CENTRAL UNIVERSITY OF HARYANA

20th Meeting of the Academic Council

27th May, 2016 (03:00 P.M.)

The 20th meeting of the Academic Council of the Central University of Haryana was held on 27th May, 2016, at 03:00 P.M in the Conference Room of the Transit Office, Gurgaon.

The following members were present:

1.	Prof. R.C. Kuhad, Vice Chancellor, Central University of Haryana.	Chairperson
2.	Prof. M.C. Sharma School of Education, Indira Gandhi National Open University (IGNOU), New Delhi	Member
3.	Dr. (Mrs.) Pawan Sharma, Joint Secretary Law Commission of India, New Delhi	Member
4.	Prof. Anup Beniwal & Dean, School of Humanities & Social Sciences, G.G.S. Indraprastha University, New Delhi.	Member Professor
5.	Dr. Pardeep S. Chauhan Department of Economics, Kurukshetra University, Kurukshetra	Member
6.	Dr. B.K. Mohapatra Registrar, Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeeth, New Delhi.	Member
7.	Prof. A.J Varma, Dean, Chemical Sciences & Head, Department of Chemistry, CUH	Member
8.	Prof. Ashish Dahiya, Dean , School of Language, Linguistics, Culture and Heritage, CUH	Member
9.	Dr. Sarika Sharma Proctor & Head, Department of Education, CUH.	Member
10.	Dr. Aditya Saxena Head, Department of Physics, CUH.	Member
11.	Dr. Sanjeev Kumar, Head, Department of English & Foreign Languages, CUH	Member

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12. Dr. Anand Sharma, Head, Department of Management Studies, CUH	Member
13. Dr. Pardeep Singh Assistant Professor, Dept. of Law, CUH	Member
14. Dr. Suman Assistant Professor, Dept. of Commerce, CUH	Member
15. Sh. A.K. Gogia, Finance Officer, CUH	Special Invitee
16. Dr. Ranjan Aneja, Teacher Incharge, Department of Economics, CUH	Special Invitee
17. Dr. Sidharath Shankar Rai, Teacher Incharge, Department of Hindi and Indian Languages, CUH	Special Invitee
18. Sh. Ram Dutt Registrar, CUH.	Secretary

The following members could not attend the meeting:

1. Dr. Sahid Ashraf
   Registrar, Jamia Millia Islamia, New Delhi.
2. Prof. Vijay Kumar
   M.D. University, Rohtak, Haryana
3. Prof. S.S. Sangwan,
   Dept. of English, M.D. University, Rohtak, Haryana
4. Prof. J.P. Khurana
   Head Department of Plant Molecular Biology & Biotechnology,
   University of Delhi
5. Prof. K.S Sangwan (Retd.)
   Maharishi Dayanand University, Rohtak
6. Prof. H.J Ghosh Roy,
   Maharishi Dayanad University, Rohtak
7. Prof. G.L Sharma,
   Prof. & Dean (ADMN),
   LBSIN, New Delhi
8. Prof. Nikhlesh Yadav,
   Indira Gandhi University, Meerpur, Rewari

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9. Dr. Bir Singh Yadav, Associate Professor,
Department of English CUH,
Mahendergarh

The Vice Chancellor welcomed the members of the Academic Council especially the new members Prof. A.J Varma and Dr. Anand Sharma and briefed them about the following academic and other activities carried out by the University during the last four months:

- **The University conducted interviews for appointment to the teaching positions in the Departments of History & Archaeology, Statistics, Microbiology, Biochemistry and Biotechnology. The recommendations of the Selection Committees would be placed before the Executive Council for approval.**
- **The University has submitted its proposal to start four Engineering courses and required faculty for establishing School of Engineering & Technology. The University is keen to start the Engineering courses w.e.f. Session 2016-17.**
- **The University has conducted the CUCET Examination 2016-17 smoothly. The admission rules and schedule have been circulated to all departments for the session 2016-17.**
- **University organized two days Yoga Fest at CUH campus on 25th and 26th May, 2016.**
- **University conducted end Semester Examinations and evaluation work is in progress. The University will be in a position to declare the results by 10th June, 2016.**
- **The University Departments have been organizing seminars, symposia, conferences, workshops regularly. Experts from corporate Sectors, Industries, Educational and Research Institutions and reputed entrepreneurs are also being invited to participate in these programmes.**
- **The University has finalized its Academic Calendar for the Session 2016-17.**

Thereafter, the agenda items were taken up as follows:

Resolution No.	Resolution Passed
1.	The minutes of the 19th Academic Council Meeting held on 06 February, 2016 were confirmed.
(A) REPORTING ITEMS	
2.	The actions taken on the resolutions of the 19th meeting of the Academic Council held on 06th February, 2016, were reported, recorded and confirmed. **(Vide Annexure-1)**
3.	The receipt of letter No. F.15-5/2012 (CU) Dated 23/03/2016 from the Joint Secretary, University Grants Commission, New Delhi conveying the approval of B.Ed. & M.Ed. (Two Year) courses and manpower for establishment of School of Education was reported, recorded and confirmed. **(Vide Annexure-2)** The Council congratulated the Vice-Chancellor, Faculty and the Department. It was also resolved that the new courses may be introduced from the Academic Session 2016-17.

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4.	The action taken by the Vice-Chancellor in approving the following was reported, recorded and confirmed :- (i) Adoption of University Grants Commission's Grievance Redressal Regulations, 2012- **(Vide Annexure-3)** (ii) Adoption of University Grants Commission's Promotion of Equity in Higher Educational Institutions Regulations, 2012. **(Vide Annexure-4)** (iii) Appointment of Professor A.J. Verma, Department of Chemistry, CUH, as Anti-Discrimination Officer (ADO) w.e.f. 12/02/2016 for a term of three years or till the date of superannuation of Prof. A.J. Verma, whichever is earlier. (iv) Constitution of a Grievance Redressal Committee consisting of following for a term of two years w.e.f. 12/02/2016 in terms of Clause 5 of the University Grants Commission (Grievance Redressal) Regulations, 2012:- (1) Prof. A.J. Varma, Professor, Department of Chemistry, CUH. (2) Dean Students' Welfare (DSW) (3) Convener of Equal Opportunity Cell (4) NSS/YRC Coordinator (5) Coordinator, Women Empowerment Cell (6) Convener, Legal Cell (7) One representative from Students council to be nominated by DSW in view of the nature of particular grievance (on case to case basis) as a special invitee. (v) Appointment of Dean, Students' Welfare (DSW) to function as the Registry to receive the applications from the students w.e.f. 12/02/2016 till some alternative arrangement is made.
5	**The action taken by the Vice Chancellor in allowing the Department of Commerce to introduce M.Phil and Ph.D. programme from the Academic Session 2016-17 in due compliance with the provisions of Ordinance II and II(a) of the University was reported, recorded and confirmed.** **Resolved further that the duration of the M.Phil. Programme should be for one and half year with one year course work and six months dissertation.**
6	**The action taken by the Vice Chancellor in approving the signing of Non-Binding Memorandum of Understanding (MOU) with National Entrepreneurship Network (NEN) for the term 01/04/2016 to 31st March, 2019 was reported, recorded and confirmed. (Vide Annexure-5)**

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Items for Consideration:-	
7	Considered the D.O. letter No. F.30-57/2012(CVO) dated 14.3.2016 from the Secretary, University Grants Commission, New Delhi regarding introduction of chapters on topics such as Ethics, Vigilance, Anti-corruption, details of organizations/agencies such as Central Vigilance Commission, Central Bureau of Investigations etc. associated with anti- corruption and how and to whom to make complaints regarding corrupt practices in the curriculum for all students. **Resolved that a general chapter on Ethics, Vigilance, Anti-Corruption may be included in the syllabi by all Departments.**
8 (a)	Resolved that the following amendment to Statute-15 of the Statutes of the University relating to School of Studies and Departments in pursuance of the sanction received from the University Grants commission vide its Letter No. F.15-5/2012(CU) dated 23.03.2016, be approved and recommended to the Executive Council for approval. **To add the following after Sr. No. (xiii) (School of Journalism, Mass Communication and Media):** **xiv) School of Education** A copy of the UGC's letter under reference is enclosed. **xv) School of Engineering** (Subject to receipt of formal approval of the UGC)
8 (b)	Resolved that, subject to receipt of formal approval of the UGC, the following Departments may be added under Statute-15 of the Statutes of the University under the proposed School of Engineering and Technology. Add the following after Sr. No. 50 51. Department of Civil Engineering 52. Department of Computer Science and Engineering. 53. Department of Electrical Engineering. 54. Department of Printing and Packaging Technology.

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9 (a)	Resolved that the following amendments to Ordinance-XV relating to courses of study offered by the University, in pursuance of the University Grants Commission (UGC) Letter No. F.15-5/2012 (CU) dated 23.03.2016 and National Council for Teacher Education (NCTE) Letter No. F.NRC/NCTE/NRCAPP-10433-10440, 10137 and 10136/249th Meeting/2015/139226-31 dated 16.02.2016 be approved and recommended for approval of the Executive Council. **Add the following programmes/courses after Master of Hotel Management and Catering technology;** **Name of Programme** — **Duration** **B.Ed.** — **Two Years** **M.Ed** — **Two Years** **Copies of the letters of the UGC and NCTE are enclosed at (Vide Annexure 6 Pages 16, 17 and 34 to 35)** **Transitory provision;** **Till the assent of the Visitor is received for amendment to Statute 15 relating to creation of School of Education, the B.Ed. and M.Ed. programmes shall be offered under the Department of Education.**
9(b)	**Resolved further that the following amendment in the Ordinance XV be also approved and recommended to the Executive Council for approval subject to receipt of approval of the UGC:-** 1. **Civil Engineering** 2. **Computer Science & Engineering** 3. **Electrical Engineering** 4. **Printing & Packaging Technology**
10	Resolved that the following amendments to Clause-17 of Ordinance –XV relating to Attendance be approved and recommended for approval to the Executive Council: **Add the following after Sub-Clause-viii** Provided that in cases of the programmes which are governed by the Regulatory Bodies, the attendance rules laid down under the relevant regulations by the respective Body for the said programme shall be followed.

11	Considered the request of Sh. Pavan Duggal, Advocate, Supreme Court of India to enter in to a Memorandum of Understanding regarding academic collaboration between Central University of Haryana & Cyber law University without any financial commitments or inputs on the part of University. **Resolved that before entering into MoU the credentials of the University and modalities may be looked into. Resolved further that the status of the Cyber law University whether it is a private University or a recognized University be also ascertained.**

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12.	Resolved that the recommendations of the Standing Committee of the Academic Council made in its meeting held on 25/05/2016 with regard to Course Structure and Syllabi of the following programmes duly recommended by the concerned Board of Studies, be approved **vide Annexure-6** 1. Course Structure and Syllabi for Course Work for Ph.D. Degree of Chemistry Department. 2. Course Structure for B.Ed. and M.Ed. Courses to be started from the Session 2016-17. 3. Revised Syllabi of M.A. English (1st to 4th Semester and M.Phil. and Ph.D. course Work. 4. Course Structure and Syllabi M.Sc. Physics (1st to 4th Semester) and Ph.D. 5. Course Structure and Syllabi of M.Sc. Mathematics (1st to 4th Semester). 6. Course Structure of M.A. (JMC) (1st to 4th Semester) and Syllabi of M.A. (JMC) (1st and 2nd Semester) 7. Course Structure and Syllabi of M.A. Hindi (1st to 4th Semesters) and revised syllabi of M.Phil. 8. Course structure and syllabi of M.Sc. Geography (1st to 4th semester)
13	Resolved that the recommendations of the Standing Committee of the Academic Council made in its meeting held on 25/05/2016 regarding change in the Course Structure and Syllabi of the following programmes duly recommended by the concerned Board of Studies, be approved. **M.A. History** 1 "That in paper one (1) of semester First (Ist) i.e. 'Introduction of Historiography and its Research Methods', there exist a typing error. That the term 'Historiography' should be substituted by the term 'HISTORY'. Finally, the very paper should be written as 'INTRODUCTION TO HISTORY AND ITS RESEARCH METHODS.' 2 There should also be mentioned in the semester one (IST) that a trip for archaeological exploration/excavation should be made compulsory for the students of semester one. Next, the semester third students who will be opting for the paper of Archaeology as their specialization should also compulsorily be a part of such trip. A trip, in general, may also be organized annually for the students of History as part of educational trip of the historical cities/places/sites." **M.Lib. I.Sc.** **Consideration of the Item was deferred.** **M.Sc. Chemistry :** 1. To introduce the following new elective courses for Semester I and III of M.Sc. course. Detailed curriculum for the following courses are attached is separate sheets. Approval is sought for the removal of the course 'Analytical Chemistry II (SCS CH 1305 DCEC 4004)' from the list of offered elective courses for Semester III.

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No	Course Code	Course title	Credits	Faculty-in-Charge	Semester
1	SCS CH 1105 GEC 4004	Environmental Friendly Processes for Sustainable Development	4	Prof. Varma	1 (offered for students of other depts.)
2	SCS CH 1306 DCEC 4004	Organic Chemistry of Polymers	4	Prof. Varma	III
3	SCS CH 1305 DCEC 4004	Advanced Computational Chemistry	4	Dr. Ansari	III

2. Approval is sought for IV semester MSc Students to carry out their research projects at other institutes for the entire duration of semester. Similarly, approval is sought for the Department faculty to accept and supervise students from other institutes to carry out their Masters project work at CUH.

LLM. :

1. Change in the syllabi and Scheme of Examination.

M.Com.

1. Change in the syllabi of M.Com. as under:

Existing Provision of Syllabi

L	T	P	Credit
4	0	0	4

Proposed Changes recommended by BOS

L	T	P	Credit
3	1	0	4

The Vice Chancellor was authorized to frame a policy on tutorials.

M.Sc. Mathematics :

1. Change in the syllabi as under:

S. No.	Existing Provision of Syllabi, Scheme of Exam	Proposed Changes recommended by BOS
1	Project/Dissertation was initially of 6 credits in the old	The committee (BOS) desired to assign 8 credits instead of 6 credits to the

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	CBCS Ordinance/scheme.	Project/Dissertation for meaningful training to the students.

M.A. Hindi:
1. Change in the syllabi of M.Phil, Ph.D. course work.

M.Sc. (Geography)
Change in the syllabi of M.Sc. Geography as under:

Sr. No.	Existing Provision of Syllabi	Scheme of Exam.	Proposed Changes recommended by BOS
1.	Corse Content	Semester	Unit wise
2.	Course: Soil Geography Code: SEEGEO13066E4004	Semester	Introduction to soil Geography and Pedology in place of Nature, scope and significance of Soil Geography
3.	Course: Oceanography Code: SEEGEO1306DCEC4004	Semester	Deletion of Topics: 1. Historical Development of Oceanography 2. Distribution Pattern of land and water 3. Input and Output
	Course: Population Geography Code: SEEGEO1304DCEC4004	Semester	Deletion of Topics: 1. Urbanisation: concept, theories, characteristics, trend and pattern Modification in topics: a. Theories of Population: Malthus, Marx, optimum, and demographic transition have been clubbed as Theories of Population: Pre- Malthus, Malthus and Modern Theories b. 'in developing and developed countries with special focus on India' from Population problems and policies have been deleted.

The Meeting ended with a vote of thanks to the chair.

REGISTRAR

VICE CHANCELLOR

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Annexure-1

ACTION TAKEN REPORT
19th ACADEMIC COUNCIL MEETING

The 19th Meeting of the Academic Council of Central University of Haryana was held on 06th February, 2016 at 04:00 PM in the Conference Room of the Camp Office at Gurgaon, Central University of Haryana.

<table>
<tr><th>Resolution No.</th><th>Resolution Passed</th><th></th></tr>
<tr><td>1</td><td>Confirmed the minutes of the 18th Academic Council Meeting held on 07th October, 2015.</td><td>Noted</td></tr>
<tr><td>2</td><td>The actions taken on the resolutions of the 18th meeting of the Academic Council held on 07th October, 2015, were reported, recorded and confirmed.</td><td>Noted</td></tr>
<tr><td colspan="3">REPORTING ITEMS</td></tr>
<tr><td>3.</td><td>The action taken by the Vice Chancellor in approving the formation of Students Council for the session 2015-16 as under was reported, recorded and confirmed.
<table>
<tr><th>Sr. No.</th><th>Department</th><th>Name of the Student</th><th>Nominated/Elected</th></tr>
<tr><td>1</td><td>Biochemistry</td><td>Poonam Yadav, 6648</td><td>Nominated</td></tr>
<tr><td>2</td><td>Biotechnology</td><td>City, 6678</td><td>Nominated</td></tr>
<tr><td>3</td><td>Chemistry</td><td>Mandeep, 5176</td><td>Nominated</td></tr>
<tr><td>4</td><td>Commerce</td><td>Shaifali, 5356</td><td>Nominated</td></tr>
<tr><td>5</td><td>Computer Science</td><td>Rahul Yadav, 4167</td><td>Nominated</td></tr>
<tr><td>6</td><td>Economics</td><td>Altaf Ahmed, 5321
Vikas Chaudhary, 5335</td><td>Elected
Nominated</td></tr>
<tr><td>7</td><td>Education</td><td>Raj Kumar, 5306
Vikram, 5311</td><td>Elected
Nominated</td></tr>
<tr><td>8</td><td>English</td><td>Pawan Kumar, 5128
V.Sarika, 5134</td><td>Elected
Nominated</td></tr>
<tr><td>9</td><td>Environmental Science</td><td>Ramphal Singh, 6111
Sunil Kumar, 5556</td><td>Elected
Nominated</td></tr>
<tr><td>10</td><td>Geography</td><td>Narender, 5236
Jitender Yadav, 6402</td><td>Elected
Nominated</td></tr>
</table>
</td><td>Noted. A copy of the resolution has been sent to the concerned office.</td></tr>
</table>

11	Hindi	Drishan Kumar, 6325 Ekta, 5144	Elected Nominated
12	History & Archaeology	Apitu, 6533 Liaqat Hussian, 5386	Elected Nominated
13	Journalism & Mass Communication	Sai Kumar, 6362 Shilpa Shaji, 5531	Elected Nominated
14	Law	Priyanka, 5259 Abhinav Kumar, 6379	Elected Nominated
15	Library & Information Science	Nikhil, 6555 Neha, 6566	Elected Nominated
16	Management	Rohit Sharma, 5444 Sahil, 6466	Elected Nominated
17	Mathematics	Bhawna Dangi, 6481 Yogesh Kumar, 5300	Elected Nominated
18	Microbiology	Bheem Singh, 6662 Priyanka, 6656	Elected Nominated
19	Nutrition Biology	Vipin Kumar, 6631	Elected
20	Physics	Deepak Kumar, 6155 Arun Kumar, 5202	Elected Nominated
21	Political Science	Raj Kumar, 6008	Elected
22	Psychology	Gautam Budh, 5361	Elected
23	Sociology	Ram Prakash, 6603	Elected
24	Statistics	Aroma Yadav, 5501	Elected
25	Tourism & Hotel Management	Gunjan Shekhawat, 6616	Elected

<table>
<tr>
<td>4</td>
<td>The action taken by the Vice Chancellor in approving the Academic Calendar for the session 2016-17 as under was reported, recorded & confirmed.
<table>
<tr><th></th><th></th><th>No of Teaching Days</th></tr>
<tr><td>Classes to begin for the odd semesters</td><td>15/07/2016 (Friday)</td><td rowspan="2">90 Days</td></tr>
<tr><td>Dispersal of Classes for the odd semesters</td><td>29/11/2016 (Tuesday)</td></tr>
<tr><td>Preparation and conduct of Examination for the odd semesters</td><td>30/11/2016 – 23/12/2016 (Wednesday) (Friday)</td><td></td></tr>
<tr><td>Winter Break</td><td>24/12/2016 – 03/01/2017 (Saturday) (Tuesday)</td><td></td></tr>
<tr><td>Classes begin for the even semesters</td><td>04/01/2017 (Wednesday)</td><td rowspan="2">90 days</td></tr>
<tr><td>Dispersal of classes for the even semesters</td><td>16/05/2017 (Tuesday)</td></tr>
<tr><td>Preparation and conduct of Examination for the even semesters</td><td>17/05/2017 – 16/06/2017 (Wednesday) (Friday)</td><td></td></tr>
<tr><td>Summer vacation</td><td>17/06/2017 – 14/07/2017 (Saturday) (Friday)</td><td></td></tr>
</table>
</td>
<td>Noted. The Academic Calendar for the session 2016-17 has been uploaded on the University website.</td>
</tr>
<tr><td colspan="2">ITEMS FOR CONSIDERATION</td><td></td></tr>
<tr><td>5</td><td>The action taken by the Vice Chancellor in approving the signing of MOU between Central University of Haryana, Mahendergarh and CSIR-Central Electronics Engineering Research institute (CSIR-CEERI), Pilani (Rajasthan) was reported, recorded and confirmed.</td><td>Noted. A copy of the resolution has been sent to the concerned department.</td></tr>
<tr><td>6</td><td>The action taken by the Vice Chancellor in approving the signing of MOU between Central University of Haryana, Mahendergarh and Liberty Shoes Haryana was reported, recorded and confirmed.</td><td>Noted. A copy of the resolution has been sent to the concerned department.</td></tr>
</table>

7	Considered the syllabi for the following B.Voc programmes:- (i) Retail and Logistics Management (ii) Bio Biomedical Sciences (iii) Industrial Waste Management **Resolved that the syllabi prepared by the experts committee be approved. (Vide Annexure- 4)**	**A copy of resolution has been sent to the concerned department. The syllabi of B.Voc. programmes have been uploaded on the University website.**
8	**Considered the following admission rules to be followed for admission to various programmes of study of the University and resolved that the same be approved.** **1. ADMISSION COMMITTEE** i) There will be an Admission Committee in each department consisting of the following which will be responsible for making admissions to the respective department in accordance with the University rules: a) Head of the Department/Teacher In Charge - Convener b) Three teachers to be nominated by the Head of the Department c) One representative (teacher) belonging to the SC/ST/OBC/PWD/Woman from any department if any of the members does not belong to any of these categories. ii) Each Department will be responsible for performing all admission related work of the Department. iii) There will be a Standing Committee (Admissions), consisting of the following which will make recommendations to the Academic Council/the Vice Chancellor on issues concerning Admission Policies, eligibility criteria and other related issues referred to it: a) One of the Deans to be nominated by the Vice Chancellor - Chairman b) Deans of all the Schools c) Two Members of Academic Council nominated by the Vice Chancellor d) Proctor e) Dean Students' Welfare (DSW) f) Heads of the concerned Departments whose matter/s are listed on the agenda g) One representative of SC/ST/OBC/PWD/Woman if any of the members does not belong to any of	**A copy of the admission rules has been circulated to all teaching departments and concerned offices. The admission rules have also been uploaded on the University website.**

these categories.

2. AGE

There will be no minimum or maximum age bar for admission to any programme of study in the University except in the courses where the respective regulatory bodies (such as Medical Council of India (MCI), Dental Council of India (DCI), Bar Council of India (BCI), National Council for Teacher Education (NCTE), All India Council of Technical Education (AICTE) etc.) have prescribed any such rule in this regard.

3. RELAXATIONS/CONCESSIONS

(a) Scheduled Caste/Scheduled Tribe (SC/ST)

i) The minimum eligibility requirement for the Scheduled Caste/Scheduled Tribe candidates will be that they must have passed the qualifying school/degree examination. Provided that the minimum eligibility for admission to post-graduate programmes be the minimum pass marks of the qualifying examination concerned of the Central University of Haryana or the marks should not be less than 40%.

ii) Where the admission is based on screening/written test, the Scheduled Caste/Tribe candidates would also be required to take the test but their merit list will be drawn separately.

iii) However, for admission to the M.Phil. and Ph.D. Programmes, the SC/ST candidates shall be given only 5% relaxation in the minimum eligibility marks.

(b) Other Backward Classes (OBC)

i) The OBC candidates shall be given a relaxation in the minimum eligibility in the qualifying examination and in the minimum eligibility (if any) in the admission entrance test to the extent of 10% of the minimum eligibility marks prescribed for the General Category candidates. For example, if the minimum eligibility for admission to a programme is 50% for the General Category candidates, the minimum eligibility for the OBCs would be 45% i.e. (50% less 10% of 50%).

ii) All those OBC candidates who meet the minimum eligibility marks in the qualifying examination and the minimum eligibility marks

(if any) in the entrance test shall be eligible for admission in the order of their merit, keeping in view the availability of seats reserved for them.

iii) The OBC candidates who belong to the '**Non-Creamy Layer**' and whose castes appear in the **Central List** of the OBCs only shall be eligible to be considered for admission under the OBC Category.

(c) Persons With Disabilities (PWD)

The PWD candidates with not less than 40% disability shall be given a relaxation in the minimum eligibility in the qualifying examination and in the minimum eligibility (if any) in the admission entrance test to the extent of 5%.

(d) Children/Widows of the eligible Armed Forces Personnel (CW Category)

A concession of 5% marks in the minimum eligibility requirements in the qualifying examinations will be given to these candidates.

(e) The candidates belonging to the Scheduled Caste, Scheduled Tribe, and Persons with Physical Disability shall be charged the admission form/entrance examination fee at concessional rates.

4. RESERVATIONS

(a) Scheduled Caste/Scheduled Tribe/Other Backward Classes

i) Reservation of seats in admissions to various programmes of study shall be in the following manner:

Scheduled Caste	=15% of total intake in each programme
Scheduled Tribe	=7 ½ % of total intake in each programme
Other Backward Classes	=27% of total intake in each programme

ii) The seats reserved for the SC/ST shall be filled by the SC/ST candidates only. However, in the case of non-availability of the eligible candidates the reserved seats may be

	interchanged between the SC & ST. If still any seat remains unfilled due to non-availability of eligible candidates of either Scheduled Caste or Scheduled Tribe or both, may be thrown open to the general category in that year provided this has been notified to the National Commission for Scheduled Castes/Tribes; University Grants Commission and the Ministry of Human Resource Development and concurrence has been obtained, failing which the seat will be left vacant. iii) The seats reserved for the OBCs shall be filled with the OBC candidates only. Only if OBC candidates possessing the minimum eligibility marks are not available in the OBC category then the vacant OBC seats shall be converted into General Category seats in accordance with the admission schedule notified by the University. **(b) Supernumerary seats:** **(i) Persons with Disabilities (PWD) =3%** of total intake in each programme shall be reserved for the PWD (1% each for the persons with low vision or blindness, hearing impaired and loco motor disability or cerebral palsy (interchangeable in case of non-availability of candidates in the sub-categories). **(ii) Children/Widows of the eligible Armed Forces Personnel** (CW Category) =5% of the seats in each programme shall be reserved for these candidates. Admission of candidates belonging to CW categories shall be made in the following order of priorities: I. Widows/Wards of Defence personnel killed in action; II. Wards of serving personnel and ex-servicemen disabled in action; III. Widows/Wards of Defence personnel who died in peace time with death attributable to military service; IV. Wards of Defence personnel disabled in	

peace time with disability attributable to the military service; and

V. Wards of Ex-servicemen personnel/serving personnel including personnel of police forces who are in receipt of Gallantry Awards;

Category-V (Gallantry Awards) include: Param Vir Chakra, Ashok Chakra, Sarvottam Yudh Seva Medal, Maha Vir Chakra, Kirti Chakra, Uttam Yudh Seva Medal,Vir Chakra, Shaurya Chakra, Yudh Seva Medal ,Sena, Nau Sena,- Vayusena Medal, Mention-in-Despatches, President's Police Medal for Gallantry, Police Medal for Gallantry.

Authorities Competent to issue educational concession certificates under CW category:-

- Secretary, Kendriya, Sainik Board, Delhi
- Secretary, Rajya Zila Sainik Board
- Officer-in-Charge, Records Office
- Competent Authority of Ministry of Defence
- Ministry of Home Affairs (for Police personnel in receipt of Gallantry Awards)

(iii) Foreign Nationals=5% seats in each programme in each Department.

