reference management and Anti-Plagiarism Tools

#### **Assignments:**

- Preparing a research proposal
- Conduct a review of related literature
- Construct and adaptation a tool and follow the procedure of standardization
- Write a research article
- Use the various anti-plagiarism tools

#### **Textbooks**

- Best John, W. & Kahn, J.V.(2003) : Research in Education (ninth edition) Pearson Prentice Hall.
- Koul, Lokesh(2002) Methodology of Educational Research. New Delhi: Vikas Publishing Company.

#### **Suggested Readings**

- Bridges, D. & Smith, R (2007). *Philosophy, Methodology and Educational Research*. Oxford: Wiley-Blackwell.
- Clive, O. (2004). *Doing Educational research-A Guide for first time researchers*. New Delhi, Vistar publication
- Creswell, J. W. (2011). *Educational Research*. New Delhi: PHI Learning Pvt Ltd.
- Fink, A., (2009). *Conducting Research Literature Reviews: From the Internet to Paper*. Sage Publications
- Flick, U. (2007). *Designing Qualitative Research*. London: Sage Pub.
- Garret, H. E. (2008). *Statistics in Psychology and Education*. Bombay Vakils: Feffer & Simons Pvt Ltd.
- Kerlinger, F.N. (1986). *Foundations of Behavioural Research*. Surjeet Publications, Delhi.
- Patton, M. Q.(2002). *Qualitative Research and evaluation Methods*. Thousand Oaks: C.A. Sage Pub.

*Alhanna*

## Course II: Recent Trends in Education

Course Code: PED 102

Credits: Four (04)

L	T	P
3	1	0

### Course Objectives:

On completion of this course the researcher will be able to:

- To develop understand various emerging trends in education
- To develop a critical understanding about Paradigm & pedagogical shifts in process of education
- To inculcate critically evaluation role of Information Communication Technology in present and future.
- To identify new & suitable research areas of educational research

### Unit I: Recent trends in Education

- a) Paradigm shifts in the process and pedagogy of education
- b) Educational leadership, Inclusive Education , Generic and life skills, Classroom realities of the world's education , Higher education as a common good, Gender equality and women participation

### Unit-II: Entrepreneurship and Professional Development

- a) Entrepreneurship Education
- b) Professional Development through interpersonal relationship
- c) Cognitive sciences and futurology of education

### Unit III: ICT and Communication in Educational Research

- a) Evaluating online resources: Authority, Accuracy and objectivity
- b) E- learning: scope, trends, attributes, opportunities
- c) Open educational resources
- d) Massive open online courses.

### Unit IV: Curriculum Development

- a) Understanding the meaning , nature and scope of curriculum
- b) Developing curriculum framework as per need
- c) Implementation and evaluation process of Curriculum

### Activities:

- Identify research problems among the areas suggested above.
- Analyse any teacher education course curriculum on the basis of framework developed by curriculum framework committee guidelines.
- Critically review the educational issues by compiling articles from newspapers, magazines and web resources and prepare a report.



- Critical Reflection on the writings of the best books of Education
- Any other activity like: presentations, discussion, brain storming sessions, etc.

**Text Books:**

- Bartlett, L.D. and Weisentein, G. R. (2003). Successful Inclusion for Educational Leaders, New Jersey: Prentice Hall.
- Mishra, B. K., Mohanty, R. K. (2008). Trends in Education: R. Lall Book Depot, Near Govt. Inter College, Meerut U.P.
- Mohit Chakrabarti, (2005). Education in the 21 st Century, Delhi, Kalpar publication

**Suggested Readings:**

- Hegarthy, S. & Alur, M. (2002) Education of Children with Special Needs: from Segregation to Inclusion, Corwin Press. Sage Publishers
- Mason Robin & Frank R. (2006). E-learning - The key concepts. Routledge, New York.
- Pathak, R.P. & Chaudhary, J (2012). Educational Technology, Pearson, New Delhi.
- Richard Andrews & Caroline (2007). E-learning Research - A handbook of, SAGE, New Delhi.
- Anand, C. L. et al. (1983). The Teacher and Education in Emerging Indian Society, New Delhi, NCERT.

*Shammy*

### Course III: Emerging Issues of Teacher Education

Course Code: PED 102

Credits : Four (04)

L	T	P
3	1	0

#### Course Objectives:

On completion of the course, the Research Scholars will be able to:

- Understand the conceptual basis of teacher education
- Understand the different paradigms of teacher education
- Acquaint with new knowledge pedagogies and approaches for teaching.
- Reflect on the basic parameters and new ideas of the processes of teacher education in India.