(iv) Sports/Extra Curricular Activities (ECA)

a)For undergraduate courses:

Sports/ECA Persons=upto 5% of total intake in each undergraduate programme may be offered to the candidates on the basis of Sports and ECA on the recommendations of a Committee consisting of the following:

1. Dean of the concerned School - Chairman
2. Head of the concerned Department
3. One External Expert to be nominated by the Vice Chancellor
4. Director, Physical Education
5. Dean Students' Welfare (Convener)

b) For postgraduate courses:

Sports= upto 5% of total intake in each postgraduate programmes may be offered to the candidates on the basis of Sports on the recommendations of the Committee

	constituted under Clause (a) above. **5.** Permission to students to apply under General/SC/ST/OBC Category as well as CW, PWD Category etc. The candidates applying for admission to various courses shall be permitted to apply simultaneously under Gen/SC/ST/OBC Category as well as Children of War Widows, Person with Disability and other categories for which reservation/concession is admissible. The application forms should, therefore, contain appropriate columns for mentioning such categories. **6.** Registration /Admission of foreign nationals i) The foreign nationals seeking admission in the University shall have to get themselves registered with the office of the Dean Students' Welfare (DSW) in compliance with the schedule notified by the University. No Foreign student will be admitted directly by any Department/School. They will be registered only on the recommendations of their respective High Commissions/Embassies. ii) Foreign nationals shall be exempted from appearing in Admission Entrance Test conducted for admission to various Under-Graduate and Post-Graduate programmes including Professional Courses. Foreign nationals who are stationed in India and have passed their last examination from Board/University in India shall also be exempted from appearing in entrance test. iii) All the categories of foreign students shall come under the same category of 5% quota for foreign nationals for admission to various programmes. This shall include foreign nationals with qualifications attained either from Indian Board /University or Foreign Board/University. iv) All admissions in Foreign Students' category shall be done on individual merit and a single merit list of foreign students, both with Indian and foreign qualifications shall be prepared for admission in various programmes. v) At least one seat shall be reserved for foreign nationals in all the programmes wherever the total numbers of seats for admission is less than 20. vi) Foreign Nationals admitted to the Central University	

	of Haryana will be required to get medical insurance which is mandatory. vii) The foreign students shall have to pay annual fee at the following rates: a. Postgraduate/Master's programmes excluding professional programmes - 1200 US Dollars b. All Professional programmes - 1350 US Dollars c. M.Phil./Ph.D. -1500 US Dollars d. Undergraduate programmes -1050 US Dollars The above fee does not include hostel/mess fee. **7.** The departments, if they decide to also hold Group Discussion (GD) or interview in addition to the admission entrance test, shall not assign more than 20% marks to the GD or interview. **8.** The merit list for the general category seats will comprise of all the candidates in the order of merit including SC/ST/OBC, if they come under the general category merit. No one will be excluded from the same. In other words, it will also include SC/ST/OBC candidates if they come in the general merit. All such reserved category candidates shall be entitled to be considered under the general category, as well as under the reserved category. Admission to open category seats will be strictly in the order of merit without excluding SC/ST/OBC candidates. **9.** The details of the seats of General and reserved categories will have to be notified by the Departments concerned before beginning of the admission process. **10.** All those programmes wherein admissions are based on the rank in the entrance examination, the candidates will be eligible for admission only after the result of the qualifying examination has been declared and the candidates meet the minimum eligibility criteria. However, the candidates whose results of the qualifying examinations are awaited, may be offered provisional admission, subject to submission of their results latest by 30th August, failing which their provisional admission will be cancelled. Such candidates shall submit an undertaking to this effect.	

	11. All admissions shall have to be finalized by the Departments in strict compliance with the schedule of admission notified by the University and in no case admission shall be allowed beyond the last date of admission. **12.** The Departments shall get the relevant certificates submitted for availing the benefit of reservation verified from the respective issuing authorities. **13.** No student of the University shall be permitted to pursue two degree courses or other full time courses simultaneously either from the Central University of Haryana or from other University except the part-time or weekend diploma/certificate courses. **14.** For admission to the courses which are governed by the Regulations of the regulatory bodies, like Medical Council of India (MCI), Dental Council of India (DCI), Bar Council of India (BCI), National Council for Teacher Education (NCTE), All India Council of Technical Education (AICTE), etc., the admissions and other rules prescribed under their respective regulations shall be followed. **15.** In case any information/document furnished by the candidates in their applications for admission is found to be incorrect/fake at any time after admission, the admission of such candidates shall be liable to be cancelled by the Head of the Department immediately, besides initiating other action in accordance with the University rules.	

Annexure-2

ज्ञान-विज्ञान विमुक्तये
डॉ. जितेन्द्र कुमार त्रिपाठी
संयुक्त सचिव
Dr. Jitendra Kr. Tripathi
Joint Secretary

विश्वविद्यालय अनुदान आयोग
University Grants Commission
(मानव संसाधन विकास मंत्रालय, भारत सरकार)
(Ministry of Human Resource Development, Govt. of India)
बहादुर शाह जफ़र मार्ग, नई दिल्ली-110002
Bahadur Shah Zafar Marg, New Delhi-110002
दूरभाष Phone : 011-23239200 फैक्स Fax : 011-23238897
E-mail : jitendratripathi.ugc@nic.in

Diary No. 1888
Dated: 04/04/16
Registrar Office

By Speed Post

No.F.15-5/2012 (CU) **March, 2016**

12 3 MAR 2016

The Vice-Chancellor
Central University of Haryana
Jant-Pali Villages
Mahendergarh
Haryana - 123029

Subject: Approval of courses and manpower for establishment of School of Education/Faculty of Education in Central Universities – Central University of Haryana.

Sir,

This is in reference to your office letter No.CUH/2015/Reg/30 dated 22.05.2015 and CUH/2015/Reg/31 dated 22.05.2015 regarding the requirement for approval of courses and manpower for establishment of School of Education/Faculty of Education in your university. The proposal was placed before the Committee constituted for the purpose. The recommendations of the Committee were placed before the Commission in its 513th meeting held on 29th February, 2016. The Commission considered and approved the recommendations of the Committee. Accordingly, the undersigned is directed to convey the approval of UGC for creation of **26 teaching positions** and **9 non-teaching positions** for establishment of School of Education/Faculty of Education as per details below:-

Teaching :

Details of the Courses approved by UGC	Details of the teaching Staff approved by UGC	No. of Posts
B.Ed.(2 years) Intake of 100 students M.Ed.(2 years) Intake of 50 students	Professor	2 (Two)
	Associate Professor	2 (Two)
	Assistant Professor	22 (Twenty Two)
	Total	**26 (Twenty Six)**
		Out of 26 teaching positions, 13 teaching positions may be filled up as Guest Faculty/contractual faculty

प्राप्ति सं./Diary No. E-178
दिनांक/Dated 01/4/16

कुलपति के आशु., ह.के.वि.
Vice-Chancellor's Office, C.U.H.

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Contd. -2/-

Non-Teaching :

Course Details	Designation	Scale of Pay		No. of posts
		Pay Band	Grade Pay	
For B.Ed. and M.Ed. Programme	Professional Assistant	9300-34800	4200	1
	Library Assistant	5200-20200	2000	1
	Library Attendant	5200-20200	1800	1
	Technical Assistant (Computer)	5200-20200	2800	1
	Laboratory Assistant	5200-20200	2400	1
	Laboratory Attendant	5200-20200	1800	1
	Assistant	9300-34800	4200	1
	Upper Division Clerk	5200-20200	2400	1
	Lower Division Clerk	5200-20200	1900	1
	Total			**9**

The expenditure on the above teaching and non-teaching positions may be incurred out of the funds provided under salary head of the XII Plan allocation.

The approval of the above is subject to fulfillment of the following :-

(i) The University may frame the cadre recruitment rules for each category of posts approved by UGC.

(ii) The University may strictly adhere to the reservation policy for SC/ST/OBCs/PH as per Govt. of India guidelines while filling up these posts

(iii) The University may fill up the sanctioned teaching and non-teaching posts in a phased manner as per actual requirement of University under intimation to UGC.

(iv) 50% of the teaching positions **(13 teaching positions)** may be filled up as Guest Faculty/contractual faculty till the decision is taken by Review Committee constituted by NCTE regarding duration of the B.Ed. and M.Ed. course.

Yours faithfully,

(Jitendra Kr. Tripathi)
Joint Secretary

V. Taneja

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Annexure-3

UNIVERSITY GRANTS COMMISSION
BAHADUR SHAH ZAFAR MARG
NEW DELHI – 110 002

NOTIFICATION

F.No.14-4/2012(CPP-II)

New Delhi, the __ December, 2012

In exercise of the power conferred under sub-section (1) of section 26 of the University Grants Commission Act, 1956 (3 of 1956), the University Grants Commission hereby makes the following regulations, namely: -

1. *Short title, application and commencement: -*

1) These regulations shall be called the University Grants Commission (Grievance Redressal) Regulations, 2012.

2. They shall apply to every university, whether established or incorporated by or under a Central Act or a State Act, and every institution recognised by the University Grants Commission under clause (f) of Section 2 of the University Grants Commission Act, 1956 and to all institutions deemed to be a university declared as such under Section 3 of the said Act.

3. They shall come into force from the date of their publication in the Official Gazette.

2. *Definition:* -- In these regulations, unless the context otherwise requires -
(a) "Act" means the University Grants Commission Act, 1956 (3 of 1956);

(b) "aggrieved student" means a student who has any complaint in the matters concerned with the grievances defined under these regulations, and includes a person seeking admission to any institution of higher education;

(c) "college" means any institution, whether known as such or by any other name, which provides for a course of study for obtaining any qualification from a university and which, in accordance with the rules and regulations of such university, is recognised as competent to provide for such course of study and present students undergoing such course of study for the examination for the award of such qualification;

d. "Commission" means the University Grants Commission established under section 4 of the UGC Act, 1956.

(e) "declared admission policy" means such policy for admission to a course or program of study as may be offered by the institution and published in the prospectus referred to in sub-regulation (1) of regulation 3;

(f) "grievances" include the following complaints of the aggrieved students, namely: –

(i) making admission contrary to merit determined in accordance with the declared admission policy of the institute;

(ii) irregularity in the admission process adopted by the institute;

(iii) refusing admission in accordance with the declared admission policy of the institute;

(iv) non publication of prospectus, as specified;

(v) publishing any information in the prospectus, which is false or misleading, and not based on facts;

(vi) withhold or refuse to return any document in the form of certificates of degree, diploma or any other award or other document deposited with it by a person for the purpose of seeking admission in such institution, with a view to induce or compel such person to pay any fee or fees in respect of any course or program of study which such person does not intend to pursue;

(vii) demand of money in excess of that specified in the declared admission policy or approved by the competent authority to be charged by such institution;

(viii) breach of the policy for reservation in admission as may be applicable;

(ix) complaints, of alleged discrimination of students, from the Scheduled Castes, the Scheduled Tribes, Other Backward Classes, Women, Minority or Disabled categories;

(x) non payment or delay in payment of scholarships to any student that such institution is committed, under the conditions imposed by University Grants Commission, or by any other authority;

(xi) delay in conduct of examinations or declaration of results beyond that specified in the academic calendar;

(xii) on provision of student amenities as may have been promised or required to be provided by the institution;

(xiii) denial of quality education as promised at the time of admission or required to be provided;

(xiv) non transparent or unfair evaluation practices;

(xv) harassment and victimisation of students, including sexual

harassment;

(g) "Grievance Redressal Committee" means a committee constituted under these regulations;

(h) "Higher Educational Institution" means a University within the meaning of clause (f) of Section 2, a college within the meaning of clause (b) of sub-section (1) of Section 12A, and an institution deemed to be a University declared under Section 3, of the University Grants Commission Act, 1956;

(i) "institution" for the purposes of these regulations, means university, college or institution, as the case may be;

(j) "Office of profit" means an office which is capable of yielding a profit or pecuniary gain, and to which some pay, salary, emolument, remuneration or non-compensatory allowance is attached;

(k) "Ombudsman" means the Ombudsman appointed under regulation 4 of these regulations;

(l) "university" means a university established or incorporated by or under a Central Act or a State Act and includes an institution deemed to be university declared as such under Section 3 of the Act.

3. *Mandatory publication of prospectus, its contents and pricing:--*
(1) Every higher education institution, shall publish, before expiry of sixty days prior the date of the commencement of the admission to any of its courses or programmes of study, a prospectus containing the following for the purposes of informing those persons intending to seek admission to such institution and the general public, namely:—

(a) each component of the fee, deposits and other charges payable by the students admitted to such institution for pursuing a course or programme of study, and the other terms and conditions of such payment;

(b) the percentage of tuition fee and other charges refundable to a student admitted in such institution in case such student withdraws from such institution before or after completion of course or programme of study and the time within, and the manner in, which such refund shall be made to that student;

(c) the number of seats approved by the appropriate statutory authority in respect of each course or programme of study for the academic year for which admission is proposed to be made;

(d) the conditions of eligibility including the minimum and maximum age limit of persons for admission as a student in a particular course or programme of study, where so specified by the institution;

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(e) the educational qualifications specified by the relevant appropriate statutory authority, or by the institution, where no such qualifying standards have been specified by any statutory authority;

(f) the process of admission and selection of eligible candidates applying for such admission, including all relevant information in regard to the details of test or examination for selecting such candidates for admission to each course or programme of study and the amount of fee to be paid for the admission test;

(g) details of the teaching faculty, including therein the educational qualifications and teaching experience of every member of its teaching faculty and also indicating therein whether such members are on regular basis or as visiting member;

(h) information in regard to physical and academic infrastructure and other facilities including hostel accommodation, library and hospital or industry wherein the practical training to be imparted to the students and in particular the facilities accessible by students on being admitted to the institution;

(i) broad outlines of the syllabus specified by the appropriate statutory authority or by the institution, as the case may be, for every course or programme of study, including the teaching hours, practical sessions and other assignments;

(j) all relevant instructions in regard to maintaining the discipline by students within or outside the campus of the institution, and, in particular such discipline relating to the prohibition of ragging of any student or students and the consequences thereof and for violating the provisions of any regulation in this behalf made by the relevant statutory regulatory authority; and

(k) any such other information as may be specified by the Commission:

Provided that an institution shall publish information referred to in items (*a*) to (j) of this sub regulation, on its website, and the attention of prospective students and the general public shall be drawn to such publication on the website through advertisements displayed prominently in the different newspapers and through other media:
Provided further that an institution may publish prospectus in accordance with this sub regulation at any time before the period of sixty days.

(2) Every institution shall fix the price of each printed copy of the prospectus, being not more than the reasonable cost of its publication and distribution and no profit be made out of the publication, distribution or sale of prospectus.

4. Appointment, tenure, removal and conditions of services under grievance redressal mechanism –

5

(1) Each University shall appoint an Ombudsman for redressal of grievances of students under these regulations.

2. The Ombudsman shall be a person who has been a judge not below the rank of a District Judge or a retired professor who has at least ten years' experience as a professor.

3. The Ombudsman shall not, at the time of appointment, during one year before such appointment, or in the course of his tenure as Ombudsman, be in a conflict of interest with the university where his personal relationship, professional affiliation or financial interest may compromise or reasonably appear to compromise, the independence of judgement toward the university.

4. The Ombudsman, or any member of his immediate family shall not -

(a) hold or have held at any point in the past, any post or, employment in the office of profit in the University;
(b) have any significant relationship, including personal, family, professional or financial, with the university;
(c) hold any position in university by whatever name called, in the administration or governance structure of the university.

5. The Ombudsman in a State University shall be appointed by the university on part-time basis from a panel of three names recommended by the search committee consisting of the following members, namely:-

(a) nominee of the Governor of the State - Chairman;
(b) two Vice-Chancellors, by rotation from public universities of the State to be nominated by the State Government - Members;
(c) one Vice-Chancellor, by rotation from a private university of the State to be nominated by the State Government - Member;
(d) Secretary (Higher Education) of the State – Member-- Convener.

6. The Ombudsman in a Central University and institution deemed to be university shall be appointed by the Central University or institution as the case may be on part - time basis

from a panel of three names recommended by the search committee consisting of the following members, namely:-

a) Chairman of the University Grants Commission or

his nominee - Chairman;

b) one Vice Chancellor from central university, by rotation, to be nominated by the Central Government - Member;

c) one Vice Chancellor from institution deemed to be university, by rotation, to be nominated by the Central Government – Member;

d) Joint Secretary to the Government of India in the Ministry of Human Resource Development dealing or incharge of the higher education - Member;

e) Joint Secretary in the office of the University Grants Commission - Member - Convener

7. The Ombudsman shall be a part time officer appointed for a period of three years or until he attains the age of seventy year, whichever is earlier, from the date he resumes the office and may be reappointed for another one term in the same university.

8. The Ombudsman shall be paid a fees of Rs. 3000 per day for hearing the cases, in addition to reimbursement of the conveyance.

9. The Ombudsman may be removed on charges of proven misconduct or misbehavior or as defined under sub regulation (3) and (4) of this regulation, by the concerned appointing authority.

10. No order of removal of Ombudsman shall be made except after an inquiry made in this regard by a person not below the rank of Judge of the High Court in which such Ombudsman has been informed of the charges against him and given a reasonable opportunity of being heard in respect of those charges.

5. **Grievance Redressal Committee** –

(1) In case of a college, the Vice Chancellor of the affiliating university shall constitute a Grievance Redressal Committee consisting of five members for an individual college or a group of colleges keeping in view the location of the college(s).

(2) The Grievance Redressal Committee shall be constituted by the Vice-Chancellor of the affiliating university consisting of -

a) a senior Professor of the University - Chairman;

b) three senior teachers drawn from the affiliating colleges, on rotation basis, to be nominated by the Vice-Chancellor – Members;

c) a student representing the college where the grievance has occurred to be nominated, based on academic merit, by the concerned college - special invitee.

(3) The Grievance Redressal Committee shall have a term of two years.

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(4) The provisions of sub-regulations (8), (9) and (10) of regulation 4 and regulation 6 in respect of the matters of the reimbursement and procedure and functions shall, *mutatis mutandis*, apply to the Grievance Redressal Committee except that the Grievance Redressal Committee shall communicate its decision within ten days of receipt of the complaint.

(5) Any person aggrieved by the decision of the Grievance Redressal Committee may within a period of six days prefer an appeal to the Ombudsman.

6. *Powers and functions of ombudsman –*

(1) The Ombudsman shall exercise his powers to hear any grievance-

(a) of any student against the university or institution affiliated to it or an institute, as the case may be, after the student has availed of remedies available in such institution for redressal of grievance; and
(b) of any applicant for admission as student to such institution.

2. No application for revaluation or remarking of answer sheets shall be entertained by the Ombudsman unless specific irregularity materially affecting the outcome or specific instance of discrimination is indicated.

3. The Ombudsman shall have power to seek the assistance of any person belonging to the Scheduled Castes, the Scheduled Tribes, Socially and Economically Backward Classes, minority or disabled category, as amicus curiae, for hearing complaints of alleged discrimination.

7. *Procedure in redressal of grievances by Ombudsman and Grievance Redressal Committee-*

(1) Each institution shall establish a registry, headed by an employee of the institute of appropriate rank as the Ombudsman may decide, where any aggrieved student or person may make an application seeking redressal of grievance.

(2) The address of the registry so established shall be published widely including on the notice board and prospectus and placed on the website of the institution.

(3) On receipt of an application by the registry, the employee-in-charge shall inform the Ombudsman or the Grievance Redressal Committee, as the case may be, shall immediately provide a copy to the institution for furnishing its reply within seven days.

8

(4) The Ombudsman or the Grievance Redressal Committee, as the case may be, shall fix a date for hearing the complaint which shall be communicated to the institute and the aggrieved person either in writing or electronically, as may be feasible.

(5) An aggrieved person may appear either in person or represented by such person as may be authorised to present his case.

(6) The Ombudsman or the Grievance Redressal Committee, as the case may be, shall be guided by the principles of natural justice while hearing the grievance.

(7) The Ombudsman or the Grievance Redressal Committee, as the case may be, shall ensure disposal of every application as speedily as possible and not later than a month of receipt of the grievance.

(8) The institution shall co-operate with the Ombudsman or the Grievance Redressal Committee, as the case may be, in redressal of grievances and failure to do so may be reported by the Ombudsman to the Commission.

(9) On the conclusion of proceedings, the Ombudsman or the Grievance Redressal Committee, as the case may be, shall pass such order, with reasons for such order, as may be deemed fit to redress the grievance and provide such relief as may be desirable to the affected party at issue.

(10) Every order under sub-regulation (9), under the signature of the Ombudsman or the Grievance Redressal Committee, as the case may be, shall be provided to the aggrieved person and the institution and shall be placed on the website of the institution.

(11)The institution shall comply with the order of the Ombudsman or the Grievance Redressal Committee, as the case may be,

(12) Any order of the Ombudsman or the Grievance Redressal Committee, as the case may be, not complied with by the institution shall be reported to the Commission.

(13) A complaint shall be filed by the aggrieved student or his parent or with a special permission from the Ombudsman or the Grievance Redressal Committee, as the case may be, by any other person.

(14)In case of any false or frivolous complaint, the ombudsman may order appropriate action against the complainant.

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8. *Information regarding Ombudsman Grievance Redressal Committee to be published in prospectus -*

The University, the institution deemed to be university and the college concerned shall provide detailed information regarding provisions of Grievance Redressal Committee, Ombudsman and the duties and rights of students in their prospectus prominently.

9. *Consequences of non-compliance –*

The Commission shall in respect of any institution which willfully contravenes or repeatedly fails to comply with orders of the Ombudsman or the Grievance Redressal Committee, as the case may be, may proceed to take one or more of the following actions, namely:-

a. withdrawal of declaration of fitness to receive grants under section 12B of the Act;
b. withholding any grant allocated to the Institution;
c. declaring the institution ineligible for consideration for any assistance under any of the general or special assistance programs of the Commission;
d. informing the general public, including potential candidates for admission, through a notice displayed prominently in the newspapers or other suitable media and posted on the website of the Commission, declaring that the institution does not possess the minimum standards for redressal of grievances;
e. recommend to the affiliating university for withdrawal of affiliation, in case of a college;
f. recommend to the Central Government for withdrawal of declaration as Institution deemed to be university, in case of an institution deemed to be university;
g. recommend to the appropriate State Government for withdrawal of status as university in case of a university established or incorporated under a State Act;
h. taking such other action within its powers as the Commission may deem fit and impose such other penalties as may be provided in the Act for such duration of time as the institution complies with the provisions of these Regulations:

Provided that no action shall be taken by the Commission under this regulation unless the institution has been given an opportunity to explain its position and opportunity of being heard has been provided to it.

(Dr. Akhilesh Gupta)
(Secretary)

Annexure4

UNIVERSITY GRANTS COMMISISON

In exercise of the power conferred by sub-section (1) of section 26 of the University Grants Commission Act 1956 (3 of 1956), the University Grants Commission (UGC) hereby makes the following regulations, namely:-

1. **SHORT TITLE, APPLICATION AND COMMENCEMENT:-**

(1) These regulations may be called the UGC (Promotion of Equity in Higher Educational Institutions) Regulations, 2012.

(2) They shall apply to all the higher educational institutions in India

(3) They shall come into force from the date of their publication in the Official Gazette

2. **DEFINITIONS:-** In these regulations, unless the context otherwise requires, -

a. "**constituent of higher educational institutions**" means any authority or person or group of persons or sections of the institutional community belonging to the higher educational institutions;

b. **"discrimination"** means any distinction, exclusion, limitation or preference which has the purpose or effect of nullifying or impairing equality of treatment in education and in particular -

i. of depriving a student or a group of students on the basis of caste, creed religion, language, ethnicity, gender, disability of access to education of any type or at any level;

ii. of imposing conditions on any student or group of students which are in-compatible with the dignity of human; and

iii. of subjecting to the provision of establishing or maintaining separate educational systems or institutions for students or groups of students based on caste, creed, religion, language, ethnicity, gender and disabilities

(c) "**equity**" means a level playing field for all students in respect of the entitlement and opportunity for enjoyment of all legitimate rights

(d) "**harassment**" means unwanted conduct which is persistent and demeans, humiliates or creates a hostile and intimidating environment or is calculated to induce submission by actual or threatened adverse consequences;

(e) "**higher educational institution**" means a university within the meaning of clause (f) of section 2, a College within the meaning of clause (b) of sub-section (1) of section 12 A and an institution deemed to be a University declared under section 3 of the University Grants Commission Act, 1956.

(f) "**ragging**" means any of the acts as defined under the University Grants Commission Regulations on Curbing the Menace of Ragging in Higher Education Institutions, 2009.

(g) "**unfavourable treatment**" means any adverse changes in the working environment, denial of training, and denial of opportunities for advancement, unfavorable probationary reports, vexatious grievances and exclusion by peers;

(h) "**victimisation**" means any unfavorable treatment of a student on the basis caste, creed, religion, language, ethnicity, gender and disability

3. **Higher Educational Institution to take measure against discrimination:-**

(1) Every higher educational institution shall take appropriate measures to -

a. safeguard the interests of the students without any prejudice to their caste, creed, religion, language, ethnicity, gender and disability.

b) eliminate discrimination against or harassment of any student in all forms in higher educational institutions by prohibiting it and by providing for preventive and protective measures to facilitate its eradication and punishments for those who indulge in any form of discrimination or harassment;

c promote equality among students of all sections of the society.

(2) Without prejudice to the directives or instructions of the Central Government or the State Governments issued from time to time in respect of treatment of students belonging to Scheduled Castes or the Scheduled Tribes, no higher educational institution shall discriminate a student belonging to the Scheduled Castes and the Scheduled Tribes categories, or allow or condone any constituent of the higher educational institution to discriminate such a student or group of such students, and take the following measures namely -

(a) the higher educational institution or constituent of higher educational institution shall not discriminate against students belonging to the Scheduled Castes and the Scheduled Tribes in admissions -

i. by breach of the policy of reservation in admissions as may be applicable.
ii. in accepting application for admission of such students.
iii. in the way in which an application is processed;
iv in the arrangements made for, or the criteria used in, deciding who should be offered admission as a student;
v by withholding or refusing to return any document in the form of certificates of degree, diploma, etc., deposited with higher educational institutions by such a student for the purpose of seeking admission, with a view to inducing or compelling such a student to pay any fee or fees in respect of any course or programme of study which he/she does not intend to pursue.
vi by demanding money in excess of that specified in the declared admission policy;
vii by denying or limiting access to any benefit arising from such enrolment provided by the higher educational institutions.

viii by treating unfavorably in any way in connection with the student's enrolment to a specific standard of class or area of study, training or instruction

(b) the higher educational institutions or constituent of higher educational institutions shall prohibit all persons and authorities of the higher educational institutions from harassing or victimising any student

i by announcing, verbally or otherwise, in the class, the names of the castes, tribes, religion or region of the students;
ii. by labeling students as reserved category in the class;
iii. by passing derogatory remarks indicating caste, social, regional, racial or religious background as reason of under-performance in the class;
iv by allotting differential time to any student to meet faculty as compared to other students;
v by keeping any student idle in the laboratory and not allowing him/her to work even if he/she is allowed to enter;
vi. by earmarking separate seats to any student or a group of students in the reading hall;
vii. by following differential treatment to any student regarding issue of books or journals or magazines, etc.;
viii by treating any student or section of students separately in utilising the sports facilities on the basis of their caste, creed, region or religion.

(c) The higher educational institution or constituent of higher educational institution shall not discriminate or allow discrimination in evaluation on the basis of caste, creed, religion, language, ethnicity, gender and disability -

i by not properly evaluating and re-evaluating examination papers of such students and by giving them less marks;
ii by delaying declaration of results of any student or section of students.

(d) the higher educational institution or constituent of higher educational institution shall ensure that there is no discrimination against the students on the basis of caste, creed, religion, language, ethnicity, gender and disability:

i by not giving full information about the fellowships related matters;
ii by withholding or stopping the fellowships meant for students.

(e) The higher educational institution or constituent of higher educational institution shall ensure that no student or section of students is discriminated on the basis of caste, creed, religion, language, ethnicity, gender and disability, against -

i. by segregating such students from others in hostel or mess or reading room or common room or playground or canteen and any other student amenities including drinking water facilities, etc.;
ii. by indulging in acts of ragging specifically targeted against such students;
iii. by doing any thing which disrupts or disturbs the regular activities of such students;
iv. by any act of financial extortion or forceful expenditure put on such students;
v. by not allowing such students to participate in the cultural programme or the sports events;

(f) the higher educational institution shall promote equality among all sections of the students without prejudice to their belonging to any social group and for this purpose it shall establish an Equal Opportunity Cell and appoint an Anti-Discrimination Officer who shall not be below the rank of a Professor in the case of a University and an Institution deemed to be a University, and not below the rank of Associate Professor in the case of a college;

(g) the higher educational institution shall prohibit any conduct by any person or group of persons in the higher educational institution, whether by words spoken or written or by any act which has the effect of ragging on students

(h) the higher educational institution shall prescribe the procedures and mechanism, within a period of six months of coming into force of these regulations, to deal with and decide any complaint of discrimination, made or submitted by any student or group of students and it shall be obligatory on the part of the higher educational institution to decide such complaints within a maximum period of sixty days from the date of receipt or submission of such complaints;

(i) the higher educational institution shall take steps to educate the educational fraternity and public and raise public awareness on the importance of equality and overcoming any form of caste based discrimination and harassment against students belonging to the marginalized sections, including SC/ST students of the society in higher educational institution;

(j) The higher educational institutions shall ensure the strict implementation of all constitutional provisions and protective measures in respect of students belonging to SC/ST categories;

(k) the higher educational institution shall upload on its website all measures for elimination of discrimination and punishments for breaching them and the higher educational institution shall also upload relevant public awareness material for prevention of discrimination against and harassment of any section of the student

4. **PUNISHMENTS:-** (1) Whoever commits any act of discrimination or harassment as specified in these regulations against any student or section of students in any higher educational institution shall be dealt with through the following procedure, namely:-

a. on receipt of a written complaint, the Anti Discrimination Officer shall initiate follow-up action including preliminary fact finding inquiry, if he considers necessary;

b. on the recommendation of the Anti Discrimination Officer, the higher educational institution shall take appropriate follow-up action;

c the competent authority of the higher educational institution upon receipt of the inquiry report shall refer the same to the Anti Discrimination Officer in the case of students for taking appropriate action in accordance with the provisions of the Statutes or Ordinances or Regulations of the higher educational institution or the UGC Regulations on Ragging and any other Regulations in force; or

d in case of teachers and non-teaching staff, the competent authority of the higher educational institution upon receipt of the inquiry report shall take appropriate action in accordance with the provision of the Statutes or Ordinances or Regulations of the higher educational institution or service rules as applicable to higher educational institution.

2 The punishment shall be commensurate with the nature of the discrimination or harassment.

5. **INFORMATION ABOUT THE COMPLAINT:-** (1) A complaint about discrimination or harassment as defined in these regulations may be made in writing by a student or a parent of a student irrespective of whether the discrimination or harassment is alleged to have taken place within or outside the higher educational institution.

2. The complaint shall include sufficient details of the alleged act of discrimination or harassment.

3 The complaint shall be made to the Anti Discrimination Officer.

4. The higher educational institution shall formulate and make public, by uploading the information on its website, a transparent procedure for filing and dealing with such complaint.

6. **APPEAL**

Subject to provisions made by higher educational institutions, any person aggrieved by an order made by the Anti Discrimination Officer may prefer an appeal against such order within a period of ninety days from the date of the order to the Head of the higher educational institution.

Provided that the Head of the higher educational institution may entertain an appeal after the expiry of the said period of ninety days, if he is satisfied that the appellant had sufficient cause for not preferring the appeal within the said period of ninety days

Annexure-5

कुलसचिव कार्यालय, हरियाणा केंद्रीय विश्वविद्यालय
Registrar Office, Central University of Haryana
प्राप्ति सं./ Receipt No. 2771
दिनांक / Dated 13/05/16

WADHWANI FOUNDATION

NEN
NATIONAL ENTREPRENEURSHIP NETWORK

NON-BINDING MEMORANDUM OF UNDERSTANDING

Name of the Institute Partner:	Central University of Haryana, Mahendergarh
City:	Mahendergarh
Address:	Jant-Pali Villages, 123031
Term:	1st April, 2016 (Effective Date) to 31st March, 2019

NEN is the flagship initiative of the Wadhwani Foundation founded in 2003 by Dr. Romesh Wadhwani for philanthropic objectives. The Foundation is driving economic growth in India and other countries through large-scale initiatives in job creation and skill development. (www.wadhwani-foundation.org, www.nen.org)

NEN, has been a pioneer in building entrepreneurial ecosystem across the country and plays a pivotal role in job creation through entrepreneurship development.

By entering into this Memorandum of Understanding (MoU) which is non-binding in nature and does not create any legal obligations between the Parties, except for the confidentiality provisions in this MoU, the Institute Partner and NEN agree to work together to systematically develop the entrepreneurship capabilities of the Institute Partner leveraging NEN high impact methodologies, models, content frameworks and best practices for entrepreneurship development and sustainable infrastructure and programs.
Institute Partner and NEN are hereinafter individually referred to as a "Party" and collectively as the "Parties" as the context may require.

1. **GOALS AND SCOPE OF THE PARTIES:**

a) **Intent and goals:**
The common intent and goals of both Parties in this MoU is to develop impactful programs, people capacity, institutional and organizational structures and policies within the Institute Partner for entrepreneurship development towards the goal of creating entrepreneurial students, student entrepreneurs, and new entrepreneurs.

b) **Roles of the Parties:**
Both Parties are committing to sincerely fulfilling their roles and responsibilities to the fullest in order to accomplish the defined goals mutually outlined by them. Specifically responsibilities include:

Subramanya Tech Park,
Plot No. 3 & 3A, EOIZ Industrial Area
Whitefield, Bangalore – 560066
T: +91 80 3307 1000

www.nen.org
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NEN shall provide the following:

- Overall guidance on the development of entrepreneurship ecosystem at the Institute Partner.
- Define goals and outcomes in a progressive manner for highest success by structuring the Partner's development process towards the expected outcomes.
- Guide and create access to developing faculty and students through training, practice and mentoring as required. Faculty would be enabled to run entrepreneurship educational programs, facilitate experiential programs, and work effectively with student entrepreneurs and new start-ups.
- Deliver support for students and student entrepreneurs through online and classroom training, experiential learning, mentoring and networking.
- Experiential content, curricula, tools and how to use it for different kinds of programs including courses, competitions, mentoring programs, campus companies etc.
- Tools and methodologies for measuring progress and outcomes from programs.
- Guidance and support in building entrepreneur community more specifically in building entrepreneurial panels of mentors, and experts for the various kinds of programs.
- Access to NEN resources including online courses, entrepreneur videos, mentor connect, entrepreneur support services, webinars and clinics for entrepreneurs etc.

Institute Partner shall provide the following:

- Full commitment from the management to help develop the institution's entrepreneurship capacity.
- Facilitate necessary policies to enable integration of entrepreneurship education within the Institute Partner.
- Facilitate & support entrepreneurship courses, programs and activities on a regular basis; Allocate necessary resources and permissions to enable implementation.
- Assign at least 2 faculty with a deep interest in entrepreneurship and are willing to be trained to mentor and train mentor students to develop them into entrepreneurs and entrepreneurial leaders.
- Facilitate necessary permissions to integrate the NEN curriculum and the Ecell program as part of the mainstream syllabus or as elective courses.
- The Institute Partner on a quarterly basis will share the details of student entrepreneurs on campus, alumni entrepreneurs, students joining Startups and details of students participating in various entrepreneurship programs through the year. The NEN Trust may publish aggregate information on impact both within and outside the network.
- The institute will also share, at the start of the year/semester, the database of students enrolling for entrepreneurship courses/programs and on a monthly basis the details of Ecell activities and participation.
- Institute Partner to enthuse & engage students towards entrepreneurship.

- Assign dedicated faculty team with the interest, motivation and ability to be an entrepreneur educator and facilitator. Enable their training and exposure progressively to maximize impact.
- Create accountability for the team to show progress and results in entrepreneurship development.
- The Institute Partner will acknowledge NEN, as a patron organization, in programs & events run for entrepreneurship development. NEN will similarly appropriately showcase the Institute Partner's levels of outcomes and development based on the current standards at the network.

2. REVIEW PROCESS

Both Parties should expect to review progress at least on a half yearly basis to ensure that things stay on track. Additionally, we should expect that the final review of the year would be in the presence of the Head of the Institute Partner to ensure that the management is fully appraised on the development. The Institute Partner would be expected to track progress and data of students, student entrepreneurs, and entrepreneurs that they will work with during the course of this association.

3. BRANDING

NEN strives to support and grow the best programs and institutes beyond the confines of this MoU and hence would happily both co-brand, co-certify and market Partner programs. However, the NEN brand is upheld not only because of the lead thinking in Entrepreneurship & best practices but also for the quality of Content, Program Management, Delivery Standards, Material, tools, etc. Hence any co-branding, co-certification, IP and marketing association for a program would be subject to quality assessment and prior approval on a case to case basis with individual partners and respective programs. This MoU does not automatically include co-branding or co- certification or marketing of programs run by Partner institutions. Any discussions on those would be on a case to case basis between the Institute Partner and NEN.

4. INTELLECTUAL PROPERTY RIGHTS

Each Party shall retain all Intellectual Property Rights in their respective Intellectual Property and nothing contained in this MoU, nor the use of the Intellectual Property on the publicity, advertising, promotional or other material in relation to the fulfilment of the obligations of the Parties contained herein shall be construed as giving to any Party any right, title or interest of any nature whatsoever to any of the other Party's Intellectual Property. Without prejudice to the generality of the foregoing but notwithstanding anything contrary contained herein, the Institute Partner shall own and retain ownership (as the case may be)

of all Intellectual Property Rights in the Institute Partner IP, and NEN shall own and retain ownership (as the case may be) of all Intellectual Property Rights in the NEN IP.

5. REPRESENTATIONS AND WARRANTIES

a) Each Party hereby represents and warrants to the other that all the Intellectual Property made available or contributed by it hereunder does not violate the Intellectual Property Rights of any third party.

b) It is duly organized, validly existing and in good standing under the laws of its incorporation and has all requisite power and authority to enter into this MOU; and

c) The execution, delivery and performance by such Party of this MOU has been authorised by all necessary and appropriate corporate or governmental action and will not, to the best of its knowledge, violate any applicable law or approval presently in effect and applicable to it

6. CONFIDENTIALITY

i. The Parties acknowledge that during the term of this MoU each Party may obtain confidential and/or proprietary information of the other Party including but not limited to financial or business information, contracts and employee details (collectively, "Proprietary Information"). Such Proprietary Information shall belong solely to the disclosing Party. Proprietary Information shall not include information that is or becomes publicly known through no wrongful act of the receiving Party

ii. The receiving Party shall not disclose Proprietary Information to third parties without the prior written consent of the disclosing Party. The receiving Party agrees to undertake reasonable measures to ensure that the Proprietary Information is kept confidential and to disclose Proprietary Information to its employees, officers, directors or representatives on a need to know basis only.

iii. The receiving Party also agrees to report immediately to the disclosing Party any unauthorized disclosure of Proprietary Information of which it has knowledge.

7. TERM, RENEWAL AND TERMINATION

i) Subject to the execution of the definitive agreements this MoU shall be in force for a period of 3 (three) years from the Effective Date ("Term").

ii) The Term may be extended by the mutual consent of the Parties in writing. In the event the Parties seek to extend the Term they shall do so by entering into a new agreement, containing mutually agreed terms, within 30 (thirty) days prior to the expiry of the Term.

iii) This MOU may be amended at any time before the expiry of its term by the mutual agreement of the Parties in writing. This MOU may be renewed by the mutual consent of the Parties any time before the expiry of its original term for such further term as may be mutually agreed to by the Parties.

iv) This MoU may be terminated by either Party with immediate effect in the event that the other Party commits a breach of any representation, obligation, or term of this MoU and the same is not cured within 30 (thirty) days of receipt of a written notice from the Party.

v) This MoU may be terminated without cause by service of a prior written notice of 60 (sixty) days Regardless of the termination of this MoU, the Parties responsibilities and obligations hereunder shall continue with respect to the roles and responsibilities mentioned above in Clause 1 prior to the date of termination.

vi) Any waiver of any right or remedy under this MOU shall be effective only if it is in writing and signed by or on behalf of the Party entitled to exercise such right or remedy. Any delay by any Party in exercising, or failure to exercise, any right or remedy under this MOU shall not constitute a waiver of the right or remedy under this MOU or a waiver of any other rights or remedies and no single or partial exercise of any rights or remedies under this MOU or otherwise shall prevent any further exercise of a right or remedy or the exercise of any other right or remedy. No waiver by a Party of any failure(s) of the other Party to perform any provision of this MOU shall operate or be construed as a waiver in respect of any other or further failure whether of a like or different character.

8. **ARBITRATION AND GOVERNING LAW**

a) This MOU shall be governed by and construed in accordance with laws of India.

b) The Parties agree that provisions contained in this MOU do not create any legal obligations between the Parties.

c) Any difference or dispute between the Parties concerning the interpretation and/or implementation and/or application of any of the provisions of this MOU shall be settled amicably through mutual consultation or negotiations between the Parties. If the dispute cannot be resolved within a period of 15 (fifteen) days from the date on which the dispute arises between the senior executives of the Parties, the disputing Party may approach the Courts at Bangalore. The Parties agree to submit themselves to the exclusive jurisdiction of the Court at Bangalore to settle any dispute under this MoU.

d) The Parties herein are independent entities. This MoU does not create any agency, partnership, joint venture or any other business relationship between the Parties.

e) The Parties are entering into this MOU in good faith and intentions. Neither party will be responsible for any liabilities arising out of death, injury or any legal action in respect of field staff, trainees or any other persons associated with the operationalization of this MOU who is not otherwise a staff of either NEN or Institute Partner.

9. **THIRD PARTY**

a) Nothing in this MOU shall mean or shall be construed to mean that either Party is at any time precluded from having similar arrangements with any other person or third party.

b) The Parties shall wherever necessary enter into written agreements with/without third parties to facilitate the implementation of specific initiatives. Such agreements will be independent and exclusive of this MOU and shall supersede this MOU.

c) Subject to NEN's right to nominate third parties to implement specific projects through definite agreements, this MOU cannot be assigned by any Party to any third party, without the prior written consent of the other Party.

d) Any potential conflict of interest arising from the conduct of activity under/ by this MOU should be declared as soon as it is known by the Parties.

10. MISCELLANEOUS

a) **Entire Agreement:** This MoU constitutes the entire understanding of the Parties with respect to the Project contemplated herein and supersedes any prior or contemporaneous oral or written understanding or communication between the Parties.

b) **Amendment:** This MoU shall not be amended, changed, modified or discharged in whole or in part except by an instrument in writing signed by both the Parties hereto.

c) **Relationship of Parties:** Nothing in this MoU shall be construed as creating a relationship of partnership, joint venture, agency or employment between the Parties. Neither Party shall be responsible for the acts nor shall omissions of the other Party, and neither Party shall have the power or authority to speak for or assume any obligation on behalf of the other Party.

d) **Assignment:** Each Party may assign its rights and obligations under this MoU with the prior written consent of the other Party. Notwithstanding the foregoing, NEN shall be entitled to assign any of its rights and obligations to any of its affiliates without the prior written consent of the Institute Partner. It is clarified that:

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i. The assignment or alienation of any part or whole of the Institute Partner IP or NEN IP shall not be construed to be an assignment of rights or obligations under this MoU; and

ii. The delegation of any obligations under this MoU by NEN to any person or entity shall not be construed to be an assignment of rights or obligations under this MoU, so long as NEN remains at all times responsible for its obligations under this MoU.

e) **Indemnity:** This MoU does not contemplate or provide for the exchange of any funds between the Parties. Therefore, save and except for fraud, no Party shall be liable to indemnify or pay damages to the other Party, its officers, directors, employees or agents from and against any liabilities, costs and expense incurred or suffered, or to be incurred or suffered by the other Party that arise out of or relate to, or result from any breach or termination by either Party of any of the provisions of this MoU.

f) **Counterparts:** This MOU may be executed two (2) counterparts each of which when so executed and delivered shall be an original in English language, but all of which shall together constitute one and same instrument.

a) **Notice:** Either Party may, from time to time, change its respective address or representative for receipt of notices or other communications provided for in this MoU by giving to the other Party not less than 10(ten) days prior written notice. Any notice or other formal communication provided for in this MoU shall be in writing in English and may be transmitted by electronic mail, to the Party to be served at its address set forth below:

Institute Partner: vc@cuh.ac.in	**NEN** – membership@nen.org

Name of Institute Partner's key Faculty Leader & Co-leader (s) to manage the Entrepreneurship Development Affiliation and its deliverables:

Faculty Leader 1		Faculty Leader 2	
Name:	Dr. Sunita Tanwar	Name:	Dr. Samiksha Godara
Designation:	Assistant Professor	Designation:	Assistant Professor
Phone:	9971807447	Phone:	9416035161
Email:	sunitatanwar@cuh.ac.in	Email:	samiksha@cuh.ac.in

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Student Leader 1	Student Leader 2
Name: Deepak Verma	Name: Sarita
Phone: 9650433416	Phone: 9812210684
Email: deepakverma1@gmail.com	Email: saritambacuh@gmail.com

Contact Details of Institute Partner's Management Team:

Name: Dr. Sunita Tanwar	Name: Prof. R.C. Kuhad
Designation: Assistant Professor	Designation: Director/Principal Vice chancellor
Phone: 9971807447	Phone: 9871509870
Email: sunitatanwar@cuh.ac.in	Email: VC@cuh.ac.in

Please note you are required to notify NEN in writing upon making a change.

NEN affiliation for your institute during the current year will be managed by the following member of the NEN team.

Name:
Designation:
Phone:
Email:

Institute Head

25/5/16

रजिस्ट्रार
हरियाणा केन्द्रीय विश्वविद्यालय
गाँव - जाँट पाली
जिला - महेन्द्रगढ़ - 123029

Name:
Designation: Vice chancellor
Date: 14/5/16

NEN, SED Director

Name: Asgar Ahmed
Designation: Director SED, NEN
Date: 01-04-2016

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Plot No. 3 & 3A, EOIZ Industrial Area
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Annexure6

(1)

Syllabus for the PhD **core course SCS CH 3 101 C4**
Research Methodology, Seminar and teaching assistantship
36 hrs (4 hrs per week); Total credits: 4

Chapter I: Methods and types of Research
Research methods vs Methodology. Types of research – Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical.
Chapter II: Literature review
Defining and formulating the research problem - Selecting the problem - Necessity of defining the problem - Importance of literature review in defining a problem – Literature review – Primary and secondary sources – reviews, treatise, monographs-patents – web as a source – searching the web - Critical literature review – Identifying gap areas from literature review - Development of working hypothesis.
Chapter-III - Research design and methods as applied to Chemical Sciences
Experiment design- monitoring- laboratory safety- Laboratory notebook keeping- data collection-coding of samples and experiments- storage of samples- Hypothesis-testing - Generalization and Interpretation.
Chapter IV: Reporting, documentation and presentation
Structure of research reports- technical reports and thesis-publication writing-presentation of raw and processed data-Bibliography- Plagiarism - Citation and acknowledgement Oral presentations-visual aids
Chapter V: Computer applications related to Chemistry
Introduction to relevant software- MS Office-Chemdraw-Mestrec-Origin-Spectra processing software-Software for Crystallographic applications-Basic software for quantum chemical calculations.

References

1. Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, U.K., 2002. An introduction to Research Methodology, RBSA Publishers.
2. Kothari, C.R., 1990. Research Methodology: Methods and Techniques. New Age International. 418p.
3. Trochim, W.M.K., 2005. Research Methods: the concise knowledge base, Atomic Dog Publishing. 270p.

Additional reading

1. Anthony, M., Graziano, A.M. and Raulin, M.L., 2009. Research Methods: A Process of Inquiry, Allyn and Bacon.
2. Coley, S.M. and Scheinberg, C. A., 1990, "Proposal Writing", Sage Publications.
3. Day, R.A., 1992.How to Write and Publish a Scientific Paper, Cambridge University Press.
4. Fink, A., 2009. Conducting Research Literature Reviews: From the Internet to Paper. Sage Publications
5. Leedy, P.D. and Ormrod, J.E., 2004 Practical Research: Planning and Design, Prentice Hall.

I. SEMINARS
Each candidate will present a total of two departmental seminars, one in Semester I and one in Semester II.

II. TEACHING ASSISTANCE
Each candidate will provide teaching assistantships by conducting tutorials, laboratory experiments for Masters/Graduate students for two hours per week.

Electives (any 3 out of 6)

Solid State and Supramolecular Chemistry
SCS CH 3 102 E4
36 Hrs. (4 hrs /week) Credits: 4
Symmetry and Structure in Solid State:

Crystal symmetry – (i) point group elements and (ii) space group elements; 32 crystal classes, HM notations, distribution in different systems and stereographic projections.
Space group – HM notation, space groups in triclinic and monoclinic systems.
Indexing of lattice planes; Miller indeces.
X-ray, Cu Kα and Mo Kα radiation; X-ray diffraction; Bragg equation; Reciprocal lattice and its relation to direct lattice; Bragg reflection in terms of reciprocal lattice – sphere of reflection and limiting sphere; relation between d_{hkl} and lattice parameters.

Supramolecular Chemistry:
Origin of supramolecular chemistry - "Chemistry beyond the molecules". Concepts and terminology of supramolecular chemistry.
Nature and types of supramolecular interactions (Hydrogen bonding, van der Waal interactions, π-stacking, C-H….π interactions etc.)
Molecular recognition- Information and complementarity. Different types of receptors with special reference of Crown ethers, cryptates and Calix[4]arene. Anion recognition and anion coordination chemistry. Molecular self-assembly formation and examples.
Supramolecular chemistry of life, application of supramolecular chemistry in drug design. Application in material science-molecular machines.

Suggested Readings:

1. C. Giacavazzo (Ed.) Fundamentals of crystallography
2. J. D. Dunitz, X-ray analysis and the structure of organic molecules
3. G.H. Stout and L.H. Jensen, X-ray structure determination: A practical guide
4. J. W. Steed & J. L. Atwood. Supramolecular Chemistry, John Wiley (2002)
5. Lehn, J.M. Supramolecular Chemistry, VCH, Wienheim, 1995
6. Lehn, J.M. Transition metals in supramolecular chemistry: John Wiley & sons: New York, 1999.

Course Work for PhD

1	Course code	SCS CH 3 103 E4
2	Course Title	Advance Computational Chemistry
3	Credits:	4
4	Course Coordinator (include participating faculty)	Dr. A. P. Sunda and Dr. Azaj Ansari
5	Pre requisites	Familiarity with Linux is strongly recommended
6	Objectives (goals, type of students for whom useful, outcome etc)	This course will introduce theoretical concepts of Molecular Dynamics and quantum mechanics. Experiments based on the theory will be part of the course. Students interested in computational chemistry will benefit from the course.
7	Course contents	Section #1- Fundamentals of Molecular Dynamics simulations (8 hrs) Topics: Introduction to Computer Simulation –Visual Representation of Molecular Systems, Lennard Jones potentials -- Potentials and Force-Fields, Molecular Mechanics, Periodic Boundary Conditions, Minimum Image convention. Propagation of Newton's Equation using Verlet, Velocity Verlet and Leap-Frog Algorithm. Section #2- Applications to Macroscopic properties (2 hrs)

		Topics: Treatment of Statistical Mechanical Ensembles – Averages – Fluctuations – Time Correlation Function – Radial Distribution Function, Mean Square Displacement - Diffusion coefficient Section #3- Molecular Dynamics simulations – Hands on exercise Simulations of water (2 hrs instructions +12 hrs lab) Topics: Introduction and Use of GROMACS Molecular Dynamics Program. Visualization using Visual Molecular Dynamics (VMD). Section #4- Introduction to Quantum Computational Chemistry: Topics: Hartree-Fock Theory, restricted and unrestricted Hartree-Fock, Density Functional Theory: Exchange-Correlation Functional, Local density approximation, Generalized Gradient Approximation, Hybrid Density Functional Methods and Basis Sets: Slater and Gaussian functions, contractions, olarization and diffuse functions, split-valence sets, core-valence sets (8 hrs) Section #5 Basic concepts of potential energy surfaces Topics: Stationary points, Geometry optimization, local and global minima, and transition state theory (2 hrs) Section #6- Hands on exercise (2 hrs instructions +12 hrs lab) Topics: Computations of Single point energy, optimizations and transition states of polyatomic molecules, Intrinsic reaction coordinates.
8	Evaluation /assessment (evaluation components with weightage)	1. End - Sem examination - 40 % 2. Sessional I (Section 1-3) examination - 15 % 3. Sessional II (Section 4-6) examination - 15 % 4. Assignment + Labs etc - 30 %
9	Suggested reading	1. Computer Simulations of Liquids, M. P. Allen and D. J. Tildesley. 2. Molecular Modelling: Principles and Applications, Andrew R. Leach, Addison Wesley Publishing Company (March 1997). 3. Introduction to Computational Chemistry, Frank Jensen, John Wiley & Sons, 2007 4. Electronic Structure: Basic Theory & Practical Methods, by Richard M. Martin, Cambridge University Press 5. A Practical Guide for Applying Techniques to Real-World Problems by David C. Young, Cytoclonal Pharmaceutics Inc.2001 6. Introduction to the Theory and Applications of Molecular and Quantum Mechanics, by Errol Lewars, Kluwer Academic Publishers, New York, Boston, Dordrecht, London, Moscow, 2004

Syllabus for the PhD elective course **SCS CH 3 104 E4**
Advanced Organic Synthesis
36 hrs (4 hrs per week); Total credits: 4

Chapter 1: Catalysis of organic reactions
Overview of modern catalytic methods in organic synthesis, transition metal catalysis, details of homogeneous catalysis by palladium, copper, silver, gold, rhodium and ruthenium complexes. Olefin and alkyne metathesis reactions. Asymmetric catalysis. Organocatalysis. Iminium and enamine catalysis. N-heterocyclic carbenes (NHC). Introduction to Enzyme catalysis and biocatalysis.
Chapter 2: Modern Organic Reactions
Modern methods of carbonyl olefinations. Boron, Tin and Silicon based reagents. Modern oxidation reactions. Hypervalent iodine reagents. Sharpless asymmetric epoxidation and

dihydroxylation reactions. New methods of reduction. Super hydride. Selectrides. Catalytic asymmetric hydrogenations and hydrogen transfer reductions. CH- and C-C activations.
Chapter 3: Total Synthesis
Strategies and tactics in total synthesis. Classical examples. Woodward synthesis of Strychnine. Stork synthesis of reserpine. Corey synthesis of longifolene. Overman synthesis of morphine. Vollhardt synthesis of estrone. Baran synthesis of vinigrol.

Suggested Reading

1. Advanced Organic Chemistry; Parts A and B; by Carey and Sundberg, Springer 2007.
2. Organic Chemistry, By Jonathan Clayden, Nick Geeves, Stuart Warren, OUP.
3. The logic of Chemical Synthesis, By E. J. Corey and X.-M. Cheng, Wiley
4. Classics in Total Synthesis, by K. C. Nicolaou, E. J. Sorensen, Wiley
5. Principles of Organic Synthesis 3rd Ed., R. O. C. Norman and J. M. Coxon, CRC Press
6. Organic Synthesis, by M. B. Smith, Academic Press.

Course Code: SCS CH 3 105 E4
PhD Course work
Syllabus- Sustainable and Green Chemistry: 2016-17
Total Credits: 4; 4 hrs per week; Course co-ordinator: Prof. A. J. Varma

Biomass based chemistry and technolgy
Biorefinery concepts and examples
Cellulose chemistry
Hemicellulose chemistry
Lignin chemistry
Waste to value concepts
Concepts of C footprints, water footprints, smart cities
Green chemistry
Biocatalyzed reactions
Microwave reactions
Photocatalyzed reactions
Ultrasound reactions
Phase transfer catalyzed reactions
Reactions in solid state
Ionic liquids
Supercritical fluids
Biodegradable polymers Life cycle analysis
Cradle-to-cradle analysis of chemicals and polymers
Waste management concepts

Syllabus for the PhD core course **SCS CH 3 106 E4**
Medicinal Chemistry
36 hrs (4 hrs per week); Total credits: 4

Drug Design

Introduction, Development of new drugs, Concept of lead compounds and lead modifications, structure-activity relationship (SAR), factors affecting bioactivity, resonance, inductive effect, isosterism, bio-isosterism. Theories of drug activity: occupancy theory, rate theory, induced fit theory. Quantitative structure activity relationship, Concepts of drugs receptor, Elementary treatment of drug receptor interactions, Physico-chemical parameters: lipophilicity, partition coefficient, electronic ionization constants, steric factors.

Anticancer Agents

Introduction, cancer chemotherapy, role of alkylating agents and antimetabolites in treatment of cancer. Synthesis of 6-mercapto purine, melphalan, mechlorethamine, cyclophosphamide and uracil, Recent development in cancer chemotherapy.

Anti-infective Drugs

Introduction and general mode of action of antibiotic and antibacterial-, antiviral-, antifungal- and antiprotozoan drugs. Cell wall biosynthesis, inhibitors, β-lactam rings, antibiotics inhibiting protein synthesis. Synthesis of penicillin G, amoxycillin, cephalosporin, ciprofloxacin, furazolidone, dapsone, gluconazole, chloroquine, primaquin, Introductory idea of tetracycline and streptomycin.

Cardiovascular Drugs

Introduction and general mode of action. Synthesis of ditiazem, verapamil, methyldopa and atenolol.

Books Suggested

1. An Introduction to Medicinal Chemistry, G L Patrick, Oxford University Press.
2. Wilson and Gisvold's Text Book of Organic Medicinal and Pharmaceutical Chemistry, Ed Robert F Dorge.
3. An Introduction to Drug Design, S.S. Pandeya and J.R. Dmmock, New Age International.
4. Burger's Medicinal Chemistry and Drug Discovery, Vol. 1, Ed. M E Wolff, John Wiley.
5. The Organic Chemistry of Drug Design and Drug Action, R B Silverman, Academic Press.

Syllabus for the PhD core course **SCS CH 3 107 E4**
Spectroscopic Techniques for Chemists
36 hrs (4 hrs per week); Total credits: 4

Nuclear Magnetic Resonance Spectroscopy

Introduction and principle, Instrumentation technique, Shielding and deshielding effects, Analysis of spectra, Number of signals, Position of signals, Intensity of signals, Splitting of signals, Chemical shift values and correlation for protons bonded to carbon and other nuclei, deuterium exchange, complex spin-spin interaction between two, three, four and five nuclei (first order spectra), Spin-spin coupling, Coupling constants involving carbon and one, two- and three-bond C-H coupling. 1D NMR techniques, nOe, 2D NMR techniques: Homo- and heteronuclear correlation (COSY, TOCSY, HSQC, HMBC), measurement of the nuclear Overhauser effect (NOESY, ROESY).

Carbon-13 NMR Spectroscopy

General and basics of ^{13}C NMR, Coupling constants and DEPT ^{13}C NMR spectra, Chemical shift, Introduction to 2D 13C NMR spectroscopy, - COSY, NOESY, HETCOR and INADEQUATE.

Infrared Spectroscopy

General introduction, Origin of Spectra, Instrumentation and sample handling, selection rule, Characteristic vibrational frequencies of alcohols, phenols, amines, amides, alkanes, alkenes, alkynes, aromatic compounds, ethers, nitriles, nitro, etc. Detailed study of vibrational frequencies of carbonyl compounds (ketones, aldehydes, esters, amides, acids, anhydrides, lactones, lactams and conjugated carbonyl compounds). Effect of hydrogen bonding and solvent effect on vibrational frequencies, overtones, combination bands and Fermi resonance, Application of IR spectroscopy.

Mass Spectrometry

Introduction and basic principles of mass spectrometry (MS), meta stable ions and metastable peaks, Instrumentation technique, Ion production – EI, CI, FD and FAB, Factors affecting fragmentation, Ion analysis, Ion abundance. Mass spectral fragmentation of organic compounds, Common functional groups, Molecular ion peak, McLafferty rearrangement. Nitrogen rule, Double bond equivalents, High resolution mass spectrometry (HRMS), Application of mass spectrometry.