#### Unit I: Conceptual Framework of Teacher Education:

- a) Concept of Teacher Education
- b) Aims, Objectives, Needs, Scope and Structure of Teacher Education at different level of education
- c) Teaching as a profession and professional ethics and socialization of teachers
- d) Pre-service and in-service teacher education programs, Innovative programmes and practices for Continuing Professional Development of Teachers and Teacher Educators

#### Unit- II Governance and Quality Assurance of Teacher Education in India

- a) Role of Regulatory Bodies of Teacher Education (UGC, NCTE, NAAC, QCI)
- b) New Education Policy: Draft document and Directions
- c) Central and state sponsored schemes for revamping Teacher Education system.
- d) Total Quality Management: Concept-indicators of quality, setting standards for performance

#### Unit- III Recent Trends in Teacher Education:

- a) Information and Communication Technology in Teacher Education
- b) Teach R and National teacher platform
- c) NCFTE 2009 and its reflections on Teacher Education
- d) Issues & Challenges related to Teacher Education programmes in India

#### Unit- IV Research Areas of Teacher Education:

- a) Action Research in Teacher Education
- b) Quality issues and challenges in Teacher Education
- c) Evaluation Strategies and Comparative Education.
- d) Issues related to Globalization and Privatization of Teacher Education
- e) International trends in Educational Research with special reference to Teacher Education

*Sharma*

**Activities:**

- Identify suitable research areas in the field of education.
- Critically review the educational issues related with the same & other associated topics by compiling research projects, research reports, research papers & articles from newspapers, or internet sources and prepare a report.
- Critical Reflection on the writings of the best books of Education
- Any other activity like: presentations, discussion, brain storming sessions, etc.

**Text Books:**

- Gupta Arun K.: Teacher Education: Current & Prospects New Delhi, Sterling Publications 1984.
- Beck, C. & Clark K. (2006). Innovations in Teacher Education: A Social Constructivist Approach. New York: State University of York.
- Brubacher (1950) Modern Philosophies of Education, McGraw Hill Book Co, New York
- Herne S., Jessel J. & Griffith, J. (2000). Study to Teach: A Guide to Studying in Teacher Education. London and New York. Routledge Falmer.

**Suggested Readings:**

- Desai D.M.: (1971). New directions in the Education of Indian teachers Baroda, M.S. University
- Hillard, F.H. (1971). Teaching the Teacher Education London: George Allen and unwin Ltd.
- Jangira N.K. (1979): Teacher training & teacher effectiveness an experience in teacher, behavior New Delhi, National Publishing House,
- Loughran, J. (2006). Developing a Pedagogy of Teacher Education: Understanding Teaching and Learning about Teaching. New York: Routledge:
- NCF 2000, NCF 2005-NCERT Publication, New Delhi.
- NCFTE-2009-NCTE Publication, New Delhi.
- UNESCO(1976). Regional office for Education in Asia, Bangkok, Exploring, New dimensions in Teacher Education, Bangkok, UNESCO.
- Yadav, M.S. & Lakshmi, T.K.S. (2003). Conceptual Inputs for Secondary Teacher Education: The Instructional Role. India: NCTE.



**Algebra-I****Core Mathematics Course (Course code: PMC-102)****Credit: 04****L/T/P: 3/1/0**

**Unit-I:** Free Groups, Presentation of Groups, Generators and Relations, Finitely Generated Groups, Dehn's Fundamental Problem, Word's Problem, Conjugacy Problem, Isomorphism Problem, Canonical Form of Word, Coset Enumeration Method, Schreier's Transversal. **(15 Lectures)**

**Unit-II:** Free Product of Groups, Central Product of Groups, Amalgamation, Semidirect Product of Groups, Classification of groups of order  $pq$ , Affine Groups. **(15 Lectures)**

**Unit-III:** Non-associative algebraic structures, Universal Algebra, Quasigroups, Loops, Right loops, Multiplication Group of Loops, Inner Mapping Groups, Transversal in groups as algebraic structure, Congruences in right loops, Maltcev Variety. **(15 Lectures)**

**Reference Books:**

- (1) M. Suzuki, Group Theory I & II, Springer Verlag, 1982
- (2) D. Robinson, A Course in the Theory of Groups, Springer, 1996
- (3) R. Lal, Algebra I & II, Springer, 2017
- (4) J. D. H. Smith, An Introduction to Quasigroups and Their Representations, CRC Press, 2006
- (5) W. Magnus, A. Karrass, D. Solitar, Combinatorial group theory, Dover Publication, 1976





## Algebra-II

Course with the research supervisor (Course code: PMC-103)

Credit: 04

L/T/P: 3/1/0

**Unit-I:** Bilinear Maps, Tensor Product of Algebras, Exact sequences, Chain complex, Cochain complex, Boundary and coboundary, Cycle and cocycle, Ext and Tor, Homology and cohomology of chain complex, Long exact sequence, Connecting Homomorphism. (15 Lectures)

**Unit-II:** Group Extension, Crossed homomorphism, principle crossed homomorphism, Interpretation of first cohomology group, Factor system, Equivalence of group extensions, Interpretation of second cohomology group, Schur-Zassenhaus Theorem, Calculation of second cohomology groups of some finite groups of small order. (15 Lectures)

**Unit-III:** Commutator subgroups, Commutator identities, Higher commutator, Three subgroup lemma, Nilpotent Groups, Lower Central Series, Upper Central Series, Nilpotency class, finite p-groups, Structure of finite p-groups upto order  $p^4$ . (15 Lectures)

### Reference Books:

- (1) M. Suzuki, Group Theory I & II, Springer Verlag, 1982
- (2) D. Robinson, A Course in the Theory of Groups, Springer, 1996
- (3) R. Lal, Algebra I & II, Springer, 2017
- (4) A. Babakhanian, Cohomological Methods in Group Theory, Marcel Dekker, 1972
- (5) L. R. Vermani, An Elementary Approach to Homological Algebra, CRC Press, 2003

*Jyoti  
Karpur*