Ultraviolet and Visible Spectroscopy

Introduction and basic principles of UV-Visible spectroscopy, Spectral range, Beer-Lambert law, Origin of spectra, Various electronic transitions, Selection rules, Effect of solvent on electronic transitions, Ultraviolet bands for carbonyl compounds, Unsaturated carbonyl compounds, dienes, conjugated polyenes, UV spectra of aromatic and heterocyclic compounds and Fieser-Woodward rules for conjugated dienes and carbonyl compound, Application of UV-Visible spectra.

Combined problems

Problems relating to structure elucidation by NMR IR & UV spectroscopy and mass spectrometry.

Books Suggested

1. Spectrometric Identification of Organic Compounds, Silverstein, Bassler and TMorrill, John Wiley.
2. Introduction to NMR Spectroscopy, R.J. Abraham, J. Fisher and P. Loftus, Wiley.
3. Application of Spectroscopy of Organic Compounds, J.R. Dyer, Prentice Hall.
4. Spectroscopic Methods in Organic Chemistry, D.H. Williams, I. Fleming, Tata McGraw-Hill.
5. Organic Chemistry, William Kemp, John Wiley.
6. Organic Spectroscopy, Jag Mohan, Narosa Publishers, New Delhi

Detailed syllabus for the new courses offered in MSc Chemistry

Course Code: SCS CH 1105 GEC 4004 **MSc Semester I (offered for students of other departments)** **Syllabus- Environmental Friendly Processes for Sustainable Developments: 2016-17** **Total Credits: 4; 4 hrs per week; Course co-ordinator: Prof. A. J. Varma**
Biorefinery concepts and examples Waste to value concepts Concepts of C footprints, water footprints, smart cities Biocatalyzed reactions Microwave reactions Ultrasound reactions Ionic liquids Biodegradable polymers Life cycle analysis Cradle-to-cradle analysis of chemicals and polymers Waste management concepts

SCS CH 1306 DCEC 4004 for MSc Semester III **Organic Chemistry of Polymers : 2016-17** **Credits : 4; Course-co-ordinator: Prof. A. J. Varma**
Introduction to polymer structures Different classes of polymers Synthesis of polymers by radical, emulsion, suspension, and ionic mechanisms Copolymers Functionalization of polymers Crosslinking of polymers Stereochemistry of polymers Natural Polymers Biodegradable Polymers

		Course Work for MSc Semester III (Elective)
1	Course code	SCS CH 1305 DCEC 4004
2	Course Title	Advanced Computational Chemistry
3	Credits:	4
4	Course Coordinator (include participating faculty)	Dr. A. P. Sunda and Dr. Azaj Ansari
5	Prerequisite	Familiarity with Linux is strongly recommended
6	Objectives (goals, type of students for whom useful, outcome etc)	This course will introduce theoretical concepts of Molecular Dynamics and quantum mechanics. Experiments based on the theory will be part of the course. Students interested in computational chemistry will benefit from the course.

7	Course contents	Section #1- Fundamentals of Molecular Dynamics (MD) simulations (8 hrs) Topics: Introduction to Computer Simulation –Visual Representation of Molecular Systems, Lennard-Jones potentials -- Potentials and Force-Fields, Phase Space, Periodic Boundary Conditions, Minimum Image convention. Propagation of Newton's Equation, Time Step and Energy Minimization Section #2- Applications to Macroscopic properties (2 hrs) Topics: Treatment of Statistical Mechanical Ensembles – Averages – Fluctuations – Time Correlation Function – Radial Distribution Function, Mean Square Displacement - Diffusion coefficient Section #3- Molecular Dynamics simulations – Hands on exercise Simulations of water (2 hrs instructions +12 hrs lab) Topics: Introduction and Use of GROMACS MD Program, Visualization using Visual Molecular Dynamics (VMD) Section #4- Introduction to Quantum Computational Chemistry (8 hrs) Topics: Scope of computational chemistry, Restricted and Unrestricted Hartree-Fock, Density Functional Theory: Exchange-Correlation Functional, Local Density Approximation, Generalized Gradient Approximation, Hybrid Density Functional Methods and Basis Sets: Slater and Gaussian Type Orbitals, Polarization and Diffuse Functions, Split-valence Sets, Core-valence Sets Section #5 Basic concepts of potential energy surfaces (2 hrs) Topics: Stationary points, Geometry optimization, local and global minima, and transition state theory Section #6- Hands on exercise (2 hrs instructions + 12 hrs lab) Topics: Computations of Single Point Energy, Optimizations and Transition States of Polyatomic Molecules, Intrinsic Reaction Coordinate Analysis
8	Evaluation /assessment (evaluation components with weightage)	5. End - Sem examination - 40 % 6. Sessional I (Section 1-3) examination - 15 % 7. Sessional II (Section 4-6) examination - 15 % 8. Assignment + Labs etc - 30 %
9	Suggested reading	7. Computer Simulations of Liquids, M. P. Allen and D. J. Tildesley. 8. Molecular Modeling: Principles and Applications, Andrew R. Leach, Addison Wesley Publishing Company (March 1997). 9. Introduction to Computational Chemistry, Frank Jensen, John Wiley & Sons, 2007 10. Electronic Structure: Basic Theory & Practical Methods, by Richard M. Martin, Cambridge University Press 11. A Practical Guide for Applying Techniques to Real-World Problems by David C. Young, Cytoclonal Pharmaceutics Inc.2001 12. Introduction to the Theory and Applications of Molecular and Quantum Mechanics, by Errol Lewars, Kluwer Academic Publishers, New York, Boston, Dordrecht, London, Moscow, 2004

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Course Structure for B.Ed.

10.05.2016

Semester I

Course No.	Total Credits	Paper Title	Total Marks (Theory + Practicum)	Credits (Theory)	Class Teaching Hours per week	Credits: Practicum (Engagement with the Field)	Practicum Hours per week (per semester)	Total Hours per week (per semester)	Internal Assessment Weightage	Theory: External Assessment Weightage
1	6	Childhood and Growing Up	150	4	4	2	4	8	30%	70%
2	6	Contemporary India and Education	150	4	4	2	4	8	30%	70%
4	3	Language across the curriculum	75	2	2	1	2	4	30%	70%
5	3	Understanding Discipline and Subjects	75	2	2	1	2	4	30%	70%
EPC 1	3	Reading and Reflection on text	75	2	2	1	2	4	30%	70%
Total	**21**		**525**	**14**	**14**	**7**	**14**	**28**		

Practicum/Hands on/ Students Activity /Seminar/Workshop/etc; during Practicum hours

- **1Credit Theory = 16 hours in a semester**
- **1 Credit Practicum = 32 hours in a semester**
- **1 Credit = 25 Marks**

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B.Ed.

10.05.2016

Semester II

Course No.	Total Credits	Paper Title	Total Marks (Theory + Practicum)	Credits (Theory)	Class Teaching Hours per week	Credits: Practicum (Engagement with the Field)	Practicum Hours per week (per semester)	Total Hours per week (per semester)	Internal Assessment Weightage	Theory: External Assessment Weightage
3	6	Learning and Teaching	150	4	4	2	4	8	30%	70%
7a	3	Pedagogy of school subject Part-I	75	2	2	1	2	4	30%	70%
8a	3	Knowledge and Curriculum-Part-I	75	2	2	1	2	4	30%	70%
EPC-II	3	Drama and Art in Education	150	2	2	1	2	4	30%	70%
	8	Two Weeks School Internship*	200	0	0	8			30%	70%
Total	23		575	10	10	13	10	20		

Practicum/Hands on/ Students Activity /Seminar/Workshop/etc; during Practicum hours

- **1Credit Theory = 16 hours in a semester**
- **1 Credit Practicum = 32 hours in a semester**
- **1 Credit = 25 Marks**

* for whole time students will be engaged with school internship

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B. Ed
10.05.2016

Semester III

Course No.	Total Credits	Paper Title	Total Marks (Theory + Practicum)	Credits (Theory)	Class Teaching Hours per week	Credits: Practicum (Engagement with the Field)	Practicum Hours per week (per semester)	Total Hours per week (per semester)	Internal Assessment Weightage	Theory: External Assessment Weightage
9	6	Assessment for Learning	150	4	4	2	4	8	30%	70%
7b	3	Pedagogy of school subject	75	2	2	1	2	4	30%	70%
	16	Four Weeks School Internship*	400	0	0	16			30%	70%
Total	**25**		**625**	**6**	**6**	**19**	6	12		

Practicum/Hands on/ Students Activity /Seminar/Workshop/etc; during Practicum hours

- **1Credit Theory = 16 hours in a semester**
- **1 Credit Practicum = 32 hours in a semester**
- **1 Credit = 25 Marks**

* For whole time students will be engaged with school internship

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B. Ed

10.05.2016

Semester IV

Course No.	Total Credits	Paper Title	Total Marks (Theory + Practicum)	Credits (Theory)	Class Teaching Hours per week	Credits: Practicum (Engagement with the Field)	Practicum Hours per week (per semester)	Total Hours per week (per semester)	Internal Assessment Weightage	Theory: External Assessment Weightage
6	3	Gender, School and Society	75	2	2	1	2	4	30%	70%
8b	3	Knowledge an Curriculum Part-II	75	2	2	1	2	4	30%	70%
10	3	Creating an inclusive school	75	2	2	1	2	4	30%	70%
11	3	Optional Course	75	2	2	1	2	4	30%	70%
EPC-III	3	Critical Understanding of ICT	75	2	2	1	2	4	30%	70%
EPC-IV	3	Understanding the Self	75	2	2	1	2	4	30%	70%
Total	18		**450**	**12**	**12**	**6**	**12**	**24**		

Practicum/Hands on/ Students Activity /Seminar/Workshop/etc; during Practicum hours

- **1Credit Theory = 16 hours in a semester**
- **1 Credit Practicum = 32 hours in a semester**
- **1 Credit = 25 Marks**

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B.Ed

10.05.2016

List of Optional Courses offered by the department

S.No.	Course title
1.	Educational Administration and Management
3.	Life Skills Education
4.	Yoga Education
5.	Value and Peace Education
6	Environmental Education

List of Pedagogical Courses offered by the department

S.No.	Course title	Course title
	Group-I	Group-II
1.	Teaching of Hindi	Teaching of History
2.	Teaching of Sanskrit	Teaching of Geography
3	Teaching of English	Teaching of Political Sciences
4.	Teaching of Social Sciences	Teaching of Biology
5.	Teaching of Sciences	Teaching of Chemistry
6.	Teaching of Mathematics	Teaching of Physics
		Teaching of Economics
		Teaching of Computer Sciences
		Teaching of Hindi
		Teaching of Sanskrit
		Teaching of English

Note:

1. Teaching subjects are likely to be added in due course.
2. Group I is for graduate students
3. Group II is for post graduate students

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Course Structure for M.Ed.

10.05.2016

Semester I

Course No.	Total Credits	Paper Title	Total Marks (Theory + Practicum)	Credits (Theory)	Class Teaching Hours per week	Credits: Practicum (Engagement with the Field)	Practicum Hours per week (per semester)	Total Hours per week (per semester)	Internal Assessment Weightage	Theory: External Assessment Weightage
1	4	Psychology of Learning and Development	100	3	3	1	2	5	30%	70%
2	4	Historical, Political and Economic foundations of Education	100	3	3	1	2	5	30%	70%
3	4	Education Studies	100	3	3	1	2	5	30%	70%
4	4	Introduction to Educational Research	100	3	3	1	2	5	30%	70%
5 A	2	Internship: Teacher Education Institute (Phase-I, Three Weeks)	50	0	0	2	4	4	30%	70%
5 B	1	Communication and Expository Writing	25	1	1	0	0	1	30%	70%
5 C	1	Self Development	25	1	1	0	0	1	30%	70%
Total	**20**		**500**	**14**	**14**	**6**	**12**	**26**		

Practicum/Hands on/ Students Activity /Seminar/Workshop/etc; during Practicum hours **Number of days=108**

- **1Credit Theory = 16 hours in a semester**
- **1 Credit Practicum = 32 hours in a semester**
- **1 Credit = 25 Marks**
- Viva-Voice exam for Course V- A , V -B and V-Cwill be conducted by the external examiner at the end of the first semester.

Sarika 10/5/16

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M.Ed.
16.05.2016

Semester II

Course No.	Total Credits	Paper Title	Total Marks (Theory + Practicum)	Credits (Theory)	Class Teaching Hours per week	Credits: Practicum (Engagement with the Field)	Practicum Hours per week (per semester)	Total Hours per week (per semester)	Internal Assessment Weightage	Theory: External Assessment Weightage
6	4	Philosophical Foundations of Education	100	3	3	1	2	5	30%	70%
7	4	Sociological foundations of Education	100	3	3	1	2	5	30%	70%
8	4	Curriculum Studies	100	3	3	1	2	5	30%	70%
9	4	Pre-Service & Inservice Teacher Education	100	3	3	1	2	5	30%	70%
10 A	2	Internship : Teacher Education Institute (Phase-II, Three Weeks)	50	0	0	2	4	4	30%	70%
10 B	2	Academic Writing	50	2	2	0	0	2	30%	70%
Total	**20**		**500**	**14**	**14**	**6**	**20**	**26**		

Practicum/Hands on/ Students Activity /Seminar/Workshop/etc; during Practicum hours **Number of days=107**

- **1Credit Theory = 16 hours in a semester**
- **1 Credit Practicum = 32 hours in a semester**
- **1 Credit = 25 Marks**
- Viva-Voice exam for Course V-A and V-B will be conducted by the external examiner at the end of the second semester.

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10/5/16

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M.Ed.
16.05.2016

Semester III

Course No.	Total Credits	Paper Title	Total Marks (Theory + Practicum)	Credits (Theory)	Class Teaching Hours per week	Credits: Practicum (Engagement with the Field)	Practicum Hours per week (per semester)	Total Hours per week (per semester)	Internal Assessment Weightage	Theory: External Assessment Weightage
11	4	Specialization of Course-I: i. Institutional Planning and Management (Elementary Level) OR Institutional Planning and Management (Secondary Level)	100	3	3	1	2	5	30%	70%
12	4	Specialization of Course-II: i. Issues, curriculum and Assessment (Elementary Level) OR ii. Issues, curriculum and Assessment (Secondary Level)	100	3	3	1	2	5	30%	70%
13	4	Advance Educational Research	100	3	3	1	2	5	30%	70%
14	4	Perspectives Research and Issues in Teacher Education	100	3	3	1	2	5	30%	70%
15	4	Internship in Specialized Area (In School; 28 Days)	100	3	3	1	2	5	30%	70%
Total	**20**		**500**	**15**	**15**	**05**	**10**	**25**		
Practicum/Hands on/ Students Activity /Seminar/Workshop/etc; during Practicum hours							Number of days=108			

- 1Credit Theory = 16 hours in a semester
- 1 Credit Practicum = 32 hours in a semester
- 1 Credit = 25 Marks
- Viva-Voce exam for Course V will be conducted by the external examiner at the end of the third semester.

Jaika 10/5/16

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M.Ed.
10.05.2016

Semester IV

Course No.	Total Credits	Paper Title	Total Marks (Theory + Practicum)	Credits (Theory)	Class Teaching Hours per week	Credits: Practicum (Engagement with the Field)	Practicum Hours per week (per semester)	Total Hours per week (per semester)	Internal Assessment Weightage	Theory: External Assessment Weightage
16	4	Specialization of Course-I: Choose any one of the following: i. Advance Curriculum Theory (Elementary Level).	100	3	3	1	2	5	30%	70%
	4	ii. Advance Curriculum Theory (Secondary Level)	100	3	3	1	2	5	30%	70%
	4	iii. Pedagogy of Science Education (Elementary Level)/ (Secondary Level)	100	3	3	1	2	5	30%	70%
	4	iv. Pedagogy of Mathematics Education (Elementary Level) (Secondary Level)	100	3	3	1	2	5	30%	70%
	4	v. Pedagogy of Language Education (Elementary Level)/ (Secondary Level)	100	3	3	1	2	5	30%	70%
	4	vi. Pedagogy of Social Science Education (Elementary Level)/ (Secondary Level)	100	3	3	1	2	5	30%	70%
	4	xi. Approaches to Assessment (Elementary Level)/ (Secondary Level)	100	3	3	1	2	5	30%	70%
17 (Elective Second)	4	Specialization of Course-II: Choose any one of the following: i. Educational Policy, Economics &Planning (Elementary Level) ii. Educational Policy, Economics &Planning (Secondary Level)	100	3	3	1	2	5	30%	70%

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18 (Elective Third)	4	Specialization of Course-III Choose any one of the following: i. Educational Management, Administration & Leadership (Elementary Level) ii. Educational Management, Administration & Leadership (Secondary Level) OR choose Any Two (one from each group) **GROUP-A** i. Value Education ii. Distance and Open Learning iii. Educational Technology. iv. Guidance and Counseling **GROUP-B** v. Measurement and Evaluation. vi. Environmental Education vii. Inclusive Education	100	3	3	1	2	5	30%	70%
	2		50	2	2	0	0	2	30%	70%
	2		50	2	2	0	0	2	30%	70%
19	8	Dissertation	200						30%	70%
Total	**20**		**500**	**23**	**23**	**7**	**14**	**37**		
Practicum/Hands on/ Students Activity /Seminar/Workshop/etc; during Practicum hours								**Number of days=107**		

- **1Credit Theory = 16 hours in a semester**
- **1 Credit Practicum = 32 hours in a semester**
- **1 Credit = 25 Marks**

INTERNSHIP PROGRAMME

Internship should be organized in such a way that involves all students' engagement for a continuous period of 28 days/21 days in a school/ teacher education institute for field experience associated with the specialization that students choose. Since the M.Ed Programme structure proposed in this report is associated on schools and teacher education institutions (and other sites) based activities, the M.Ed. Calendar should be developed keeping in mind the schedule of these institutions.

Saika 10/5/16

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English

Central University of Haryana, Mahendergarh
Department of English & Foreign Languages
Scheme of Courses (M.A. English)
(Revised Syllabi Approved in the Meeting of BOS Held on 3rd May 2016 and AC in its Meeting Held on 27th May 2016)

Semester-I

S. No.	Course Code	Course Title	L	T	P	Credit
		Core Courses				
1	SLLCH ENG 01 01 C 01 4004	Literary Criticism- I	4	0	0	4
2	SLLCH ENG 01 01 C 02 4004	British Poetry- I	4	0	0	4
3	SLLCH ENG 01 01 C 03 4004	British Drama- I	4	0	0	4
4	SLLCH ENG 01 01 C 04 4004	British Fiction- I	4	0	0	4
5	SLLCH ENG 01 01 C 05 3003	American Literature	3	0	0	3
		Elective Courses				
1	SLLCH ENG 01 01 E 01 3003	Communication Skills in English (General Elective)	3	0	0	3
2	SLLCH ENG 01 02 E 02 3003	Literature and Cinema	3	0	0	3
3	SLLCH ENG 01 01 E 03 3003	Dalit Literature and Aesthetics	3	0	0	3

L: Lectures T: Tutorial P: Practical Cr: Credits

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Semester-II

S. No.	Course Code	Course Title	L	T	P	Credit
		Core Courses				
1	SLLCH ENG 01 02 C 06 4004	Literary Theory and Criticism –I	4	0	0	4
2	SLLCH ENG 01 02 C 07 4004	British Poetry -II	4	0	0	4
3	SLLCH ENG 01 02 C 08 4004	British Drama –II	4	0	0	4
4	SLLCH ENG 01 02 C 09 4004	British Fiction –II	4	0	0	4
5	SLLCH ENG 01 02 C 10 3003	History of English Literature-I	3	0	0	3
		Elective Courses				
4	SLLCH ENG 01 02 E 04 3003	Media and Communication (General Elective)	3	0	0	3
5	SLLCH ENG 01 02 E 05 3003	Diaspora and Literature	3	0	0	3
6	SLLCH ENG 01 02 E 06 3003	Literature and Philosophy	3	0	0	3

L: Lectures T: Tutorial P: Practical Cr: Credits

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Semester-III

S. No.	Course Code	Course Title	L	T	P	Credit
Core Courses						
1	SLLCH ENG 01 03 C 11 4004	Literary Theory and Criticism-II	4	0	0	4
2	SLLCH ENG 01 03 C 12 4004	Indian Writings in English	4	0	0	4
3	SLLCH ENG 01 03 C 13 4004	Modern World Literature	4	0	0	4
4	SLLCH ENG 01 03 C 14 3003	History of English Literature-II	3	0	0	3
Elective Courses						
7	SLLCH ENG 01 03 E 07 3003	Research Methodology (General Elective)	3	0	0	3
8	SLLCH ENG 01 03 E 08 3003	Literature of Protest	3	0	0	3
9	SLLCH ENG 01 03 E 09 3003	Introduction to Linguistics	3	0	0	3

L: Lectures T: Tutorial P: Practical Cr: Credits

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Semester-IV

S. No.	Course Code	Course Title	L	T	P	Credit
1	SLLCH ENG 01 04 C 15 4004	Indian Literary Criticism	4	0	0	4
2	SLLCH ENG 01 04 C 16 4004	Modern Indian Literature in English Translation	4	0	0	4
3	SLLCH ENG 01 04 C 17 4004	Postcolonial Theory and Literature	4	0	0	4
4	SLLCH ENG 01 04 C 18 0044	Dissertation	0	0	4	4
		Elective Courses				
10	SLLCH ENG 01 04 E 10 3003	Literature and Gender (General Elective)	3	0	0	3
11	SLLCH ENG 01 04 E 11 3003	Comparative Literature and Translation Studies	3	0	0	3
12	SLLCH ENG 01 04 E 12 3003	Introduction to Cultural Studies	3	0	0	3
13	SLLCH ENG 01 04 E 13 3003	Literature and Theatre	3	0	0	3

L: Lectures T: Tutorial P: Practical Cr: Credits

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Syllabus M.A. English
(Approved in BOS on 3rd May 2016 and AC in its Meeting Held on 27th May 2016)

Semester-I

L	T	P	Credits
4	0	0	4

Course Title: Literary Criticism-I
Course Code: SLLCH ENG 01 01 C 01 4004

Objective: The course intends to provide a critical understanding of the developments in literary criticism from the beginnings to the end of 19th century. Moreover some selected texts/critics are prescribed for detailed study whose contribution to this area constitutes a significant benchmark in each era. It also provides a conceptual framework for developing an understanding of the function and practice of traditional modes of literary criticism.

Prescribed Texts:

Unit - A

Aristotle: *Poetics* (Chapters i-xvi, xxvi)

Unit - B

William Wordsworth: *Preface to Lyrical Ballads* (1802 edition)

Unit - C

Matthew Arnold: *The Function of Criticism in the Present Time*

Unit - D

T. S. Eliot: "Tradition and Individual Talent"

Suggested readings:

Abrams, M. H. *A Glossary of Literary Terms.* Singapore: Harcourt Asia Pvt. Ltd., 2000. Print.

Arnold, Matthew. *Essays in Criticism*. New York: MacMillan and company, 1865. Print.

Blamire, Harry. *A History of Literary Criticism.* Delhi: Macmillan, 2001. Print.

Daiches, David. *Critical Approaches to Literature,* 2nd ed. Hyderabad: Orient Longman, 2001. Print.

Ford, Boris (ed). *The Pelican Guide to English Literature,* Vols. 4 & 5. London: Pelican, 1980. Print.

Habib, M. A. R. *A History of Literary Criticism: From Plato to the Present.* Oxford: Blackwell, 2005. Print.

House, Humphrey. *Aristotle's Poetics.* Ludhiana: Kalyani Publishers, 1970. Print.

Lucas, F. L. *Tragedy in Relation to Aristotle's Poetics.* New Delhi: Allied Publishers, 1970. Print.

Nagarajan, M.S. *English Literary Criticism & Theory: An Introductory History.* Hyderabad: Orient Longman, 2006. Print.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Waugh, Patricia. *Literary Theory & Criticism: An Oxford Guide.* Delhi: OUP, 2006. Print.

Wellek, Rene. *A History of Modern Criticism: 1750-1950,* Vols. I-IV. London: Jonathan Cape, 1958. Print.

Course Title: British Poetry-I
Course Code: SLLCH ENG 01 01 C 02 4004

L	T	P	Credits
4	0	0	4

Objective(s): This course intends to generate an understanding of poetry as a genre and as a language form. Poetry is an expression, a different language in itself. It is the highest form of expression. The course focuses on the works of pioneer poets from Chaucer to Alexander Pope. Moreover it includes the general awareness of the historical and literary developments in the field of poetry.

Unit -A

Geoffrey Chaucer

'The Prologue' to *The Canterbury Tales*

Unit –B John Donne:

"A Valediction: Forbidding Mourning", Holy sonnet XIV: "Batter My Heart, Three – Person'd God"

Andrew Marvel:

"To His Coy Mistress"

Unit -C

John Milton

The Paradise Lost (Book 1)

Unit –D

Alexander Pope

The Rape of the Lock

Suggested Readings:

Abrams, M.H., *English Romantic Poets: Modern Essays in Criticism*, 2nd ed., Oxford: Oxford University Press, 1975.

Bate, Walter Jackson. ed. *Keats: A Collection of Critical Essays*, New Delhi: Prentice Hall India Pvt. Ltd., 1978. Print.

Bennett, Joan. *Five Metaphysical Poets.* Cambridge: Cambridge University Press, 1964. Print.

Benson, Robert G. and Susan J. Ridyard. eds. *New Readings of Chaucer's Poetry* (*Chaucer Studies*). D. S. Brewer, 2003. Print.

Bowden, Muriel A. *A Reader's Guide to Geoffrey Chaucer*. London: Thames & Hudson, 1964. Print.

David Aers. *Chaucer (New Readings*). Kent: The Harvester Press, 1986. Print.

Fraser, G.S. ed., *Keats: The Odes*, London: Macmillan, 1971.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Gardner, Helen. ed. *John Donne: A Collection of Critical Essays (Twentieth Century Views Series).* New Delhi: Prentice Hall India Ltd., 1979. Print.

Course Title: British Drama -I
Course Code: SLLCH ENG 01 01 C 03 4004

L	T	P	Credits
4	0	0	4

Objective(s): Drama combines the literary arts of storytelling and poetry with the world of live performance. As a form of ritual as well as entertainment, it has served to unite communities and challenge social norms by vitalizing its audiences. In order to understand this rich art form more fully, a sampling of plays, which exemplify different kinds of dramatic structure, will be examined. Students will be encouraged to read widely for enrichment and enjoyment.

Unit A

Christopher Marlowe : *Doctor Faustus*

Unit B

William Shakespeare : *Othello*

Unit C

R.B. Sheridan : *The School for Scandal*

Unit D

George Bernard Shaw : *Candida*

Suggested Readings:

Abrams, M.H. *A Glossary of Literary Terms*. India: Macmillan, 1970. Print.

Adelman, Janet (ed.). *Twentieth Century Interpretations of King Lear.* New Delhi: Prentice Hall India, 1980. Print.

Anderson, Michael. Anger *and Detachment: A Study of Arden, Osborne and Pinter*. London: Pitman, 1976. Print.

Baldick, Chris. *The Oxford Dictionary of Literary Terms*. USA: OUP, 2009 (3ed.). Print.

Bentley, Eric. *Bernard Shaw*. London: Limelight Editions, 1985. Print.

Bradley, A.C. *Shakespearean Tragedy: Lectures on Hamlet, Othello, King Lear, Macbeth*. New Delhi: Dodo Press, 2009. Print.

Chandler, Frank Wadleigh. *Aspects of Modern Drama*. New York: Macmillan, 1914. Print.

Harbage, Alfred. *Shakespeare: The Tragedies (A Collection of Critical Essays)*. New Delhi: Pearson, 2005. Print.

Hayman, Ronald. *John Osborne (Contemporary Playwrights Series)*. London: Heinemann Educational, 1970. Print.

Innes, Christopher (ed.): *Cambridge Companion to George Bernard Shaw*. Cambridge: Cambridge University Press, 2006. Print.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Loftis, J. *Comedy and Society from Congreve to Fielding*. Stanford: Calif, 1959. Print.

Loomba, Ania. *Post-colonial Shakespeare*. London: Routledge, 1998.

Course Title: British Fiction- I
Course Code: SLLCH ENG 01 01 C 04 4004

L	T	P	Credits
4	0	0	4

Objective(s): To introduce fiction as a genre of literature through a critical study of the thematic and stylistic aspects of the following prescribed texts.

Unit A

The Origin and Rise of Novel: A Historical Perspective

Henry Fielding: *Joseph Andrews*

Unit B

Jane Austen: *Pride and Prejudice*

Unit C

Dickens: *Hard Times*

Unit D

Thomas Hardy: *Jude the Obscure*

Suggested Readings:

Chesterton, G.K. *Charles Dickens*. U.K.: House of Stratus, 2001.

Forster, E.M. *Aspects of the Novel.* Penguin, 1927.

Gardner, John. *The Art of Fiction.* New York: Alfred A. Knopf, 1984.

Kettle, Arnold. *An Introduction to the English Novel Vol. I*. London: Hutchinson, 1974

Lubbock, Percy. *The Craft of Fiction*. U.S.A.: Create Space, 2010.

Lucas, George. *The Theory of Novel*. London: Merlin Press, 1971.

Rimmon-Kenan, Shlomith. *Narrative Fiction.* London: Routledge: 2002.

Seager, Nicholas. *The Rise of Novel.* U. K.: Macmillan, 2012.

Williams, Raymond. *Culture and Society: 1780-1950*. New York: Columbia University, Press, 1958.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Course Title: American Literature
Course Code: SLLCH ENG 01 03 C 5 4004

L	T	P	Credits
4	0	0	4

Objective(s): To introduce American literature as a distinct branch of English literature through a critical study of the thematic and stylistic aspects of the following prescribed texts.

Unit A: Essays

Ralph Waldo Emerson

"The American Scholar"

Henry David Thoreau

"Civil Disobedience"

Unit B: Poetry

Walt Whitman

"There was a Child Went Forth"

"When Lilacs Last in the Dooryard Bloom'd"

Emily Dickinson

"Success is Counted Sweetest"

"Because I could not stop for Death".

Robert Frost

"Mending Wall",

"The Road Not Taken"

Unit C: Novel

Ernest Hemingway

The Old Man and the Sea

Unit D: Play

Edward Albee

Who is Afraid of Virginia Woolf ?

Suggested Readings:

Barett, M. O. *The Irrational Man*. <http://www.philosophymagazine.com/others/MO_ Barrett_Irrational.html >. 20 August 2011.

Camus, Albert. *The Myth of Sisyphus.* http://www.sccs.swarthmore.edu/ users/00/pwillen 1 /lit/msysip.htm>. 14 January 2005.

Fisher, William J. *The American Literature of the Nineteenth Century: An Anthology.* New Delhi Eurasia Publishing House Pvt Ltd, 1970. Print.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Ford, Boris. *The New Pelican Guide to English Literature: 9. American Literature*. Penguin Books, 1988.

Jacob, J. *History of American Literature*. New Delhi: Sublime Publishers, 2005. Print.

Milton, Jane, Caroline Polmear and Julia Fabricius. *A Short Introduction to Psychoanalysis.* New Delhi: Sage Publications, 2004. Print.

Schneider, Dorothy Schneidercarl J. *An Eyewitness History of Slavery in America.* N. A.: Checkmark, 2000. Print.

Course Title: **Communication Skills in English**

L	T	P	Credits
3	0	0	3

Course Code: SLLCH **ENG 01 01 E 01 3003**

Objective(s): The course will develop the basic understanding of grammar and communication skills among the students.

Unit A: Phonetics

The Organs of Speech

Phonetic Symbols

Speech Sounds – Vowels and Consonants

Unit B: Functional Grammar

Articles, Parts of Speech, Question Tags, Tenses, Preposition, Common Errors

Unit C: Conversational English

Language and Society, Styles and Registers

Situational Communication

Suggested Readings:

Adair, John. *Effective Communication*. London: Pan Macmillan Ltd., 2003.

Ajmani, J. C. *Good English: Getting it Right*. New Delhi: Rupa Publications, 2012.

Amos, Julie-Ann. *Handling Tough Job Interviews*. Mumbai: Jaico Publishing, 2004.

Bonet, Diana. *The Business of Listening*. Third Edition. New Delhi: Viva Books, 2004.

Bovee, Courtland L, John V. Thill & Barbara E. Schatzman. *Business Communication Today*. Tenth Edition. New Jersey: Prentice Hall, 2010.

Brown, Michele & Gyles Brandreth. *How to Interview and be Interviewed*. London: Sheldon Press, 1994.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Carnegie, Dale. *The Quick and Easy Way to Effective Speaking*. New York: Pocket Books, 1977.

Collins, Patrick. *Speak with Power and Confidence*. New York: Sterling, 2009.

Fensterheim, Herbert and Jean Baer. *Don't Say Yes When You Want To Say No*. New York: Dell, 1975.

Fitikides, T. J. *Common Mistakes in English*. London: Orient Longman, 1984.

Guffey, Mary Ellen. *Essentials of Business Writing*. Ohio: South Western College Pubg., 2000.

Hall, Edward, T. *The Silent Language*. Greenwich, Conn, Fawcett, 1959.

---. Beyond Culture. Garden City, N.Y.: Doubleday, 1976.

Hasson, Gill. *Brilliant Communication Skills*. Great Britain: Pearson Education, 2012.

Hughes, Shirley. *Professional Presentations: A Practical Guide to the Preparation and Performance of Successful Business Presentations*. Sydney: McGraw-Hill, 1990.

Kalish, Karen. *How to Give a Terrific Presentation*. New York: AMACOM, 1996.

Kratz, Abby Robinson. *Effective Listening Skills*. Toronto: ON: Irwin Professional Publishing, 1995.

Kroehnert, Gary. *Basic Presentation Skills*. Sidney: McGraw Hill, 2010.

Lesikar, Raymond V and Marie E. Flatley. *Basic Business Communication: Skills for Empowering the Internet Generation*. Ninth Edition. New Delhi: Tata McGraw-Hill, 2002.

Lesikar, Raymond V., & John D. Pettit, Jr. *Report Writing for Business*. Tenth Edition. Delhi: McGraw-Hill, 1998.

Morgan, Dana. *10 Minute Guide to Job Interviews*. New York: Macmillan, 1998.

Prasad, H. M. *How to Prepare for Group Discussion and Interview*. New Delhi: Tata McGraw-Hill Publishing Company Limited, 2001.

Pease, Allan. *Body Language*. Delhi: Sudha Publications, 1998.

Raman, Meenakshi & Sangeeta Sharma. *Technical Communication: Principles and Practice*. Second Edition. New Delhi: Oxford University Press, 2011.

Rogers, Natalie. *How to Speak Without Fear*. London: Ward Lock, 1982.

Rutherford, Andrea J. *Basic Communication Skills for Technology*. Second Edition. Delhi: Pearson Education, 2007.

Seely, John. *Writing Reports*. New York: Oxford University Press, 2002.

Sharma, R. C. & Krishna Mohan. *Business Correspondence and Report Writing*. Third Edition. New Delhi: Tata McGraw-Hill Publishing Company Limited, 2007.

Thill, John V. & Courtland L. Bovée, *Excellence in Business Communication*. 10th edition. Boston: Pearson, 2013.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Thorpe, Edgar & Showick Thorpe. *Winning at Interviews*. 2nd Edition. Delhi: Dorling Kindersley, 2006.

Turton, N. D. & J. B. Heaton. *Longman Dictionary of Common Errors*. Essex: Longman, 1987. First Indian Edn. 1998.

Course Name: Literature and Cinema
Course Code: SLLCH ENG 01 01 E 02 3003

L	T	P	Credits
3	0	0	3

Objective(s): To orient the students towards cinema study viz-a-viz literature through the study of Indian and World cinema and to introduce the students with important aspects and phases of cinema, and adaptation theories.

Unit A:

Linda Hutcheon: "On the Art of Adaptation"

Thomas Leitch: "Adaptation Studies at Crossroads"

Theories of Adaptation

Transformation and Transposition

Adaptation as Interpretation

Film Review, Discussions & Presentations on various aspects of Cinema and Literature

Unit B: World Cinema

Phillip Noyce: *Rabbit Proof Fence* (adaptation of Doris Pilkington's *Follow the Rabbit-Proof Fence*)

Jonathan Demme: *Beloved* (Adaptation of Toni Morrison's *Beloved*)

Unit C: Indian Cinema

Satyajit Ray: *Shatranj Ke Khiladi*

Govind Nihalani: Hazaar Chaurasi Ki Maa

Suggested Readings:

Beaver, Frank Eugene. *A Dictionary of Film Terms: The Aesthetic Companion to Film Art*. New York: Peter Lang, 2006.

Bluestone, George. *Novels into Films*. California: University of California Press, 1957.

Hood, John W. The *Essential Mystery: Major Film Makers of Indian Art Cinema*. Hyderabad: Orient Blackswan, 2009.

Linda Hutcheon, 'On the Art of Adaptation', *Daedalus*, vol. 133, (2004). 2.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Monaco, James. *How to Read a Film: Motives, Media, Multimedia*. New York: OUP, 2000/2007 (Indian Edition).

Thomas Leitch, 'Adaptation Studies at Crossroads', *Adaptation*, 2008, vol. 1, no. 1, pp. 63–77.

Course Name: Dalit Literature and Aesthetics

Course Code: SLLCH ENG 01 01 E 03 3003

L	T	P	Credits
3	0	0	3

Objective(s): The course intends to make the students familiar with the intent and contents of Dalit Literature and aesthetics. The prescribed texts represent different genres to provide comprehensive understanding of Dalit context and the paradigms of dalit literature.

Unit A: Dalit Autobiographies

Omprakash Valmiki

Joothan: An Untouchable's Life

Unit B: Novel

Kalyan Rao

Untouchable Spring

Unit C: Poetry

Namdeo Dhasal's "Hunger"

Daya Pawar's "Blood-wave"

Arjun Dangle's "I Will Belong to It"

Keshao Meshram's "The Barriers"

Sharankumar Limbale's "White Course"

Suggested Readings:

Ahmad, Imtiaz and Upadhyay.*Dalit Assertion in Society Literature and History*. Hyderabad: Orient Blackswan, 2010.

Ambedkar, B.R. "Annihilation of Caste". Valerian Rodrigues, ed. *The Essential Writings of B.R. Ambedkar*. New Delhi: Oxford UP, 2002. Pp. 263-305.

Bama. Sangati: Events. OUP, 2008.

---. Vanmam (Vendetta). OUP, 2008.

Dangle, Arjun. Ed. *No Entry for the New Sun: Translations from Modern Marathi Dalit*. Orient Blackswan, 1992.

---. ed. *Poisoned Bread*. Hyderabad: Orient Blackswan, 2009.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Datta, Prithvi and Chandra Shobhi. The Flaming Feet and Other Essays: The Dalit Movement in India. University of Chicago Press, 2011.

Gajarawala, Toral Jatin. *Untouchable Fictions: Literary Realism and the Crisis of Caste*. Fordham University Press, 2012.

Ganguly, Debjani. Caste and Dalit Lifeworlds: Postcolonial Perspectives. Orient Longman, 2008.

Jaffrelot, Christopher. Dr.Ambedkar and Untouchability: Analysing and Fighting Caste. C. Hurst & Co. Publishers, 2005.

Ilaiah, Kancha. *Why I am Not a Hindu: A Sudra Critique of Hindutva Philosophy, Culture and Political Economy*. Samya, 2005.

Kumar, Raj. *Dalit Personal Narratives*. Hyderabad: Orient Blackswan, 2010.

Limbale, Sharankumar. *Towards an Aesthetic of Dalit Literature*.trans. Alok Mukherjee. Orient Blackswan, 2004.

---. *Hindu: A Novel*. Samya Publications, 2010.

Omvedt, Gail. *Dalit Visions*.OrientBlackswan, 2006.

---. *Ambedkar: Towards an Enlightened India*. Penguin, 2008.

Rao, Anupama. *The Caste Question: Dalits and the Politics of Modern India*. Permanent Black, 2009.

Rege, Sharmila. *Writing Caste: Writing Gender*.Delhi: Zubban 2006.

Sattanathan, A.N. *Plain Speaking: A Sudra's Story*. Permanent Black, 2007.

Sharatchandra Muktibodh, "What is Dalit Literature?," *Poisoned Bread*. Arjun Dangle, ed. Hyderabad: Orient Blackswan, 2009. 270-273.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Semester -II

Course Title: Literary Theory and Criticism- I
Course Code: SLLCH **ENG 01 02 C 06 4004**

L	T	P	Credits
4	0	0	4

Objective(s): The course intends to provide a textual, historical and critical study of the developments in literary criticism from the beginning of 20th century to the present times. The course undertakes to offer a survey of all the major developments in literary methodology from the beginning of 20th century up to the present times. It also provides a conceptual framework for developing an incisive understanding of the function and practice of different literary methodologies available to a student.

Unit A: Russian Formalism and New Criticism

Viktor Shklovsky:

"Art as Technique"

Cleanth Brooks:

"Irony as a Principle of Structure"

Unit B: Psychological Approach

Sigmund Freud:

"Creative Writers and Day-dreaming"

Jacques Lacan:

"The Symbolic Order"

Unit C: Feminism

Simone de Beauvoir

"Myth and Reality"

Elaine Showalter

"Feminist Literary Criticism in the Wilderness"

Unit D: Sociological/Marxist Approach:

Raymond Williams

"Base and Superstructure in Marxist Cultural Theory"

Louis Althusser

"Ideology and Ideological State Apparatuses"

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Suggested Readings:

Barry, Peter. *Beginning Theory: An Introduction to Literary & Cultural Theories,* 2nd ed., Manchester: Manchester University Press, 2004.

Bertens, Hans. *Literary Theory: The Basics,* New York: Routledge, 2003.

Blamires, Harry. *A History of Literary Criticism,* Delhi: Macmillan, 2001.

Eagleton, Terry. *Marxism and Literary Criticism*, University of California Press: London, 1976.

Freud, Sigmund. Trans. Alix Strachey. "The 'Uncanny." *The Norton Anthology of Theory and Criticism*. Ed. Vincent B. Leitch. New York: W.W. Norton & Company, 2001.

Habib, M.A.R.*A History of Literary Criticism: From Plato to the Present,* Oxford: Blackwell, 2005.

Lacan, Jacques. "The Symbolic Order" in M.A.R Habib: *A History Of Literary Criticism And Theory: From Plato to the Present.* New Delhi: Wiley India, 2008.

Nagarajan, M.S. *English Literary Criticism & Theory: An Introductory History.* Hyderabad: Orient Longman, 2006.

Ransom, John Crowe. *The New Criticism,* New York: New Directions, 1941.

Richards, I. A. *Practical Criticism*, London: Routledge & Paul, 1964.

Robey, David and Ann Jefferson, *Modern Literary Theory,* London: Batsford, 1986.

Showalter, Elaine. "Feminist Literary Criticism in the Wilderness." in David Lodge (ed.), *Modern Criticism and Theory: A Reader,* London and New York: Longman, 1988. 331-53.

Waugh, Patricia. *Literary Theory & Criticism: An Oxford Guide.* New Delhi: Oxford University Press, 2006.

Wimsatt and Brooks. *Literary Criticism: A Short History.* New Delhi: Oxford & IBH Pub. Co., 1974.

Course Title: British Poetry -II
Course Code: SLLCH ENG 01 02 C 07 4004

L	T	P	Credits
4	0	0	4

Objective(s): Poetry, in general sense, may be defined to be – the expression of the imagination: and poetry is connate with the origin of man. Poets are the unacknowledged legislators of the world as P.B. Shelley claims. In order to understand and imbibe the essential value and worth of this art form, a collection of poems, based in diverse geography, persona and context, will be analysed. This course assures a sound reason and imagination to the students along with enjoyment and learning.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Unit-A

William Wordsworth

"Ode: Intimations of Immortality from Recollections of Early Childhood"
"Tintern Abbey"

John Keats

"Ode to Nightingale"
"Ode on a Grecian Urn"

Unit -B

Lord Alfred Tennyson:

"Ulysses"

Matthew Arnold:

"Dover Beach"

Robert Browning

"The Last Ride Together"
"My Last Duchess"

Unit –C

W. B. Yeats

"The Second Coming"
"Sailing to Byzantium"

T. S. Eliot

"The Love Song of J. Alfred Prufrock" and "The Hollow Men"

Unit -D

Philip Larkin: "Toads Revisited"
Seamus Heaney: "Digging"
Dylan Thomas: "Do not Go Gently into the Goodnight"
Ted Hughes : "The Jaguar"
"Hawk Roosting"

Suggested Readings:

Arana, R. Victoria. *W.H. Auden's Poetry: Mythos, Theory, and Practice.* Cambria Press, 2009. Print.

Cleeve, Brian. *W.B. Yeats and the Designing of Ireland's Coinage*. New York: Dolmen Press, 1972.

Croft, Barbara L. *Stylistic Arrangements: A Study of William Butler Yeats' Vision*, Bucknell University Press, 1987.

Drew, P. ed., *Robert Browning: A Collection of Critical Essays*. New Delhi: Macmillan, 1985. Print.

Firchow, Peter Edgerly. *W.H. Auden: Contexts for Poetry*. University of Delaware Press, 2002. Print.

Gifford, Terry. *The Cambridge Companion to Ted Hughes*. New York: Cambridge University Press, 2011. Print.

Haffenden, John. *W.H. Auden: The Critical Heritage*. Psychology Press, 1997.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Hargrove, Nancy Duvall. *Landscape as Symbol in the Poetry of T. S. Eliot.* University Press Mississippi 1978.

Hibbett, Ryan. *Proving Poetry: Ted Hughes and Philip Larkin, Now.* Pro Quest, 2006. Print.

Jeffares, A Norman. *A Commentary on the Collected Poems of W. B. Yeats*. Stanford University Press, 1968

Maxwell, D. E. S. *The Poetry of T. S. Eliot*, Routledge and Keagan Paul, 1960.

McCormack, W. J. *Blood Kindred: The Politics of W. B. Yeats and His Death*. Pimilico, 2005.

McDiarmid, Lucy. *Saving Civilization: Yeats, Eliot, and Auden between the Wars.* CUP Archive, 1984.

O'Neill, Michael. *Routledge Literary Sourcebook on the Poems of W.B. Yeats*. Routledge, 2003.

Pritchard, William H. *W. B. Yeats: A Critical Anthology*. Penguin, 1972.

Sagar, Keith M. *The Achievement of Ted Hughes*. Manchester University Press, 1983. Print.

Scofield, Dr. Martin. *T.S. Eliot: The Poems*. Cambridge University Press, 1988

Sharma, Shrawan K. *Alienation in the Poetry of Matthew Arnold*. New Delhi: K.K. Publications, 1996. Print.

Sperry, Stuart M. Sperry. *Keats: The Poet*. New Jersey: Princeton University Press, 1973. Print.

Vendler, Helen. *Our Secret Discipline: Yeats and Lyric Form,* Harvard University Press, 2007.

Wasserman, Earl R. *The Finer Tone: Keats' Major Poems*. Baltimore: John Hopkins Press, 1967. Print.

Watson, J.R. ed. *Browning: Men and Women and Other Poems (Case Book Series*). New Delhi: Macmillan, 1986. Print.

Williamson, George. *A Reader's Guide to the Metaphysical Poets.* Yugoslavia: Thomas & Hudson, 1988. Print.

Course Title: British Drama II
Course Code: SLLCH ENG 01 02 C 08 4004

L	T	P	Credits
4	0	0	4

Objective(s): Drama combines the literary arts of storytelling and poetry with the world of live performance. As a form of ritual as well as entertainment, it has served to unite communities and challenge social norms, to vitalize and disturb its audiences. In order to understand this rich art form more fully, a sampling of plays, which exemplify different kinds of dramatic structure, will be examined. Students will be encouraged to read widely for enrichment and enjoyment.

Unit A

T.S. Eliot

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Murder in the Cathedral

Unit B

John Osborne

Look Back in Anger

Unit C

Samuel Beckett

Waiting for Godot

Unit D

Harold Pinter

The Birthday Party

Suggested Readings:

Abrams, M.H. *A Glossary of Literary Terms*. India: Macmillan, 1970. Print.

Bachner, Saskia. *The Omnipresent Emptiness in Samuel Beckett's "Waiting for Godot"*. Germany: GRIN Verlag, 2008. Print.

Baldick, Chris. *The Oxford Dictionary of Literary Terms*. USA: OUP, 2009 (3ed.). Print.

Behan, Tom. *Dario Fo: Revolutionary Theatre*. London: Pluto, 2000. Print.

Bloom, Harold. *Berthold Brecht*. USA: Chelsa House, 2002. Print.

Brecht, Bertolt. *Brecht on Theater: The Development of an Aesthetic*, edited and translated by John Willett. London: Methuen, 1992. Print.

Chandler, Frank Wadleigh. *Aspects of Modern Drama*. New York: Macmillan, 1914. Print.

Cornwel, Neil. *The Absurd in Literature*. Manchester: Manchester University Press, 2006. Print.

Esslin, Martin. *The Theatre of the Absurd*. London: Penguin, 1980. Print.

Northam, John. *Ibsen's Dramatic Method*. London: Fabor, 1953. Print.

Williams, Raymond. *Drama: From Ibsen to Eliot*. London: Chatto & Windus, 1952. Print.

Course Title: British Fiction -II
Course Code: SLLCH ENG 01 02 C 09 4004

L	T	P	Credits
4	0	0	4

Objective(s): To introduce fiction as a genre of literature through a critical study of the thematic and stylistic aspects of the following prescribed texts.

Unit A

D. H. Lawrence

Sons and Lovers

Unit B

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Virginia Woolf

Mrs. Dalloway

Unit C

George W. Orwell

Animal Farm

Unit D

William Golding

Lord of Flies

Suggested Readings:

Garg, G. R. *George Orwell: A Study in Ideas.* Dept. of English, 1968.

Kaushal, Deepak. *Civilization and Savagery.* Chandigarh, Department of English. 2007.

Kinkead, Weekes, Mark. *William Golding: A Critical Study*. London, Faber & Faber, 1975.

Naik, Sulabha. *Feministic Perspective on the Novels of Virginia Woolf*. New Delhi, Prestige Bks, 1998.

Tedlock, E. W. [ed.]. *D. H. Lawrence and Sons and Lovers: Sources and Criticism*. London Univ. 1966.

William Raymonds, ed. *George Orwell: A Collection of Critical Essays*. Englewood Cliffsm, 1974.

Yudhistar. *Conflict in the Novels of D. H. Lawrence*. Edinburgh, Oliver and Boyd. 1969.

Course Title: History of English Literature-I
(Anglo-Saxon Period to the Age of Romanticism)
Course Code: SLLCH ENG 01 02 C 10 3003

L	T	P	Credits
3	0	0	3

Objective(s): To study the socio-political, cultural and literary trends and influences during various phases/periods to enable the learner to have a chronological understanding of the development of English Literature from Anglo-Saxon to Romantic Age.

Unit-I: Anglo-Saxon Period and Age of Chaucer

Evolution of English Language and Literature

First known Generation of Poets and their Poetry

Literature of the Norman Period

French Influence on English Language and Literature

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Chaucer and his Contemporaries

Unit-II: Renaissance and Elizabethan Period

Renaissance—Meaning, Scope and Historical Context

Scientific Spirit, Discoveries and Inventions

Reformation and Bible's Translation

Evolution of Drama—Miracle, Cycle, Mystery Plays, Moral Plays, Interludes, Comedy and Tragedy

Important Writers and their Works

Classical Influences upon the Drama

University Wits

Shakespeare and his Works

Rise of Essay and Bacon's Contribution

Unit-III: Puritan Age to Neo-Classical Period

Puritan Movement and Important Puritan Poets

Spenserian and Metaphysical Poets

Prose Writers of Puritan Age

Restoration Age and its Literature

Comedy of Manners and Comedy of Morals

Neo-Classical Age and Literature

Works of John Dryden and Alexander Pope

Periodical Essays and Essayists

Samuel Johnson, Edmund Burke and Edward Gibbon

Rise of Novel

Unit-IV: Romantic Period

Historical and Political Undercurrents of the Age

Romanticism—Definition and origin as a Literary Movement

Influencing Factors Shaping the Age

French Revolution and its Impact

Early Romantic Poets and their major Works

Later Romantic Poets and their major Works

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Novelists of the Romantic Age

Suggested Readings:

Abrams, M.H. and Geoffrey Galt Harpham. *A Glossary of Literary Terms* (9th Edition). Cengage Learning, 2008.

Dahiya, Bhim S. *A New History of English Literature*. New Delhi: Doaba Publications, 2006.

Daiches, David. *A Critical History of English Literature*. Vol. I-IV. New Delhi: Allied Publishers, 2005.

Ford, Boris. Ed. *The New Pelican Guide to English Literature, Vol. 1: The Age of Chaucer*.

---. Ed. *The New Pelican Guide to English Literature: Medieval Literature*.

---. Ed. *The New Pelican Guide to English Literature, Vol. 2, The Age of Shakespeare*.

---. *The New Pelican Guide to English Literature, Vol. 3: From Donne to Marvell*.

---. *The New Pelican Guide to English Literature, Vol. 4: From Dryden to Johnson*.

---. *The New Pelican Guide to English Literature, Vol. 5: From Blake to Byron*.

Hudson, William Henry. *An Outline History of English Literature*. New Delhi: Atlantic Publishers.

Long, William J. *English Literature: Its History and Significance*. New Delhi: Kalyani Publishers, 2009.

Richetti, John. Ed. *The Cambridge History of English Literature*. Cambridge University Press, 2005.

Course Title: Media and Communication

L	T	P	Credits
3	0	0	3

Course Code: SLLCH **ENG 01 02 E 04 3003**

Objective(s): To understand the relationship between communication, media and society; to acquaint the students with the applications of mass communication and the growth and current trends in mass media.

Unit I: Mass Media:

a. History, Goals and Kinds: TV, Radio, Print, Film, Cyber Media and Ethics;

b. Media and Society.

b. Thinkers on Media and Culture:

Walter Benjamin: "The Work of Art in the Age of Mechanical Reproduction"

Raymond Williams: "From Medium to Social Practice"

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Jean Baudrillard: "The Precession of Simulacra"

Unit II: Media Representations and Impact:

Globalization, Consumerism and Media,

Soap Operas, Reality Shows, Social Media and TRP

Print Media and Electronic Media—from Nation to Market

Unit III: Literature as Media and Communication

a. Poetry and Communication:
    i. Significance and Scope of Poetry as a Communicative Medium
b. Fiction and Communication:
    i. Short Stories and Novels as Communicative Media;
    ii. Fiction as Social and Political Narrative
c. Drama and Communication:
    i. Drama as a medium of interpersonal and cultural communication

Suggested Readings:

Benjamin, Walter. *Illuminations*. Trans. Harry Zohn. London: Fontana Press, 1992. Print.

Berger, Arthur Asa. *Making Sense of Media*. Malden: Blackwell, 2005. Print.

Bignell, Jonathan and Jeremy Orlebar. *The Television Handbook*. Oxon: Routledge, 2009. Print.

Childs, Peter. *Texts: Contemporary Cultural Texts and Critical Approaches*. Edinburgh: Edinburgh UP, 2006. Print.

Eagleton, Terry. *How to Read a Poem*. Malden: Blackwell, 2002.

Feldman, Tony. *Introduction to Digital Media*. London, Routledge, 1997. Print.

Japp, Phyuis M., Mark Meister, Debra K. Japp. *Communication, Ethics, Media & Popular Culture*. Peter Lang, 2005. Print.

Kumar, Keval J. *Mass Communication in India*. Jaico, 2008. Print.

Lister, Martin et al. *New Media*: *A Critical Introduction*. 2nd ed. London, Routledge, 2003. Print.

Myerson, George. *From Heidegger, Habermas and the Mobile Phone*. UK, Icon Books, 2001. Print.

Sanger, Keith. *The Language of Drama*. London, Routledge, 2001.

Williams, Raymond. *Marxism and Literature*. Oxford: OUP, 1997. Print.

---. Television: *Technology and Cultural Form*. Routledge, 2003.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Course Name: Diaspora and Literature
Course Code: SLLCH ENG 01 02 E 05 3003

L	T	P	Credits
3	0	0	3

Objective(s): The course intends to engage the students in the study of Diaspora, Diaspora Theory and a few Diaspora texts to further enable them to develop their understanding of Diaspora texts in global contexts.

UNIT A

Salman Rushdie

"Imaginary Homelands"

Vijay Mishra

"Diaspora and the Art of Impossible Mourning"

Stuart Hall

"Cultural Identity and Diaspora"

UNIT B

A.K. Ramanujan

"Small Scale Reflections on a Great House"

R. Parthasarathy

"Home Coming"

Agha Shahid Ali (Select poems from *The Final Collections)*

"Srinagar Airport,

"Of Snow"

"Memory"

UNIT C

Khaled Hosseini

The Kite Runner

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Suggested Readings:

Braziel, Jana Evans and Anita Mannur. Eds. *Theorizing Diaspora: A Reader*. Wiley Blackwell, 2003.

Goldberg, David Theo. Ed. *Multiculturalism: A Critical Reader*. Blackwell, London,1994.

Hall, Stuart. "Cultural Identity and Diaspora".in Williams P. and Chrisman, Laura. Eds. *Colonial Discourse and postcolonial Theory: A Reader*. Harvester Wheatsheaf, New York, 1993.

Nelson,Emmanuel. ed. *Reworlding: The literature of the Indian Diaspora*. Green Wood, New York, 1992.

Parmeswaran, Uma. *Writing the Diaspora: Essays on Culture and Identity*. Jaipur: Rawat Publications, 2007.

Rushdie, Salman. "The Indian Writer in England." *The Eye of the Beholder: Indian Writing in English*. ed.M. Butcher, CommonwealthInstitute,London,1983:75-83.

---. *Imaginary Homelands*. London: Granta, 1991.

Stuart Hall: "Cultural Identity and Diaspora." In Williams, Patrick & Laura Chrisman eds. *Colonial Discourse & Postcolonial Theory: A Reader*. Harvester Whaeatsheaf, 1993.

Vijay Mishra: "Diaspora and the Art of Impossible Mourning" (in *Indian Diaspora*. Ed. Makarand Paranjpe, New Delhi: Indialog, 2001).

Course Name: Literature and Philosophy

Course Code: SLLCH ENG 01 02 E 06 3003

L	T	P	Credits
3	0	0	3

Objective(s): As philosophy and literature are integral to each other, the objective behind teaching this course is to acquaint the students with this relationship. Further, philosophy opens new horizons for new thinking and therefore, the objective of this course is to develop philosophical attitude in the learners.

Unit A

Philosophical Schools of Thought

Idealism

Pragmatism

Naturalism

Unit B

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Jean - Paul Sartre

Existentialism and Humanism

Unit C

Rabindranath Tagore

"Nationalism in India"

S. Radhakrishnan

"Religious Experience: Its Nature and Content" from *The Hindu View of Life*

Anand Coomaraswami

"What has India Contributed to Human Welfare?" from *The Dance of Siva*

Suggested Readings:

Coomaraswamy, Ananda. *The Dance of Siva: Fourteen Indian Essays*. New York: The Sunwise Turn, Inc. 1918.

Flynn, Thomas. *Existentialism: A Very Short Introduction*. New York: Oxford University Press, 2006.

Glendinning, Simon [ed]; Eaglestone, Robert, ed. *Derrida's Legacies: Literature and Philosophy.* London, Routledge, 2008.

Kant. *Philosophy of Kant and our modern world: four lectures delivered at Yale University Commemorating the 150th anniversary of the death of Immanuel Kant.* New York, Liberal Art Pr. 1957.

Kaufmann, Walter, ed. *Existentialism: From Dostoevsky to Sartre*. Rev. ed. New York: Penguin, 2004.

Levi, A. W. *Philosophy and the Modern World.* Bloomington: Indiana Univ., 1959.

Mishra, D.S. *Poetry and Philosophy of Sri Aurobindo's Savitri*. New Delhi, Harman. 1989.

Montague, W.P. *Great Visions of Philosophy: Varieties of Speculative Thought in the West from the Greeks to Bergson*. Illinois, Open Court Pub. 1950.

Pandit, M.P. *Readings in Savitri: Sri Aurobindo's Epic*. Pondicherry: Aurobindo Ashram, 1969.

Radhakrishnan, S. *The Hindu View of Life.* London: George Allen & Unwin Ltd, 1954.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Semester-III

Course Title: Literary Theory and Criticism -II
Course Code: SLLCH ENG 01 03 C 11 4004

L	T	P	Credits
4	0	0	4

Objective(s): The course proposes to study literary theory as an intellectual and critical activity in the 20thCentury. The purpose of the course is the analysis of some of the major essays that are central to the understanding of these literary and critical theories. The course takes up major strands of modern literary theory and provides a conceptual context for an understanding of the function and practice of modern literary and cultural criticism.

Unit A

Structuralism:

Roland Barthes: "The Structuralist Activity" in *Critical Theory since Plato.* Ed. Hazard Adams. New York: Harcourt Brace Jovanovich, 1971. 1128-1130.

Ferdinand de Saussure: "The Nature of Linguistic Sign" in David Lodge (ed.) *Modern Criticism and Theory: A Reader,* London and New York: Longman, 1988: 10-14.

Unit B

Poststructuralism and Deconstruction:

Roland Barthes: "The Death of the Author" from Roland Barthes, *Image, Music, Text*. London: Flamingo, 1977: 142-48.

Jacques Derrida: "Structure, Sign & Play in the Discourse of Human Sciences" from J. Derrida, *Writing and Difference*, trans. Alan Bass, Chicago: University of Chicago Press, 1978: 278-93.

Unit C

Postmodernism:

Jean Francois Lyotard: "Answering the Question: What is Postmodemism?" translated by Regis Durand in *The Postmodern Condition*, Manchester University press, 1984.

Jean Baudrillard: "The Spirit of Terrorism," trans. by Chris Turner in *The Spirit of Terrorism and Other Essays*. London: Verso, 2003.

Unit D

New Historicism and Cultural Materialism:

Stephen Greenblatt: "Introduction" in *Renaissance Self –Fashioning.* Chicago: University of Chicago Press, 1980. 1-9.

Alan Sinfield and Jonathan Dollimore: "Foreword" and"Introduction" in *Political Shakespeare: New Essays in CulturalMaterialism.*Ithaca: Cornell, 1985. vii-viii& 2-17.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Suggested Readings:

Barry, Peter. *Beginning Theory.* Manchester and New York: Manchester University Press, 1995.

Culler, Jonathan. *Barthes*. Great Britain: Fontana, 1983.

Derrida, Jacques. *Positions*. Trans. Alan Bass. Chicago: U of Chicago P, 1981.

---. *Speech and Phenomena and Other Essays on Husserl's Theory of Signs*. Trans. David B. Allison. Evanston: Northwestern UP, 1973.

Eagleton, Terry. *Literary Theory: An Introduction*, Minneapolis: University of Minnesota Press, 1983.

---.*Marxism and Literary Criticism*, Berkeley and Los Angeles: University of California Press, 1976.

Hawthorn, Jeremy. *A Concise Glossary of Contemporary Literary Theory*, London: Edward Arnold, 1992.

Jefferson, Ann and David Robey, eds. *Modern Literary Theory,* New York: Barnes and Noble, 1982.

Krishnaswamy et al. *Contemporary Literary Theory: A Student's Companion,* New Delhi: Macmillan, 2000.

Lodge, David (ed.) *Modern Criticism and Theory: A Reader*, London and New York: Longman, 1988. Selden, Raman. *A Reader's Guide to Contemporary Literary Theory,* New Jersey: Prentice-Hall, 1985.

Waugh, Patricia. Literary Theory and Criticism: An Oxford Guide. Oxford UP, 2005.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Course Title: Indian Writings in English
Course Code: SLLCH ENG 01 03 C 12 4004

L	T	P	Credits
4	0	0	4

Objective(s): The different language clusters in India are distinctive but share a common heritage and core identity. Nurturing its plural and diverse traditions, emergent India is engaged in an act of constant and ongoing cultural translation and interpretation.

Indian writing in English reverberates with many voices trying to articulate the essence of Indianness. To quote V. K. Gokak, "Indianness of Indian writing consists in the writer's intense awareness of his entire culture," and that of K. R. Srinivas Iyengar, India or Indianness includes "the choice of subject," "texture of thought and play of sentiment", "the organization of material," and "the creative use of language." This course introduces students to a wide range of Indian Writings in English. Students will be encouraged to read widely for enrichment and enjoyment.

Unit A: Poetry

A. K. Ramanujan
"The Striders"
"Love Poem for a Wife 1"

Nissim Ezekiel
"Poet, Lover, Birdwatcher"
"Night of the Scorpion"

Jayanta Mahapatra
"Hunger"
"A Rain of Rites"

Unit B: Novel

Raja Rao
Kanthapura

Unit C: Drama

Girish Karnad
Nagamandala

Unit D: Short Stories

R.K. Narayan
"An Astrologer's Day" from *Malgudi Days*

Mulk Raj Anand
"The Lost Child" from *The Lost Child and Two Lyrical Stories*

Uma Parmeswaran
"What was Always Hers" from *What was Always Hers*

Bhabani Bhattacharya

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

"Names are not Labels" from *Steel Hawk and Other Stories*

Suggested Readings:

Damodhar, G. *"Search for Identity: An Estimate of Ezekiel's Poetry." Nissim Ezekiel: A Critical Companion*. Ed. G. S. Balarama Gupta. New Delhi: Pencraft, 2012. 79-85. Print

Iyengar, K. R. S. *Indian Writing in English*. New Delhi: Sterling, 1985. Print.

King, Bruce. *Modern Indian Poetry in English*. New Delhi: Oxford University Press, 1987. Print.

Kumar, Akshay. *A. K. Ramanujan: In Profile and Fragment*. Jaipur: Rawat Publications, 2004. Print.

Lal, E.N. *The Poetry of Encounter: Dom Moraes, A.K. Ramanujan and Nissim Ezekiel*. New Delhi: Sterling, 1983.

Mukherjee, Meenakshi.*The Perishable Empire: Essays on Indian Writing in English.* New Delhi: Oxford University Press, 2000. Print.

Mehrotra, A. K. ed. *An Illustrated History of Indian Literature in English*. New Delhi: Permanent Black, 2003. Print.

Mukherjee, Meenakshi.*Twice Born Fiction*. New Delhi: Heinemann, 1971. Print.

Naik, M. K. ed., *Aspects of Indian Writing in English*. Delhi: Macmillan, 1979. Print.

Naik, M.K.: *Raja Rao*. New York: Twayne Publishers Inc., 1972. Print.

Nehru, JawaharLal. *Discovery of India*. India: OUP, 1994 (6thed.). Print.

Parthasarathy, R. ed., *Ten Twentieth Century Indian Poets*, Delhi: Oxford University Press, 1976. Print.

Rao, Raja. *Kanthapura*. Delhi: Orient Coursebacks, 1970. Print.

Sethi, Rumina: *Myths of the Nation*. Oxford: Claredon Press, 1999.Print.

Shyamala, A. Narayan: *Raja Rao (Man and His Works)*. New Delhi: Sterling, 1988. Print.

Tharu, S. and K. Lalitha, *Women Writing in India*: 600BC to the Present, 2 vols. New Delhi: Oxford University Press, 1995. Print.

Course Title: Modern World Literature
Course Code: SLLCH ENG 01 03 C 13 4004

L	T	P	Credits
4	0	0	4

Objective(s): To introduce to the students to a diversity of World literatures, their cultural specificities and overlaps; to imbibe in learners the critical abilities, and literary insights through poetry, drama and fiction.

Unit A:

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Derek Walcott

"The Sea is History," "The Saadhu of Couva;" "A City's Death by Fire"

Octavio Paz

"A Tree Within,' "No More Cliches," "Tomb of Amir Khusru" (from Collected Poems of Octavio Paz)

Pablo Neruda

"A Song of Despair," "Enigmas" "Brown & Agile Child" (from Collected Poems of Pablo Neruda)

Unit B:

Gabriel Garcia Marquez

Love in the Time of Cholera

Unit C:

Mo Yan

The Garlic Ballads

Unit D:

Bertolt Brecht

Mother Courage and Her Children

Suggested Readings:

Ashcroft, Bill Ashcroft et al, eds. *The Post-Colonial Studies Reader,* London and New York: Routledge, 2006.

---. *Key Concepts in Post-Colonial Studies,* London and New York: Routledge, 1998.

Bhabha, Homi. *Nation and Narration*, London and New York: Routledge, 1990.

Birns, Nicholas. "The Solid Mandala and Patrick White's Late Modernity." *Transnational Literature*. 4.1, November 2011. <http://fhrc.flinders.edu.au/transnational/home.html>

Brydon, Diana and Helen Tiffin. *Decolonising Fictions*. Sydney: Dangaroo, 1993.

Jain, Shalini. "A Posthumanist Response to Amitav Ghosh's *Sea of Poppies.*"*Kontur.* no.22. 201.

Johnson, Manly. "*Patrick White's Fiction: The Paradox of Fortunate Failure"* (review). *MFS Modern Fiction Studies* . 33.4 (1987).764-765

King, Bruce, ed. *The New National and Postcolonial Literatures: An Introduction,* Oxford: Clarendon, 1996.

McMahon, Elizabeth and Brigitta Olubas, eds. *Remembering Patrick White: Contemporary Critical Essays.* Amsterdam: Rodopi, 2010.

Course Name: History of English Literature-II (Victorian Age to Postmodern Age)
Course Code: SLLCH ENG 01 03 C 14 3003

L	T	P	Credits
3	0	0	3

Objective(s): To study the socio-political, cultural and literary trends influencing English literature during various phases of its development from Victorian age onwards.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Unit-A: Victorian Age (Early Victorians)

Socio-Political and Literary Characteristics of Victorian Age

Impact of Industrialization

Conflict between Science and Faith

Victorian Compromise

Important Early-Victorian Poets and their Works

Early Victorian Novelists

Unit-B: Victorian Age (Later Victorians)

Pre-Raphaelites or Later Victorian Poets

Novelists of the Later Victorian Age

Victorian Prose and Criticism

Art for Art's Sake and other movements

Influence of T.B. Macaulay, Thomas Carlyle and John Ruskin

Unit-C: Modern Age and Literature

The Spirit of Modern Age

Intellectual and Aesthetic Background of the Age

Socio-Political Context of the Age

Modern Playwrights, Poets and their Important Works

Imagism and Symbolism

Great Depression and Age of Anxiety

Modernist Criticism

Modern Novel and Novelists

Unit-D: Post-Modern Age and Literature

Understanding Postmodernism

Intellectual Background

Post-War Literature

Theatre of Absurd

Angry Young Men Generation

Movement Poets and their Poetry

Suggested Readings:

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Abrams, M.H. and Geoffrey Galt Harpham. *A Glossary of Literary Terms* (9th Edition). Cengage Learning, 2008.

Dahiya, Bhim S. *A New History of English Literature*. New Delhi: Doaba Publications, 2006.

Daiches, David. *A Critical History of English Literature*. Vol. I-IV. New Delhi: Allied Publishers, 2005.

Ford, Boris. Ed. *The New Pelican Guide to English Literature*, Vol. 6: *From Dickens to Hardy*. Pelican Books, 1957.

---. Ed. *The New Pelican Guide to English Literature, Vol. 7: The Modern Age, James to Eliot*. Penguin, 1990.

---. Ed. *The New Pelican Guide to English Literature, Vol. 8. The Present: From Orwell to Naipaul.*

---. Ed. *Romantics to Early Victorians*. Cambridge University Press, 1990.

---. Ed. *The Cambridge Cultural History of Great Britain, Volume 8*. Cambridge University Press, 1992.

---. Ed. *The Cambridge Cultural History of Great Britain, Volume 9, Modern Britain*. Cambridge University Press, 1992.

Hudson, William Henry. *An Outline History of English Literature*. New Delhi: Atlantic Publishers.

Long, William J. *English Literature: Its History and Significance*. New Delhi: Kalyani Publishers, 2009.

Richetti, John. Ed. *The Cambridge History of English Literature*. Cambridge University Press, 2005.

Course Name: Research Methodology
Course Code: SLLCH ENG 01 03 E 07 3003

L	T	P	Credits
3	0	0	3

Objective(s): To orient the students towards the appropriate use of research methodology, techniques and stylesheet for carrying out literary research. It will help the students understand basics of literary research and bibliographical aspects of the research.

Unit A

Literary Research

Literary Research: Meaning, Scope and limitations

Approaches and Methods of Literary Research

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Research Methodology:

Research Methodology—Definition and Scope

Types of researches

Plagiarism and Intellectual Property Rights;

Authenticity and validity of research

Unit B

Citations:

Citing articles, books, journals, internet sources within the text, in works cited and in bibliography;

Referencing quotes from different sources;

Formulating end-notes

Unit C

How to write a Research Paper:

Framing a methodology

Incorporating review of literature

Illustrations and exemplification

Formulating the Objective(s)/hypothesis

Textual analysis

Ways of arriving at conclusions

Editing and Proof Reading

Suggested Readings:

1. Gibaldi, Joseph (7th ed. 2009), *MLA Handbook for Writers of Research Courses*, New York: MLA Association.

Course Title: **Literature of Protest**
Course Code: SLLCH **ENG 01 03 E 08 3003**

L	T	P	Credits
3	0	0	3

Objective(s): The purpose here is to introduce our students with the revolutionary potential of literature. The way literature can work as a progressive force in the society and assumes the role of a vehicle of protest against hegemonic elements will be really interesting. This course assures a sound imagination to the students along with enjoyment and learning.

Unit A

Faiz Ahmad Faiz

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

"In Search of Vanished Blood"

"We Shall See"

Agha Shahid Ali:

"Postcard from Kashmir"

"Farewell"

Unit B

Namdeo Dhasal

"Cruelty"

"Kamatipura"

Arun Kolatkar

"The Shit Sermon"

"Meera"

Unit C

Bhudhan: A Play by Denotified Chharas by Dakshin Bajarange (translated by Sonal Baxi)

Suggested Readings:

Ali, Agha Shahid. *The Country without a Postoffice*. New Delhi: Penguin, 2013.

Devy, G N. *Painted Words: An Anthology of Tribal Literature*. New Delhi: Penguin India, 2003.

Dhasal, Namdeo. *Poet of the Underworld*. Mumbai: Lavanaya Pub, 2000.

Kolatkar, Arun. *Reading Together: Kala Ghoda Poems*. Mumbai: Pras Pub., 2004.

Kumar, Akshaya. *Poetry, Politics and Culture: Essays on Indian Texts and Contexts*. New Delhi: Routledge, 2009.

Schwartz, Henry. *Constructing the Criminal Tribe in Colonial India: Acting Like a Thief*. Wiley Pub. 2010.

Course Title: **Introduction to Linguistics**
Course Code: SLLCH **ENG 01 03 E 09 3003**

L	T	P	Credits
3	0	0	3

Objective(s): The course has been designed to enable the learners to understand the nuances of language structure and to introduce the basics of Linguistics. Phonetics has been added for the understanding of fundamental aspects of communication.

Unit A: Basics of Linguistics

Scope and nature of linguistics;

Branches of linguistics;

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Language and Communication.

Definition of language; Characteristics of language.

Concepts of Syntagmatic and Pardigmatic Relations; Synchronic and Diachronic relations; Competence and Performance; Langue and Parole.

Unit B:

Part-I: Introduction to Morphology

Morphology—Definition and scope

Concept of Morpheme, Morph and Allomorph;

Relationship between Morph and Morpheme; Conditioning of Allomorphs; Types of Morph;

Basic constituents of word structure—Root, Stem, Base, Affixes, Types of Affixes;

Inflectional vs. Derivational Morphology; Exercises on morphological analysis.

Important word formation processes in English—Back-formation, Derivation, Reduplication, Conversion, Clipping, Acronymy, Blending and Compounding

Part-II: Transformational Generative Grammar

Transformational generative grammar: definition, scope and rational.

Basic sentences and transformations.

Transformation process: Negation, interrogation, passive, emphatic etc.

Competence and performance. Deep structure and surface structure.

Tree-Diagrams; Ambiguity and its Types

Unit C: Introduction to Phonetics

Definition, aim and scope of Phonetics;

Organs of Speech;

Air-stream mechanism,

Place of articulation and manner of articulation;

Phonemes and allophones;

Classification of speech sounds: vowels and consonants; Phonetic transcription

Suggested Readings:

Anderson, S. R. *Amorphous Morphology*. Cambridge University Press, 1992.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Aronoff, M. *Word Formation in Generative Grammar*. Cambridge, Massachusetts: MIT Press, 1976.

Bansal, R.K. and Harrison, J.B. *Spoken English for India*. New Delhi: Orient Longman, 1972.

Bloomfield, Leonard. *Language*. Allen & Unwin, 1993.

Fromkin, V. Ed. *Linguistics: An Introduction to Linguistic Theory*. Cambridge: Blackwell, 2000.

Gimson, A.C. and Ramsaran, Susan. *An Introduction to the Pronunciation of English,* ELBS, 1992.

Hockett, C.F. *A Course in Modern Linguistics*. Macmillan, 1958.

Jacobs, R. A. & Rosenbaum. *English Transformational Grammar*. Waltham, Massachusetts: Blackwell Publishing Company, 1970.

Katamba, F. *Morphology*. Basingstorke: MacMillan, 1993

Lyons, John. *An Introduction to Theoretical Linguistics*, Macmillan, 1958

O'Connor, J.D. *Phonetics*, London: Penguin, 1991.

---. *Better English Pronunciation*, Cambridge University Press, 2000.

Roach, Peter. *English Phonetics and Phonology*. Third Edition. Cambridge University Press, 1983. Reprint, 2004.

Sethi, J and D.V. Jindal. *A Handbook of Pronunciation of English Words*. New Delhi: Prentice Hall of India, 1993.

Sethi, J. and P.V. Dhamija. *A Course in Phonetics and Spoken English*. New Delhi: Prentice Hall of India, 1990.

Spencer, A. *Morphological Theory*. Oxford: Blackwell, 1993.

Verma, S.K. and N. Krishnaswamy. *Modern Linguistics*. Oxford, 1994.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Semester-IV

Course Title: Indian Literary Criticism
Course Code: SLLCH ENG 01 04 C 15 4004

L	T	P	Credits
4	0	0	4

Objective(s): The purpose of this course is to introduce our students with indigenous criticism and critical theories. Here the selection of texts is carried out keeping in mind two vital Objective(s): first, antiquity and contemporary are brought together; second, various schools of criticism provide contestation grounds for each other. It will also provide the students an opportunity to study criticism available in translation from other Indian languages.

Unit A: Sanskrit Aesthetics

Introduction to various schools of Sanskrit Criticism: Rasa, Dhvani, Alamkara, Riti, Vakrokti and Auchitya.

Bharata: *Natyashastra,* tr. Manomohan Ghosh (chapter 6: 'Sentiments) revd. 2nd ed. (Calcutta: Granthalaya, 1967), vol. I, pp 100-18.

Unit B: Nativism

G.N. Devy: "Tradition and Amnesia" in *After Amnesia*.

Bhalchander Nemade: "*Sahityateel Desiyata"* (Nativism in Literature) in *Nativism: Essays in Criticism*. New Delhi: Sahitya Akademi, 1997. 233-254.

Unit C: Postcolonial Theory in India

Namwar Singh: "Decolonising the Indian Mind" translated by Harish Trivedi and published in *Indian Literature*. Vol. 35, No. 5, 1992. 145-157.

Ania Loomba: "Challenging Colonialism" in *Colonialism / Postcolonialism.* London: Routledge, 1998. 154 – 212. (Selected excerpts)

Unit D: Marxism in India

Munshi Premchand: 'The Aim of Literature', Presidential Speech given at the First Progressive Writers' Conference, Lucknow, 9 April 1936, tr. Francesca Orsini, in *The Oxford India Premchand*. New Delhi: OUP, 2004.

Aijaz Ahmad: **"**Literary Theory and 'Third World Literature': Some Contexts" in *In Theory: Classes, Nations, Literatures*. New Delhi: OUP, 1992. Print. (Selected excerpts)

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Suggested Readings:

Bharata. *Natyashastra,* tr. Manomohan Ghosh. Calcutta: Granthalaya, 1967, vol. I, pp 100-18.Chari, V.K. *Sanskrit Criticism*. New Delhi: Motilal Banarsidass Pvt. Ltd., 1993. Print.

Chaitananya, Krishna. *New History of Sanskrit Literature*. 2nd. ed. New Delhi: Manohar, 1977. Print.

Devy, Ganesh N. *After Amnesia*. Mumbai: Orient Longman, 1992. Print.

---. "Swa and Para: Self and the Other." *Of Many Heroes*. Mumbai: Orient Longman, 1998. 143-147. Print.

Kane, P. V. *History of Sanskrit Poetics*. 3rd. ed. New Delhi: Motilal Banararsidas, 2002. Print.

Kapoor, Kapil and Nalini M. Ratnam. *Literary Theory: Indian Conceptual Framework*. New Delhi: Affiliated East-West Press, 1998. Print.

Loomba, Ania. *Colonialism/ Postcolonialism*. 2nd ed. London and New York: Routledge, 2005. Print. Ahmad, Aijaz. *In Theory: Classes, Nations, Literatures*. New Delhi: OUP, 1992. Print.

Nemade, Bhalchander. "Nativism in Literature." Trans. and ed. by Arvind Dixit and Makarand Paranjape. *Nativism: Essays in Criticism*. New Delhi: Sahitya Akademi. 233-254. Print.

Rayan, Krishna. *Sahitya, A Theory: For Indian Critical Practice*. New Delhi: Sterling Publishers, 1987. Print.

Shastri, Gaurinath. *A Concise History of Classical Sanskrit Literature*. Delhi: Motilal Banarsidass, 1998.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Course Title: Modern Indian Literature in English Translation
Course Code: SLLCH ENG 01 04 C 16 4004

L	T	P	Credits
4	0	0	4

Objective(s): The different language clusters in India are distinctive but share a common heritage and core identity. Nurturing its plural and diverse traditions, emergent India is engaged in an act of constant and ongoing cultural translation and interpretation. This course introduces students to a wide range of Indian Writings in English Translation. Students will be encouraged to read representative Indian literary texts in English translation for enrichment and enjoyment.

Unit A: Fiction

Rahi Masoom Reza: *A Village Divided*

Unit B: Drama

Vijay Tendulakar: *Silence! The Court is in Session*

Unit C: Poetry

Rabindranath Tagore:

"Where the Mind is without Fear," "Brink of Eternity," "A Moment's Indulgence"

Suryakant Tripathi 'Nirala':

"Breaking Stones" ("Todti Patthar"), "Mushroom" ("Kukurmutta") and "Remembering Saroj" (Saroj Smriti')

Unit D: Short Story

C.S. Lakshmi 'Ambai':

"My Mother Her Crime" and "A Kitchen in the Corner of the House" and "Once Again" from *A Purple Sea*

Vaikom Muhammad Basheer:

"The Rightful Inheritors of the Earth", "The Invaluable Moment" and "The World Renowned Nose"

Suggested Readings:

Alien, Richard and Harish Trivedi. Eds. *Literature and Nation: Britain and India, 1800-1990*. London: Routledge, 2000.

Ambai. *A Purple Sea*. Trans. Lakshmi Holmstrom. Chennai: Affiliated East -West Press, 1992.

Basheer, Vaikom Muhammad. *Basheer Fictions*: *Short Stories.* Ed. Vanajam Ravindran. New Delhi: Katha, 1996.

Das, S. K. *History of Indian Literature*. New Delhi: Sahitya Akademi, 1991.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Dharwadker, Vinay and A. K. Ramanujan. Eds. *The Oxford Anthology of Modern Indian Poetry*. New Delhi: OUP, 1994.

Dharwadker, Vinay. Ed & Trans. *Kabir: The Weaver's Songs*. New Delhi: Penguin Books, 2003.

Jaffari, Ali Sardar. Ed. *Deevan-e-Ghalib*. New Delhi: Rajkamal, 1988/2012.

Mukherjee, Sujit. *Towards a Literary History of India*. Shimla: llAS, 1975.

Nirala, Suryakant Tripathi. *A Season on the Earth: Selected Poems of Nirala*. Trans. David Rubin. New Delhi: OUP, 2003.

Ramakrishnan, E. Y. *Locating Indian Literature: Texts, Traditions, Translations*. Hyderabad: Orient Blackswan Pvt. Ltd, 2011.

Sadana, Rashmi. *English Heart, Hindi Heartland: The Political Life of Literature in India*. New Delhi: Permanent Black, 2012.

Satchidanadan, K, Ed. *Signatures: One Hundred Indian Poets*. New Delhi: NBT, 2000.

Thapar, Romila. Sakuntala: Texts, Readings, Histories. New Delhi: Kali for Women. New Delhi: 1999.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Course Title: Postcolonial Theory and Literature
Course Code: SLLCH ENG 01 04C 17 4004

L	T	P	Credits
4	0	0	4

Objective(s): This course intends to familiarize students with literatures of two erstwhile colonies – Asia and Africa– which have remained outside discourse making for a long time. Also it proposes to give a voice to the indigenous efforts towards decolonizing the local people from colonial and neo-colonial hegemonies. The course is introduced as a revisionary discipline which primarily focuses on interrogating the Western canon.

Unit A

Edward Said

"Introduction" to *Orientalism*

Unit B

Frantz Fanon

Black Skin White Masks

Unit C

Chinua Achebe

Things Fall Apart

Unit D

Nadine Gordimer

My Son's Story

Suggested Readings:

Anderson, Benedict. Imagined Communities: Reflections on the Origin and Spread of Nationalism. Verso, 1983.

Ashcroft, Bill Ashcroft et al, eds. *The Post-Colonial Studies Reader,* London and New York: Routledge, 2006.

---. *Key Concepts in Post-Colonial Studies,* London and New York: Routledge, 1998.

Brydon, Diana and Helen Tiffin. *Decolonising Fictions*. Sydney: Dangaroo, 1993.

Bhabha, Homi. *Nation and Narration*, London and New York: Routledge, 1990.

Brennan, Timonthy. *Salman Rushdie and the Third World,* New York: St. Martin's Press, 1989.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

King, Bruce, ed. *The New National and Postcolonial Literatures: An Introduction,* Oxford: Clarendon, 1996.

Killam, G. D. *The Novels of Chinua* Achebe. Studies in African Literature Series, London: Heinemann, 1978.

Said, Edward. "Introduction" to *Orientalism,* London: Routledge, 1978. 1-28.

Course Name: **Dissertation**
Course Code: SLLCH **ENG 01 04 C 18 0044**

L	T	P	Credits
0	0	4	4

Objective(s): To familiarize the students with the art of academic writing and exposing them to the practical understanding of research, research methodology, referencing, different types of citations and other important aspects of MLA Handbook. It will also help the students to develop their area of interest and perform a mini research on the same.

Length of the Dissertation: 40 to 50 pages in not less than ten thousand words.

Supervisors: Students will be assigned Supervisors from amongst the faculty of the department depending upon the specialization to guide them to write the dissertation.

Evaluation and Viva-Voce: The dissertation will be evaluated by the examiner(s) and Viva-Voce shall be conducted on having the satisfactory report from the examiner(s).

Duration: Students will have to submit the dissertation before the commencement of end-semester examinations of the fourth semester.

Course Name: Literature and Gender

Course Code: SLLCH ENG 01 04 E 10 3003

L	T	P	Credits
3	0	0	3

Objective(s): The objective of this course is to make the students aware of the ways gender has historically determined one's position in society and how class and race complicate such determinations. Further, it is also the objective to familiarize the students with the different debates and developments in the study of gender.

Unit A

Mahasweta Devi

Breast Stories

Unit B

Alice Walker

The Color Purple

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Unit C

A. Revathi

The Truth about Me: A Hijra Life Story

Suggested Readings:

Beja, Morris ed. *To the Lighthouse: A Collection of Critical Essays*. London: Macmillan, 1970.

Dattani, Mahesh. *Collected Plays.* New Delhi: Penguin, 2000.

Foucault, Michel. *The History of Sexuality- 1*. London: Penguin, 1998.

Gilbert, Sandra and Susan Gubar: *The Madwoman in the Attic*. USA: Yale University Press, 1980.

Moody, A.D. *Virginia Woolf*: Michigan: University of Michigan, Oliver and Boyd, 1963.

Raj Rao, R. *The Boyfriend*. Delhi: Penguin Books.

Rege, Sharmila. *Writing Caste: Writing Gender.* Delhi: Zubban, 2006.

Rubenstein, Robert. *The Novelistic Vision of Doris Lessing.* Illinois: University of Illinois Press, 1979.

Ruthwen, K.K. *Feminist Literary Studies*: *An Introduction*. London: Cambridge University Press, 1984.

Showalter, Elaine. *A Literature of Their Own*. London: Virago, 2009.

Stubbs, Patricia. *Women and Fiction*. Michigan: Harvester Press, 1979.

Supreme Court Verdict on Third Gender (WRIT PETITION (CIVIL) NO.400 OF 2012). http://supremecourtofindia.nic.in/outtoday/wc40012.pdf.

Course Title: Comparative Literature and Translation Studies

L	T	P	Credits
3	0	0	3

Course Code: SLLCH ENG 01 04 E 11 3003

Objective(s): The course intends to orient the students to the Translation Studies and Comparative Literature. The prescribed texts will be studied to understand the essential dimensions of translation as performance and its limitations.

Unit A: Comparative Literature:

Genesis and definition of Comparative Literature

Growth of Comparative Literature as a discipline

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Domain of Comparative Literature

Contemporary Approaches to Literature

Contemporary Issues in Comparative Literature

Unit B: Translation Studies:

Origin, Concept, History and Growth of Translation Studies

Translation, Translation Studies, Translation Theory: Introduction

Translation: Nature and Types—Semantic / Literal translation, literary translation, communicative translation, transcreation and transliteration

Equivalence, Language variety, Dialect, Idiolect, Register, Style, Mode, Code mixing / Switching

Unit C: Theoretical Dimensions of Translation Studies

Approaches to Translation

Cultural and ideological issues in translation

Contemporary Debates in Translation Studies

Suggested Readings:

Abrams, M.H. *A Glossary of Literary Terms*.Cengage Learning, 2014.

Asaduddin, M. "Translation and Indian Literature: Some Reflections." *Translation Today*.Vol. 3 Nos. 1 & 2, 2006 © CIIL 2006.

Baker, Mona. ed. *Critical Readings in Translation Studies*. London/New York: Routledge, 2010.

Basnett, Susan. Comparative Literature: A Critical Introduction. Oxford: Blackwell, 1993.

Bassnett, S. & A. Lefevre. eds. *Translation, History and Culture*. Princeton: UP, 1990.

Bassnett, Susan. *Translation Studies*. London: Routledge, 2002.

Bernheimer, Charles.ed. Comparative Literature in the Age of Multiculturalism. Baltimore: Johns Hopkins, 1995.

*De, S.K. Sanskrit Poetics as a Study of Aesthetics.*Berkeley: University of California Press, 1963.

Dev, Amiya. The Idea of Comparative Literature in India. Calcutta: Papyrus, 1984.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Devy, G.N. "Indian Literature in English Translation: An Introduction."*The Journal of Commonwealth Literature*.March 1993, 28: 123-138.

Fowler, Roger. *Dictionary of Literary Terms,* London: Routledge, 1995.

Jost, Francois.*Introduction to Comparative Literature.* Bobbs-Merill, Indianapolis, 1974.

Majumdar, Swapan. Comparative Literature: Indian Dimensions. Calcutta: Papyrus, 1987.

Mukherjee, *S*ujit. *Dictionary of Indian Literature*. Hyderabad: Orient Blackswan, 1998.

Munday,Jeremy.*Introducing Translation Studies: Theories and Applications*. London: Routledge, 2001.

Rahman, Anisur. "Indian Literature(s) in English Translation: The Discourse of Resistance and Representation." *Journal of Postcolonial Writing*. Vol. 43, No. 2 August 2007, pp. 161–171© 2007 Taylor & Francis.

Shipley, J.T. *Dictionary of World Literature.* Genesis Publishing, 1953.

Venuti, Lawrence. *The Translation Studies Reader*. London and New York: Routledge, 2000.

Weisstein, Ulrich. Comparative Literature and Literary Theory. Bloomington: Indiana University Press, 1963.

Wellek, Rene and Austin Warren. Theory of Literature. New York: Harvest, 1968.

Williams, Raymond. *Keywords*: A Vocabulary of Culture and Society. London: Routledge, 2011.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Course Title: Introduction to Cultural Studies

L	T	P	Credits
3	0	0	3

Course Code: SLLCH ENG 01 04 E 12 3003

Objective(s): The study of the prescribed texts will inform the students of the origin, history and the paradigms of Culture and Cultural Studies. The course is divided into units on the basis of a particular focal area/theme or phase of the Cultural Studies. Students are expected to develop an understanding regarding different approaches to the discipline after reading the prescribed texts.

UNIT A

Stuart Hall

"Cultural Studies and its Theoretical Legacies"

UNIT B

Raymond Williams

"Culture is Ordinary"

UNIT C

Walter Benjamin

"The Work of Art in the Age of Mechanical Reproduction"

UNIT D

Theodore Adorno and Max Horkheimer

"The Culture Industry: Enlightenment and Mass Deception"

Suggested Readings:

Adorno, Theodore and Max Horkheimer, *The Dialectic of Enlightenment.* USA: Stanford University Press, 2002.

Barker, Chris. *Cultural Studies: Theory and Practice*. London: Sage, 2012.

Benjamin, Walter. *Illuminations*, trans. H. Zohn, ed. with intro. by Hannah Arendt, NY: Schocken, 1969.

De Certeau, Michel. *The Practice of Everyday Life*, trans. Steven Rendall. California: University of California Press, Berkeley, 2002

During, Simon. Ed. *The Cultural Studies Reader*. Routledge, 1999.

---. Cultural Studies: A Critical Introduction. Psychology Press, 2005.

Eagleton, Terry. *Ideology: An introduction* London and New York: Verso, 1991.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Hall, Stuart. *Representation: Cultural representations and Signifying Practices*. London: Sage (ed), 1997.

Raymond Williams: **"**Culture is Ordinary" from *Resources of Hope: Culture, Democracy, Socialism.* London: Verso, 1989. Pp. 3-14.

Ryan, Michael. *Cultural Studies: A Practical Introduction.* John Wiley and Sons, 2010.

Said, Edward. *Orientalism* New York*:* Vintage Books/ Random House. 1978.

Spivak, Gayatri Chakravorty. *In Other Words: Essays in Cultural Politics*. New York: Methuen, 1988.

Storey, John. "Introduction: The Study of Popular Culture and Cultural Studies" in (ed) *Cultural Theory and Popular Culture: A Reader*. Harlow: Pearson Education Ltd. (2009)

Williams, Raymond. *Culture and Society*. London: Fontana, 1986.

---. *Keywords: A Vocabulary of Culture and Society* Rev. ed. New York: Oxford University Press, 1988. pp 87-93.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Course Name: Literature and Theatre
Course Code: SLLCH **ENG 01 04 E 13 3003**

L	T	P	Credits
3	0	0	3

Objective(s): The course will sensitize the students about theatre and literature as a tool of personality development and inter-personal, intercultural and oral communication. The course would focus on history of world theatre in selected periods, basic theories of theatre and their relationships through acting, introspection and interaction.

Unit - A

Antonin Artaud's Concept of "Theatre of Cruelty"

Konstantin Stanislavsky: *An Actor Prepares*

Unit - B

Bertolt Brecht's Concept of "Epic Theatre"

Jerzy Grotowski: *Towards a Poor Theatre*

Peter Brook: *The Empty Space*

Unit - C

A project/Assignment which may comprise any one of the following:

Performance of a play

Detailed review of a production seen by the students

Artistic work on a hypothetical production such as preparing a director's script from a printed original, set design and costume design

Transcription of the performance text of a folk/traditional Indian play

Suggested Readings:

Bermel, Albert. *Artaud's Theatre of Cruelty (Plays and Playwrights)*. Methuen Drama, 28 June 2001.

Brook, Peter. *The Empty Space: A Book About the Theatre: Deadly, Holy, Rough, Immediate*. Touchstone; Reprint edition, December 1, 1995.

Farley, P., Darius L Swann, Phillip B Zarrilli. Eds. *Indian Theatre: Tradition of Performance*. New Delhi: MBP, 1990.

Glynne Wickham, A History of the Theatre (2nd ed., Phaidon, Oxford, 1992);

Grotowski, Jerzy. Towards a Poor Theatre (Eyre Methuen Drama Books) (Performance Books). Methuen Drama; 2nd Revised edition, 10 April 1975.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Oscar Brockett, History of the Theatre (7th ed., Holt, Rinehart & Winston, NY, 1995)

Rangacharya, Adya. *The Indian Theatre.* New Delhi: NBT, 1971.

Rangacharya, Adya. Tr. *Natyashastra*. New Delhi: Munshiram Manoharlal, 1996.

Stanislavski, Constantin. *An Actor Prepares*. Routledge; Reprint edition 1 April 1989.

Vatsyayan, Kapila. *Traditional Indian Theatre: Multiple Streams*. (Hindi Translation: Paramparik Bhartiya Rangmanch: Anant Dharayen, Tr. Badiuzzama), New Delhi: National Book Trust, 1995.

M.A. English Syllabus approved in the meeting of BOS held on 3rd May 2016 and AC in its meeting held on 27th May 2016.

Physics

Department of Physics, CUH

Syllabus for M.Sc. (Physics)
according to Choice Based Credit System (CBCS)

Course Type

- Core Course (CC)
- Generic Elective Course (GEC)
- Discipline Centric Elective Course (DCEC)
- Skill Enhancement Elective Course (SEEC)

Total Credits: 88

Semester wise distribution of credits: 20 + 22 + 22 + 24

Semester I

Course	Course Code	Credits	Course Type
Mathematical Methods in Physics	SPMS PHY 01 101 CC 3104	4	CC
Classical Mechanics	SPMS PHY 01 102 CC 3104	4	CC
Quantum Mechanics	SPMS PHY 01 103 CC 3104	4	CC
Laboratory I	SPMS PHY 01 104 CC 0044	4	CC
Numerical Methods and Programming	SPMS PHY 01 101 GEC 3104	4	GEC*
Modern Optics	SPMS PHY 01 102 GEC 3104	4	GEC*
Introduction to Experimental Physics	SPMS PHY 01 103 GEC 3104	4	GEC*

Semester II

Course	Course Code	Credits	Course Type
Statistical Mechanics	SPMS PHY 01 201 CC 3104	4	CC
Classical Electrodynamics	SPMS PHY 01 202 CC 3104	4	CC
Electronics	SPMS PHY 01 203 CC 3104	4	CC
Laboratory II	SPMS PHY 01 204 CC 0044	4	CC
Latex for Science & Mathematics	SPMS PHY 01 201 GEC 1102	2	GEC*
Environmental Physics	SPMS PHY 01 202 GEC 1102	2	GEC*
Computational Physics	SPMS PHY 01 201 DCEC 3104	4	DCEC
Advanced Quantum Mechanics I	SPMS PHY 01 202 DCEC 3104	4	DCEC

This GEC* course can only be taken by the students of other departments. The department may offer more than one elective courses depending on specialisation and strength of faculty members, and the student has to opt one of them.

Semester III

Course	Course Code	Credits	Course Type
Atomic, Molecular Physics and Laser	SPMS PHY 01 301 CC 3104	4	CC
Nuclear & Particle Physics	SPMS PHY 01 302 CC 3104	4	CC
Solid State Physics	SPMS PHY 01 303 CC 3104	4	CC
Laboratory III	SPMS PHY 01 301 DCEC 0044	4	DCEC
Physics of Electronic Material and Devices	SPMS PHY 01 302 DCEC 3104	4	DCEC
Electronic Communication	SPMS PHY 01 303 DCEC 3104	4	DCEC
Thin Film and Integrated Devices	SPMS PHY 01 304 DCEC 3104	4	DCEC
Laser & Spectroscopy	SPMS PHY 01 305 DCEC 3104	4	DCEC
Microprocessor and Microcontroller	SPMS PHY 01 306 DCEC 3104	4	DCEC
Physics of Nanomaterials	SPMS PHY 01 307 DCEC 3104	4	DCEC
Nuclear Physics: Interaction and Model	SPMS PHY 01 308 DCEC 3104	4	DCEC
Advanced Quantum Mechanics II	SPMS PHY 01 309 DCEC 3104	4	DCEC
Advanced Statistical Mechanics	SPMS PHY 01 310 DCEC 3104	4	DCEC
Paper Presentation	SPMS PHY 01 301 GEC 1102	2	GEC

Semester IV

Course	Course Code	Credits	Course Type
Project/Dissertation	SPMS PHY 01 401 PROJ 00024	24	PROJECT
Nonlinear Dynamics	SPMS PHY 01 402 SEEC 3100	—	SEEC
Astrophysics, Gravitation and Cosmology	SPMS PHY 01 403 SEEC 3100	—	SEEC

Mathematical Methods in Physics

Course Code: SPMS PHY 01 101 CC 3104

Matrices, Group Theory and Tensors:
Linear vector spaces, matrix spaces, linear operators, eigenvectors and eigenvalues, matrix diagonalization, special matrices.
Symmetries and groups, multiplication table and representations, permutation group, translation and rotation groups, O(N) and U(N) groups.
Tensors: Coordinate transformations, scalars, contravariant and covariant vectors, mixed and covariant tensor of second rank, addition, subtraction and contraction of tensors, quotient rule. Christoffel symbols, transformation of Christoffel symbols, covariant differentiation, Ricci's theorem, divergence, Curl and Laplacian tensor form, Stress and strain tensors, Hook's law in tensor form.

Second Order Differential Equations and Special functions:
Separation of variables-ordinary differential equations, singular points, series solutions leading to Legendre, Bessel, Hermite, Laguerre functions as solutions. Orthogonal properties and recurrence relations of these functions. Spherical harmonics and associated Legendre polynomials. Sturm-Liouville systems and orthogonal polynomials. Wronskian linear independence and linear dependence.

Complex Variables:
Functions of complex variable, Limits and continuity, differentiation, Analytical functions, Cauchy-Riemannn conditions, Cauchy Integral theorem, Cauchy integral formula, Derivatives of analytical functions, Liouville's theorem. Power series Taylor's theorem, Laurent's theorem. Calculus of residues–poles, essential singularities and branch points, residue theorem, Jordan's lemma, singularities on contours of integration, evaluation of definite integrals.

Integral Transforms:
Fourier Transforms: Development of the Fourier integral from the Fourier Series, Fourier and inverse Fourier transform, Simple Applications: Finite wave train, Wave train with Gaussian amplitude, solution of wave equation as an application. Convolution theorem. Intensity in terms of spectral density for quasi monochromic EM Waves, Momentum representation. Laplace transforms and their properties. Convolution theorem. Application of Laplace transform in solving linear, differential equations with constant coefficient, with variable coefficient and linear partial differential equation.

References:
1. **George Arfken**, Mathematical Methods for Physicists, Academic Press.
2. **L. A. Pipe**, Applied Mathematics for Engineers and Physicists, McGraw Hill.
3. **Merle C. Potter and Jack Goldberg**, Mathematical Methods, Prentice Hall of India.
4. **Fredrick W. Byron and Robert W. Fuller**, Mathematics of Classical and Quantum Physics, Dover Publications.
5. **E. Kreyszig**, Advanced Engineering Mathematics, John Wiley & Sons.
6. **K. F. Riley, M. P. Hobson, and S. J. Bence**, Mathematical methods for Physicists and Engineers Cambridge University Press.

Classical Mechanics

Course Code: SPMS PHY 01 102 CC 3104

Lagrangian Equation of Motion & Central Force Problem:
Newtonian mechanics of one and many particle systems, Virtual work, Constraints: holonomic and non-holonomic, D'Alembert's Principle and Euler-Lagrange Equation of motion, velocity dependent potentials, simple applications of Lagrangian formulation. Hamilton Principle, Calculus of Variations, Derivation of Lagrange's equation from Hamilton's principle. Conservation theorems and Symmetry Properties, Noether's theorem.
Two body central force problem: Reduction to equivalent one body problem, equation of motion and first integrals, Equivalent one-dimension problem and classification of orbits. Inertial and Non-inertial frame of references, Coriolis force.

Hamilton's Equations of Motion:
Generalized momentum, Legendre transformation and the Hamilton's Equations of Motion, simple applications of Hamiltonian formulation, cyclic coordinates, Routh's procedure, Hamiltonian Formulation of Relativistic Mechanics, Derivation of Hamilton's canonical equation from Hamilton's variational principle. The principle of least action.

Canonical Transformation and Hamilton-Jacobi Theory:
Canonical transformation, integral invariant of Poincare, Lagrange's and Poisson brackets as canonical invariants, equation of motion in Poisson bracket formulation. Infinitesimal contact transformation and generators of symmetry, Liouville's theorem. Hamilton-Jacobi equation and its application. Action angle variable: adiabatic invariance of action variable, the Kepler problem in action angle variables.

Small Oscillations & Rigid Body Motion:
Stable and unstable equilibrium; Theory of small oscillations in Lagrangian formulation, normal coordinates and its applications, Free vibration of linear harmonic oscillator. Orthogonal transformation, Euler's theorem, Eigenvalues of the inertia tensor, Euler equations, force free motion of a rigid body.

References:
1. **Herbert Goldstein, Charles Poole, John Safko,** Classical Mechanics, Pearson Education.
2. **L. D. Landau and E. M. Lifshitz,** Mechanics, Butterworth-Heinemann.
3. **N. C. Rana and P. S. Joag,** Classical Mechanics, McGraw Hill.
4. **Ronald L. Greene,** Classical Mechanics with Maple, Springer.
5. **A. Sommerfeld,** Mechanics, Academic Press.
6. **I. Percival and D. Richards**, Introduction to Dynamics, Cambridge University Press.

Quantum Mechanics

Course Code: SPMS PHY 01 103 CC 3104

Origin of Quantum Physics:

Review of chronological developments of quantum mechanics; Particle aspects of wave: Black Body Radiation, Photoelectric Effect, Compton Effect, Pair Production; Wave aspects of particle: de Broglie hypothesis, Davisson & Germer's experiment; Wave--Particle Duality. Stren-Gerlach experiment for spin 1/2 system.

Structure of Quantum Mechanics (QM)

Linear spaces and Operators: Vector spaces, Linear independence, Bases, Dimensionality. Linear Transformations, Similarity Transformations; Eigen values and Eigen vectors. Inner product, Orthogonality and Completeness; Gramm Schmidt Orthogonalization Procedure.

Structure of Quantum Mechanics**:** Postulates of QM, Hilbert space; Hermitian and Unitary Operators; Orthonormality, Completeness and Closure. Dirac's bra and ket notation. Matrix Representation and Change of Basis. Operators and Observables, Significance of eigenvector and eigenvalues, Commutation relation; Uncertainty principle for two arbitrary Operators.

Quantum Dynamics:

Problem in one dimension (1D) with different types of potential functions such as particle in box, barrier potential, harmonic oscillator: analytical and algebraic methods. 3 D problems: Hydrogen Atom.

Angular Momenta & Approximate Analysis:

Orbital angular momentum, angular momentum algebra, raising and lowering operators; Matrix representation for $j = 1/2$ and $j = 1$; Spin angular momentum; Addition of two angular momentum, Clebsch-Gordan (CG) Coefficients.

Perturbation Theory: Time-independent non-degenerate and degenerate cases, Time-dependent perturbation theory; variational methods, and WKB method.

References:

1. **Ashok Das and A. C. Melissinos,** Quantum Mechanics, Gordon and Breach Science Publishers.
2. **P. A. M. Dirac,** Lectures on Quantum Mechanics, Dover Publications.
3. **R. Shankar,** Principles of Quantum Mechanics, Springer.
4. **Albert Messiah,** Quantum Mechanics, Dover Publications.
5. **L. I. Schiff,** Quantum Mechanics, McGraw Publications.
6. **Claude Cohen,** Quantum Mechanics, Wiley.
7. **J. J. Sakurai,** Modern Quantum Mechanics, Pearson Education.
8. **E. Merzbecher,** Quantum Mechanics, John Wiley.

Laboratory I

Course Code: SPMS PHY 01 104 CC 0044

1. Ionization potential of Lithium
2. Zeeman Effect
3. Dissociation Energy of I2 molecule
4. Hall Effect
5. Four Probe Method
6. Electron Spin Resonance
7. Telexometer
8. Faraday Effect
9. Frank-Hertz experiment
10. Compton Effect
11. Atomic Spectra of two-Electron Systems
12. Iodine Spectra
13. H-alpha Spectra
14. Coupled Oscillations

Students assigned the general laboratory work will perform at least eight (08) experiments of the above mentioned list. Experiments of equal standard may be added. Workshop soldering and designing of experiments should be included.

Reference:

Worsnop and Flint, Experimental Physics.
A. C. Melissinos, J. Napolitano, Experiments in Modern Physics, Academic Press.

Numerical Methods and Programming

Course Code: SPMS PHY 01 101 GEC 3104

C/C++:
Flow charts, Algorithms, Integer and floating point arithmetic, Precision, Variable types, Arithmetic statements, Input and output statements, Control statements, Executable and non-executable statements, Arrays, Repetitive and logical structures, Subroutines and functions, Operation with files, Operating systems, Creation of executable programs.

Numerical Methods of Analysis:
Solution of algebraic and transcendental equations: Iterative, Bisection and Newton-Raphson methods; Solution of simultaneous linear equations: Matrix inversion method; Interpolation: Newton and Lagrange formulas; Numerical differentiation, Numerical Integration: Trapezoidal, Simpson and Gaussian quadrature methods; Least-square curve fitting: Straight line and polynomial fits; Numerical solution of ordinary differential equations: Euler and Runge-Kutta methods.

Simulations:
Generation of uniformly distributed random numbers, Statistical tests of randomness, Monte-Carlo evaluation of integrals and error analysis, Non-uniform probability distributions, Importance sampling, Rejection method, Metropolis algorithm, Molecular diffusion and Brownian motion as random walk problems and their Monte-Carlo simulation.

Short introduction to Programming using C and Psi Lab, class projects may be implemented in any language.

References:
1. **S. S. M. Wong,** Computational Methods in Physics and Engineering, World Scientific.
2. **V. Rajaraman,** Computer Oriented Numerical Methods, Prentice Hall of India.
3. **V. Rajaraman,** Computer Programming in FORTRAN 90/95.
4. **C. F. Gerald,** Applied Numerical Analysis, Pearson/Addison Wesley.
5. **Landau and Binder,** A Guide to Monte Carlo Simulations in Statistical Physics, Cambridge University Press.
6. **Teukolsky, Vetterling and Flannery,** Numerical Recipes 3rd Edition: The Art of Scientific Computing, Cambridge University Press.

Modern Optics

Course Code: SPMS PHY 01 102 GEC 3104

An overview of Geometrical and Wave Optics: Laws of Reflection, Refraction, Total Internal Reflection; Ideas of Interference, Diffraction, Polarisation, Dispersion.

Fresnel Relations: Conductors, Thin Films: Reflection Model, Matrix Formalism, Coating Design, Fourier Optics: Wave Propagation, Fraunhofer Diffraction, Fresnel Diffraction, Spatial Filtering, Holography.

Coherence, Interference and Visibility, Laser Physics: Overview, Gain Saturation, Light-Atom Interactions, Optical Gain and Pumping Schemes, Output Characteristics.

Light Shifts and Optical Forces, Atom-Photon interactions.

Fibre Optics: Mode Analysis, Loss and Dispersion, Photonics Band-gap Crystals. Introduction/ Basic idea of LED.

References:

1. **Pedrotti,** Introduction to Optics, Pearson.
2. **A. Ghatak,** Optics, Tata McGraw-Hill.
3. **G. R. Fowles,** Introduction to Modern Optics, Dover Publication.
4. **B. E. A. Saleh and M. C. Teich,** Fundamentals of Photonics, Wiley.
5. **E. Hecht,** Optics, Addison Wesley.
6. **J. T. Verdeyen,** Laser Electronics, Prentice-Hall.
7. **A. E. Siegman,** Lasers, University Science Book.

Introduction to Experimental Physics

Course Code: SPMS PHY 01 103 GEC 3104

Science of Experimental Physics: Background, Objectives, Error Analysis, Graphical Analysis, Writing about Experiments, Design of Experiments.

Probability and Statistics in Experimental Physics: Basic Concepts, Specific Discrete Distributions, Normal Distribution and other Continuous Distributions, Monte-Carlo Method, Inverse Probability: Confidence Limit.

Curve-Fitting Methods: Methods for Estimating Parameters, Regression Analysis, The Regularization Method, Interpolating Functions and Unfolding Problems, Fitting Data with Correlations and Constraints.

Some Fundamental Experiments in Physics: Frequency of Oscillations in Simple Pendulum, Single, Double and N slits Diffraction Experiments, Relation between Refractive Index and Wavelength: Hartmann Formulae, Hall Effect, Ionization Potential of Mercury, Oscillations in Compound Pendulum, more experiments of similar nature may also be discussed.

References:

1. **D. W. Preston and E. R. Dietz,** The Art of Experimental Physics, Academic Press.
2. **C. Cooke,** An Introduction to Experimental Physics, University College London.
3. **B. P. Roe,** Probability and Statistics in Experimental Physics, Springer.

Statistical Mechanics

Course Code: SPMS PHY 01 201 CC 3104

Elementary Probability Theory:
Preliminary Concepts: mean values, standard deviation, various moments; Random walk problem, Binomial distribution, Poisson distribution, Gaussian distributions, Central Limit Theorem.

Review of Thermodynamics:
Extensive and intensive variables, laws of thermodynamics, Legendre transformations and thermodynamic potentials, Maxwell relations, applications of thermodynamics to (a) ideal gas, (b) magnetic material, and (c) dielectric material.

Classical Statistical Mechanics:
Micro-canonical ensembles and their equivalence, Canonical and grand canonical ensembles, partition function, thermodynamic variables in terms of partition function, ideal gas, Gibbs paradox, validity of classical approximation, equipartition theorem. Maxwell-Boltzmann gas velocity and speed distribution. Chemical potential, Free energy and connection with thermodynamic variables, First and Second order phase transitions; phase equilibrium.

Quantum Statistical Mechanics:
Density Matrix, ensembles in quantum statistical mechanics, simple applications of density matrix. Maxwell-Boltzmann, Bose-Einstein, Fermi-Dirac statistics.
Bose system: Ideal Bose gas, Debye theory of specific heat, properties of black-body radiation, Bose- Einstein condensation, experiments on atomic BEC, BEC in a harmonic potential.
Fermi System: Ideal Fermi gas, properties of simple metals, Pauli paramagnetism, electronic specific heat, white dwarf stars.

References:
1. **F. Reif,** Fundamentals of Statistical and Thermal Physics, McGraw Hill.
2. **K. Huang,** Statistical Mechanics, John Wiley & Sons.
3. **R. K. Pathria,** Statistical Mechanics, Pergamon Press.
4. **B. B. Laud,** Fundamentals of Statistical Mechanics, New Age.
5. **Mark W. Zemansky and Richard H. Dittman,** Heat and Thermodynamics, McGraw Hill.
6. **L. D. Landau and E. M. Lifshitz,** Statistical Physics, Butterworth-Heinemann.
7. **Richard P. Feynman,** Statistical Mechanics, Westview Press.
8. **J. P. Sethna,** Statistical Mechanics: Entropy, Order Parameter and Complexity, Oxford University Press.

Classical Electrodynamics

Course Code: SPMS PHY 01 202 CC 3104

Electrostatics & Magnetostatics:
Differential equation for electric field, Poisson and Laplace equations, formal solution for potential with Green's functions, boundary value problems, examples of image method and Green's function method, solutions of Laplace equation in cylindrical and spherical coordinates by orthogonal functions, dielectrics, polarization of a medium, electrostatic energy.
Biot-Savart law, differential equation for static magnetic field, vector potential, magnetic field from localized current distributions, examples of magnetostatic problems, Faraday's law of induction, magnetic energy of steady current distributions.

Maxwell's Equations & Electromagnetic Waves:
Displacement current, Maxwell's equations, vector and scalar potentials, Gauge symmetry, Coulomb and Lorentz gauges, electromagnetic energy and momentum, conservation laws, inhomogeneous wave equation and Green's function solution.
Plane waves in a dielectric medium, reflection and refraction at dielectric interfaces, frequency dispersion in dielectrics and metals, dielectric constant and anomalous dispersion, wave propagation in one dimension, group velocity, metallic wave guides, boundary conditions at metallic surfaces, propagation modes in wave guides, resonant modes in cavities.

Radiation:
Field of a localized oscillating source, fields and radiation in dipole and quadrupole approximations, antenna, radiation by moving charges, Lienard-Wiechert potentials, total power radiated by an accelerated charge, Lorentz formula.

Relativistic Electrodynamics:
Four-vectors relevant to electrodynamics, electromagnetic field tensor and Maxwell's equations, transformation of fields, fields of uniformly moving particles.

References:
1. **J. D. Jackson,** Classical Electrodynamics, Wiley.
2. **David J. Griffiths,** Introduction to Electrodynamics, Benjamin Cummings.
3. **L. D. Landau and E. M. Lifshitz,** Classical Theory of Electrodynamics, Addison-Wesley.
4. **L. D. Landau and E. M. Lifshitz,** Electrodynamics of Continuous Media, Addison Wesley.
5. **Wolfgang K. H. Panofsky and Melba Phillips,** Classical Electricity and Magnetism, Dover Publications.

Electronics

Course Code: SPMS PHY 01 203 CC 3104

Introduction to Network:
Network analysis: Kirchhoff's Laws and Star-Delta networks. Network theorems: Superposition, Thevenin, Norton, & Maximum Power Transfer. Two port networks: z, y, h, and t parameters.

Electronic Devices:
Review of p-n junction, Schottky diode, metal-semiconductor and metal-oxide semiconductor junctions, BJT, JFET, MESFET & MOSFET.
Basic differential amplifier circuit, operational amplifier characteristics and applications: Addition, Subtraction, Integrator, Differentiator; 555 Timer, astable and monostable multivibrator; zero crossing detector. Amplifiers at low and high frequencies.

Digital Electronics:
Overview of Gates, combinational and sequential digital systems, flip-flops: (RS, JK, Master Slave), counters: synchronous/asynchronous and decade.

Electronic Instruments:
Regulated Power supplies, phase shift and Wien bridge oscillators, digital oscilloscopes.

References:
1. **P. Horowitz and W. Hill,** The Art of Electronics, Cambridge University Press.
2. **J. Millman and A. Grabel,** Microelectronics, McGraw Hill.
3. **J. J. Cathey,** Schaum's Outline of Electronic Devices and Circuits, McGraw Hill.
4. **M. Forrest,** Electronic Sensor Circuits and Projects, Master Publishing.
5. **W. Kleitz,** Digital Electronics: A Practical Approach, Pearson.
6. **J. H. Moore, C. C. Davis and M. A. Coplan,** Building Scientific Apparatus, Addison Wesley.

Laboratory II

Course Code: SPMS PHY 01 204 CC 0044

1. Addition, Subtraction and Binary to BCD conversion
2. JK, Master Slave Flip-Flop, up-down counter, 4 bit counter
3. Multivibrator
4. Differential Amplifier using Op Amp
5. Op-amps and its application: Inverting and Non-inverting of given gain; Integrator and Differentiator
6. IC 555 Timer: Astable and Monostable Multivibrator
7. Design of CE Amplifier
8. Design of Regulated Power Supply
9. Arithmetic Logic Unit
10. Digital to Analog Converter (maximum 4-bit)
11. Experiments on MUX, DEMUX, Decoder and shift register
12. I-V characteristics of Photodiode/Solar Cells
13. Voltage regulation of Zener diodes
14. Designing decade counter
15. Characteristics of MOSFET

Computational experiments using computer programming

1. Finite and infinite series
2. Root finding: (bisection, Secant and Newton-Raphson methods)
3. Solving first and second order ordinary differential equations including simultaneous equations (Euler and Runge-Kutta methods)
4. Numerical integration (trapezoidal, Simpson, Gauss quadrature,methods)
5. Matrices (arrays of variable sizes, addition, multiplication, eigenvalues, eigenvectors, inversion, solutions of simultaneous equations)

Students assigned the general laboratory work will perform at least twelve (12) experiments from the above mentioned. More experiments of similar nature may be added.

References:

W. Kleitz, Digital Electronics: A Practical Approach, Pearson.
J. H. Moore, C. C. Davis and M. A. Coplan, Building Scientific Apparatus, Addison Wesley.
V. Rajaraman, Computer Oriented Numerical Methods, Prentice Hall of India.
V. Rajaraman, Computer Programming in FORTRAN 90/95.

Latex for Science & Mathematics

Course Code: SPMS PHY 01 201 GEC 1102

Software installation, Markup Languages, LATEX typesetting basics, LATEX math typesetting, Tables and matrices, Graphics, Packages, User definable, Document classes, text bibTEX, beamer, flash cards / CV, Creating your own package, Project.

References:

1. **Helmut Kopka,** Guide to LATEX.
2. Resources from websites.

Environmental Physics

Course Code: SPMS PHY 01 202 GEC 1102

Introduction to Energy:
Importance of energy in science and society. Types of energy (mechanical, heat, chemical, nuclear, electrical). Law of conservation of energy. Energy transformations. Mechanical energy: force, work, kinetic and potential energy, PE diagrams, conservation of mechanical energy, bound systems. Electricity Basics.

Heat Energy and Kinetic Theory:
Heat and Temperature. Internal Energy, Specific Heat. Ideal gas equation. Kinetic theory interpretation of pressure and temperature. Work, heat, and the first law of thermodynamics. Adiabatic lapse rate. Radiant energy. Blackbody radiation

Energy and Climate Change:
Energy balance of the Earth. Greenhouse effect. Climate feedbacks (water, clouds, ice albedo). Global Climate Models. Evidence for climate change. Paleo-climate. Climate change impacts. Climate change mitigation. Target CO_2 levels.

Energy Source:
Chemical energy. Energy in biology, photosynthesis, respiration. Energy use in the human body, energy content of food. Fossil fuels and their origin (coal, oil, natural gas). Problems with fossil fuels, greenhouse pollution, peak oil. Alternatives to fossil fuels. Alternative energy resource: Wind energy, energy from water on land, ocean energy. Biomass and other sources.

Thermal Aspect of Energy Conservation:
Heat engines and the second law of thermodynamics. The Carnot cycle. Applications of the second law to various energy transformation processes: heat pumps and refrigerators; different engine cycles. Entropy and disorder.

References:
R. A. Hinrichs and M. Kleinbach, Energy, Its Use and the Environment, Brooks Cole.
C. W. Rose, An Introduction to the Environmental Physics of Soil, Water and Watersheds, Cambridge University Press.
P. Hughes, N. J. Mason, Introduction to Physics: Planet Earth, Life and Climate, Taylor & Francis.
J. Monteith, M. Unsworth, Principles of Environmental Physics: Plants, Animals and the Atmosphere, Elsevier.

Computational Physics

Course Code: SPMS PHY 01 201 DCEC 3104

Stochastic Processes:
Theory of random walks and simulation of random walks in one, two and three dimensions. Elementary ideas and simulations of self-avoiding walks, additive and multiplicative stochastic processes, Brownian motion and fractional Brownian motion.

Percolation theory:
Percolation theory and simulation by Hoshen-Kopelman algorithm; Application to simple lattice models in Physics.

Simulations of physical models:
Elementary ideas of Molecular dynamics; Dynamical equations and physical potentials; Verlet algorithm. Time-average and Ensemble average; Monte Carlo methods; Metropolis algorithm. Introduction to the simulations: (a) Ising model in magnetism (b) Bak-Tang-Wiesenfeld model in studies of Self Organized Criticality.

Combinatorial optimization problems:
Classification of problems; examples of optimization problems: traveling salesman problem (TSP) and satisfiability (k-SAT) problem; heuristic methods of solutions and simulated annealing technique.

References

1. **D. Frenkel & B. Smit,** Understanding Molecular Simulation, Academic Press.
2. **D. Stauffer,** Introduction to Percolation Theory, Taylor-Francis.
3. **M. Plischke & B. Bergersen,** Equilibrium Statistical Physics, World Scientific.
4. **W. H. Press, B. P. Flannery, S. A. Teukolsky and W. T. Vetterling,** Numerical Recipes in C/C++: The Art of Scientific Computing, Cambridge University Press.

Advanced Quantum Mechanics I

Course Code: SPMS PHY 01 202 DCEC 3104

Symmetry in Quantum mechanics:
Symmetry Operations and Unitary Transformations, conservation principles, space and time translation, rotation, space inversion and time reversal, symmetry and degeneracy.

Identical particles:
Meaning of identity and consequences; Symmetric and anti-symmetric wave-function; incorporation of spin, symmetric and antisymmetric spin wave functions of two identical particles, slater determinant, Pauli exclusion principle.

Time-dependent Perturbation Theory & Scattering Theory:
Interaction Picture; Constant and harmonic perturbations; Fermi Golden rule; Sudden and adiabatic approximations. Beta decay as an example.
Differential cross-section, scattering of a wave packet, integral equation for the scattering amplitude, Born approximation, method of partial waves, low energy scattering and bound states, resonance scattering.

Relativistic Quantum Mechanics:
Klein Gordon equation, Dirac equation, negative energy solutions, antiparticles, Dirac hole theory, Feynman interpretation of antiparticles, Gamma matrices and their properties, Covariance of Dirac equation, Charge conjugation, Parity & Time reversal invariance, Spin & Helicity.

References:
1. **S. Flugge,** Quantum Mechanics, Springer.
2. **C. Cohen-Tannoudji, Bernard Diu and Frank Laloe,** Quantum Mechanics, Wiley.
3. **Albert Messiah,** Quantum Mechanics, Dover Publications.
4. **R. Shankar,** Principles of Quantum Mechanics, Springer.
5. **L. I. Schiff,** Quantum Mechanics, McGraw Hill.
6. **J. J. Sakurai,** Modern Quantum Mechanics, Pearson Education.
7. **E. Merzbecher,** Quantum Mechanics, John Wiley.

Atomic, Molecular Physics and Laser

Course Code: SPMS PHY 01 301 CC 3104

Atomic Structure and Atomic Spectra:
Review of Atomic Models: Rutherford's Model, Bohr's model, Sommerfeld's model, Stern-Gerlach experiment for electron spin. Revision of quantum numbers, exclusion principle, electronic configuration. Relativistic correction to energy levels of an atom, atom in a weak uniform external electric field – first and second order Stark effect; The polarizability of the ground state of hydrogen atom and of an isotropic harmonic oscillator; Linear Stark effect for hydrogen atom levels. Spin-orbit interaction, LS coupling, origin of spectral lines, selection rules; X-ray spectra, fine spectra, hyperfine structure, Zeeman effect, Lamb shift.

Molecular Structure:
The nature of chemical bonds, valence bond approach and molecular orbital approach for molecular bonding (for H2 molecule). Bonding and anti-bonding orbitals, pi- bonds, sigma -bonds, different kinds of bonding mechanism, Madelung constant, hybridization, bonding in hydrocarbons.

Molecular spectra:
Rotational levels in diatomic and polyatomic molecules, vibrational levels in diatomic and polyatomic molecules, diatomic vibrating rotator, Born-Oppenheimer approximation, symmetry of the molecules and vibrational levels, experimental aspects of vibrational and rotational spectroscopy of molecules, polarization of light and Raman effect, Raman Spectroscopy.

Lasers:
Requisites for producing laser light, Role of Plane and Confocal cavity resonators, Longitudinal and transverse cavity modes, Mode selection, Q-switching and Mode locking, Generation of Ultra short Pulse.

References:

1. **B. H. Bransden and C. J Joachain,** Physics of Atoms and Molecules, Prentice Hall.
2. **K. Thyagarajan and A. K. Ghatak,** Lasers - Theory and Applications, Plenum Press.
3. **H. E. White,** Introduction to Atomic Spectra, McGraw Hill.
4. **H. G. Kuhn,** Introduction to Atomic Spectra, McGraw Hill.
5. **R. Eisberg and R. Resnick,** Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles, Wiley.
6. **Arthur Beiser,** Perspectives of Modern Physics, McGraw Hill.
7. **Gerhard Herzberg,** Molecular Spectra and Molecular Structure, Krieger Pub Co.
8. **C. N. Banwell,** Fundamentals of Molecular Spectroscopy, Tata McGraw Hill.

Nuclear & Particle Physics

Course Code: SPMS PHY 01 302 CC 3104

Introductory Concept of Nuclei:
Nuclear angular momentum, Nuclear magnetic dipole moment and Electric quadruple moment, Parity quantum number, Statistics of nuclear particles, Isobaric spin concept, Systematic of stable nuclei.
Nuclear Disintegration: Simple theories of decay, Properties of neutrino, Non conservation of parity and Wu's experiment in beta decay, Electron capture, Internal conversion.

Inter Nucleon Forces:
Properties and simple theory of the deuteron ground state, Spin dependence and tensor component of nuclear forces, Nucleon-nucleon scattering at low energy, Charge-independence of nuclear forces, Many–nucleon systems and saturation of nuclear forces, Exchange forces, Elements of meson theory.

Nuclear Structure and Models:
Fermi gas model, Experimental evidence for shell structure in nuclei, Basic assumption for shell model, Single- particle energy levels in central potential, Spin-orbit potential and prediction of magic numbers, Extreme single- particle model, Prediction of angular moment, Parities and magnetic moment of nuclear ground states, Liquid drop model, Semi-empirical mass formula, Nuclear fission, The unified model.

Particle Physics:
Properties and origin, Elementary particles, Properties, classification, type of interactions and conservation laws, Properties of mesons, Resonance particles, Strange particles and Strangeness quantum number, Simple ideas of group theory, Symmetry and conservation laws, CP and CPT invariance, Special symmetry groups SU (2) and SU (3)classification of hadrons, Quarks, Gell-Mann-Okubu mass formula.

References:
1. **Roy & Nigam,** Nuclear Physics, Wiley.
2. **H. Enge,** Introduction to nuclear Physics, Addison Wesley.
3. **J. M. Blatt and V. F. Weisskopf,** Theoretical Nuclear Physics, Springer.
4. **J. D. Walecka,** Theoretical Nuclear and Subnuclear Physics, World Scientific.
5. **M. Leon,** Particle Physics: An introduction, Academic Press.
6. **F. I. Stancu,** Group Theory in Subnuclear Physics, Clarendon Press.
7. **B. R. Martin and G. Shaw,** Particle Physics, Wiley.

Solid State Physics

Course Code: SPMS PHY 01 303 CC 3104

Crystal structure:

Crystal structures and lattices with basis, Miller indices, Common crystal structures, Reciprocal lattice, Brillouin zones, X-ray diffraction by a crystal and their equivalence, Laue equations, Ewald construction, Brillouin interpretation, Crystal and atomic structure factors, Structure factor; Experimental methods of structure analysis: Types of probe beam, the Laue, rotating crystal and powder methods.

Lattice dynamics and thermal properties:

Classical theory of lattice dynamics: Vibrations of crystals with monatomic basis and Two atomic basis, Dispersion relation, Group velocity, Acoustical and optical modes; Phonons: Quantization of lattice vibration, Phonon momentum, Inelastic scattering of neutrons by phonons; Thermal properties: heat capacity, Density of states, Normal modes, Debye and Einstein models

Electronic properties of solids:

Free electron gas model: Electrical conductivity and Ohm's law, Density of states, Heat capacity, Fermi energy, Effect of temperature, effective mass, Limitations of the free electron gas model, Band theory of solids: Periodic potential, Bloch's theorem, Kronig-Penney model, Approximate solution near a zone boundary, Periodic, extended and reduced zone schemes of energy band representation, Classification into metals, semiconductors and insulators; Tight binding method and its application to SC and BCC structures.

Superconductivity:

Introduction to Superconductivity, effect of magnetic field, Meissner effect, Type I and type II superconductors, Entropy, Free energy, Heat capacity, Energy gap, Microwave and infrared properties, Isotope effect; Thermodynamics of the superconducting transition, London equation, Coherence length, BCS theory of superconductivity, Flux quantization in a superconducting ring; DC and AC Josephson effects; Macroscopic long-range quantum interference; High Tc superconductors

References:

1. **Charles Kittel,** Introduction to Solid State Physics, Wiley.
2. **Neil W. Ashcroft and N. David Mermin,** Solid State Physics, Holt, Rinehart and Winston.
3. **Rajnikant,** Applied Solid State Physics, Wiley.
4. **H. Ibach and H. Luth,** Solid State Physics: An Introduction to Theory and Experiment, Springer.
5. **J. M. Ziman,** Principles of the Theory of Solids, Cambridge University Press.

Laboratory III

Course Code: SPMS PHY 01 301 DCEC 0044

Each student is required to perform at least five experiments from Section A and at least three experiments from any one of the optional subtopics of Section B: (i) Electronics (ii) Thin Film and Nano-Material (iii) Numerical Techniques; depending upon the courses opted under discipline centric elective course.

Section A

1. Kerr Effect
2. Curie Temperature
3. B-H curve
4. Solid State Nuclear Track Detector (SSNTD)
5. G.M. Counters: characteristics, deadtime and counting statistics
6. Scintillation detector-energy calibration, resolution and determination of gamma ray energy
7. Prism Spectrometer
8. Grating Spectrometer
9. Interferometric method for thin film thickness and strain measurement
10. Ultra-Voilet Visible
11. Surface Plasmon Resonance (SPR)
12. Laser Diffraction
13. Gas Hydrogen Spectra
14. Fourier Transform Infrared Spectroscopy (FTIR)
15. Alpha Spectroscopy with Surface Barrier Detector
16. X-Ray Diffraction
17. Verification of Hartmann formula for prism spectrogram
18. Measurement of optical spectrum of an alkali atom
19. Emitter of electric discharge through air in an evacuated tube
20. Measurement of optical spectrum of alkaline earth atoms
21. Measurement of Band positions and determination of vibrational constants of AlO molecule
22. Measurement of Band positions and determination of vibrational constants of N_2 molecule
23. Measurement of Band positions and determination of vibrational constants of CN molecule
24. Determination of characteristic parameters of an optical fibre
25. Measurement of Raman spectrum of CCl_4

Section B

(i) Electronics

1. PCM/delta modulation and demodulation
2. Fiber optic communication
3. D/A converter interfacing and frequency/temperature measurement with microprocessor 8085/8086
4. A/D converter interfacing and AC/DC voltage/current measurement using microprocessor 8085/8086
5. PPI 8251 interfacing with microprocessor for serial communication

(ii) Thin Film and Nano-Material

1. Chemical Vapour Deposition
2. Vacuum, Thermal Evaporation and DC sputtering
3. Spin Coater
4. Surface morphological characterisation of thin film by AFM/SEM
5. Ball milling

(iii) Numerical Techniques

1. Solution of Linear algebraic equation: Gauss Jordon elimination, Singular Value Decomposition, Sparse linear system.
2. Evaluation of Functions: special functions, evaluation of functions by path integration, incomplete gamma, beta function.
3. Random Numbers: Uniform random numbers generators, statistical distributions and their properties, Rejection Methods, transformation method, simple Monte Carlo integration, Adaptive and recursive Monte Carlo methods, Test of randomness.
4. Signal Processing: FFT, IFFT, Filtering with FFT, convolution and correlation functions, application to real time series data.
5. Eigen systems: Solving eigenvalues and finding eigen functions of Schrodinger equation for analytically unsolvable potentials using variational principle.

Reference:

W. H. Press, B. P. Flannery, S. A. Teukolsky and W. T. Vetterling, Numerical Recipes in C/C++: The Art of Scientific Computing, Cambridge University Press.

J. P. Sethna, Statistical Mechanics: Entropy, Order Parameters, and Complexity, Oxford University Press.

A. C. Melissinos, J. Napolitano, Experiments in Modern Physics, Academic Press.

Physics of Electronic Material and Devices

Course Code: SPMS PHY 01 302 DCEC 3104

Physical Mechanisms:
Crystal structures of Electronic materials (Elemental, III-IV and VI semiconductors), Energy Band consideration in solids in relation to semiconductors, Direct and Indirect bands in semiconductor, Electron/Hole concentration and Fermi energy in intrinsic/Extrinsic semiconductor continuity equation, Carrier mobility in semiconductors, Electron and Hole conductivity in semiconductors, Shallow impurities in semiconductors (Ionization Energies), Deep Impurity states in semiconductors, Carrier Trapping and recombination/generation in semiconductors, Shockley Read theory of recombination, Switching in Electronic Devices.

Devices:
Metal/Semiconductor Junction or (Abrupt P-N Junction), Current-voltage characteristics, C-V measurements, Estimation of Barrier Height and carrier concentration from C-V characteristics, Surface/Interface States, Role of interface States in Junction Diodes. Field Effect devices, C-V characteristic of MIS diodes (Frequency dependence), Estimation of Interface Trapped charges by capacitance conductance, method CCD (Charge Coupled Devices), MESFET, MOSFET.

Microwave Devices: Tunnel Diode, MIS Tunnel Diode, Degenerate and Non-degenerate semiconductor, MIS Switch Diode, MIM Tunnel diode. IMPATT Diode. Characteristics, breakdown Voltage, Avalanche Region and Drift Region, Transferred Electron devices.
Photonics Devices: LED and LASER, Photo detectors, Solar-cells.

References:
1. **S. M. Sze,** Physics of Semiconductor Devices, Wiley.
2. **Jasprit Singh,** Semiconductor Devices Basic Principles, Wiley.
3. **A. S. Grove,** Physics and Technology of Semiconductor Devices, Wiley.
4. **B. L. Sharma,** Metal/Semiconductor Schottky Barrier Junction and their Applications, Plenum Press.
5. **E. H. Rhoderick,** Metal/Semiconductor Contacts, Clarendon Press.

Thin Film and Integrated Devices

Course Code: SPMS PHY 01 304 DCEC 3104

Materials for Integrated Circuits:
Classification of IC, CMOS Process Overview, Electronic grade silicon, Crystal growth, Czeehralski and float zone crystal growing methods, Silicon shaping lapping, Polishing and wafer preparation, Hot Processes-I: Oxidation and Diffusion, Oxidation of silicon, oxide deposition by thermal dry oxidation and wet oxidation method Diffusion Process, Diffusion Coefficient, Fick's 1st and 2nd Laws of Diffusion, Vacancy –Impurity interactions, Dopants and Dopant Sources, Doping by Diffusion, ion implantation, Diffusion Process Control, Diffusion Systems, Implantation Technology, Selective Implantation, Junction depth, Channeling, Lattice Damage, Annealing, Dopant Diffusion and Related Operations: Equipment for Diffusion and Related Operations.

Thin Films: Metals and Nonmetals
Vacuum Science and Technology, Evaporation theory and electron beam evaporation, evaporation system, idea of DC and R.F. sputtering system, Physical vapour deposition methods, Design construction of vacuum coating units, Chemicals Vapour Deposition, Reactors for Chemical Vapour Deposition, CVD Applications, Epitaxy methods for thin film deposition, Vapour-Phase Epitaxy, Photolithography, Photoresist Processing and Etching.

Wafer Cleaning methods, Wafer Preparation method: Vapour HMDS Treatment for adhesion improvement of photoresist, photoresist coating methods, soft backing of photo resist, post exposure backing of photo resist, Negative photoresist, Positive photoresist, Contrast and sensitivity of photoresist, Chemical Modulus Transfer Function (CMTF) of Photoresist, Resist Exposure (single, bi-layer and multi-level photoresist exposure) and Resist Development, Hard Baking and Resist curing, Photolithographic Process Control. Photolithography: An Overview, lithography, Raleigh criterion for resolution, Photo lithography source, Resolution and numerical aperture, Photolithographic methods: Contact, proximity and projection and their resolution limit, Photo mask and mask Alignment, Limitations of optical lithography, Concept of phase-shift mask, Idea of electron beam lithography, Electron optics, Idea of an X-ray lithography and x-ray mask, Wet chemical dry etching for material removal, Reactive plasma etching, Ion milling,

Interconnections and Contacts and Packaging and Yield
Ohmic Contact Formation, Contact Resistance, Electro-migration, Diffused Interconnections, Poly-silicon Interconnections, Buried Contacts, Butted Contacts, Silicides, Multilayer Contacts, Liftoff Process, Multilevel Metallization. Testing, Die Separation, Die Attachment, Wire Bonding, Packages, Flip-Chip Process, Tape-Automated-Bonding Process, Yield, Uniform and Nonuniform Defect Densities.

References:

1. **Millman and Taub,** Integrated Electronics, McGraw Hill.
2. **Millman and Gros,** Microelectronics, McGraw Hill.
3. **K. L. Chopra,** Thin Film Phenomena, McGraw Hill.
4. **L. I. Marshel and R. Glang,** Hand Book of Thin Film, McGraw Hill.
5. **S. M. Sze,** VLSI Technology, McGraw Hill.

Electronic Communication

Course Code: SPMS PHY 01 303 DCEC 3104

Need for communication: AM, FM, modulation index.

Digital communication:

Pulse – Modulation systems, sampling theorem – Low – Pass and Band – Pass signals, PAM, Channel BW for a PAM signal. Natural sampling. Flat – top sampling. Signal recovery through Holding, Quantization of signals, Quantization error, Differential PCM, Delta Modulation, Adaptive Delta Modulation, CVSD. Digital Modulation Techniques: BPSK, DPSK, QPSK, PSK, QASK, BFSK, FSK, MSK.

Mathematical representation of Noise:

Sources of noise. Frequency domain representation of noise, effect of filtering on the probability density of Gaussian noise, spectral component of noise, effect of a filter on the power spectral density of noise. Superposition of noises. Mixing involving noise. Linear filtering. Noise Bandwidth, Quadrature components of noise, Power spectral density of nc(t), ns(t) and their time derivatives.

Data Transmission:

Baseband signal receiver, probability of error. Optimum filter. White noise. Matched filter and probability of error. Coherent reception. Correlation, PSK, FSK, Non-coherent detection of FSK. Differential PSK, QPSK, calculation of error probability for BPSK, BFSK, and QPSK.

Noise in pulse–code and Delta–modulation system: PCM Transmission, Calculation of Quantization noise, Output – signal power, Effect of thermal noise in D M, Output signal–to–noise ratio in PCM, DM, Quantization noise in DM, Effect of thermal noise in Delta modulation, Output signal to noise ratio in DM.

Computer Communication Systems:

Types of networks, Design features of a communication network, examples: TYMNET, ARPANET, ISDN, LAN.

Mobile Radio and Satellites: Time division multiple Access (TDMA), Frequency Division Multiple Access (FDMA), ALOHA, Slotted ALOHA, Carrier Sense Multiple Access (CSMA) Poisson distribution, Protocols, Cellular communications, Mobile communication via Satellites, Bandwidth consideration in INTERNET.

References:

1. **Taub and Schilling,** Principles of Communication Systems, McGraw Hill.
2. **Simon Haykin,** Communication Systems, Wiley.

Spectroscopy

Course Code: SPMS PHY 01 305 DCEC 3104

Pure rotational spectra of diatomic molecules, Polyatomic molecules, Study of linear molecules and symmetric top molecules, Hyperfine structure and quadruple moment of linear molecules, Experimental techniques, Molecular structure determination, Stark effect, inversion spectrum of ammonia, Applications to chemical analysis.

Vibrational spectroscopy of diatomic and simple polyatomic molecules, Harmonic Oscillator, Anharmonic Oscillator - Rotational vibrators - Normal modes of vibration of Polyatomic molecules, Experimental techniques, Applications of infrared spectroscopy, H_2O and N_2O molecules, Reflectance spectroscopy.

Classical theory of Raman Scattering - Raman effect and molecular structure, Raman effect and crystal structure, Raman effect in relation to inorganic, organic and physical chemistry, Experimental techniques, Coherent anti-Stokes Raman Spectroscopy, Applications of infrared and Raman spectroscopy in molecular structural confirmation of water and CO_2 molecules, Laser Raman Spectroscopy.

Theory of NMR, Bloch equations, Steady state solution of Bloch equations, Theory of chemical shifts, Experimental methods, Single Coil and double coil methods, Pulse Method, High resolution method, Applications of NMR to quantitative measurements. Quadruple Hamiltonian of NQR, Nuclear quadruple energy levels for axial and non-axial symmetry - Experimental techniques and applications.

Quantum mechanical treatment of ESR - Nuclear interaction and hyperfine structure, Relaxation effects, Basic principles of spectrographs, Applications of ESR method, Mossbauer Effect,Recoilless emission and absorption - Mossbauer spectrum - Experimental methods - Mossbauer spectrometer, Hyperfine interactions, Chemical Isomer shift, Magnetic hyperfine interactions, Electric quadruple interactions, Simple biological applications

References:

1. **C. N. Banwell and E. M. Mc Cash,** Fundamentals of Molecular Spectroscopy, Tata McGraw-Hill.
2. **G. Aruldas,** Molecular Structure and Spectroscopy, Prentice Hall of India.
3. **D. N. Satyanarayana,** Vibrational Spectroscopy and Applications, New Age.
4. **Raymond Chang,** Basic Principles of Spectroscopy, McGraw Hill.

Microprocessor and Microcontroller

Course Code: SPMS PHY 01 306 DCEC 3104

8085 Architecture - Programmer's model - ALU - Registers and Flags - Stacks - Complete instruction set of Intel 8085 - State transition and timing diagrams - T States - Machine cycles - Instruction cycles - Addressing modes - Assembly language programs – Timing diagram for memory read and memory write cycles - time delay subroutines and delay calculations – maskable and Non-maskable Interrupts.

Interfacing memory and devices – I/O and Memory mapped I/O – Simple polled I/O and Handshaking operations - Programmable keyboard/display interface 8279 - Programmable peripheral device 8255A - 8253 Timer Interface - Wave form generation (Square, triangular and ramp wave) - Programmable communication interface 8251 (USART).

Introduction – 8 and 16 bit Microcontroller families –Flash series – Embedded RISC Processor – 8051 Microcontroller Hardware – Internal registers – Addressing modes – Assembly Language Programming – Arithmetic, Logic and Sorting operations.

Interfacing I/O Ports, External memory, counters and Timers - Serial data input/output, Interrupts – Interfacing 8051 with ADC, DAC, LED display, Keyboard, Sensors and Stepper motor.

Embedded microcontroller system – types of embedded operating system – Micro chip PIC 16C6X /7X family – features – Architecture – Memory Organization – Register file map – I/O ports – Data and flash program memory – asynchronous serial port – Applications in communication and industrial controls.

References:

1. **R. S. Gaonkar,** Microprocessor Architecture, programming and Application with the 8085.
2. **V. Vijayendran,** Fundamentals of Microprocessor 8085 - Architecture, programming and interfacing.
3. **Kenneth J. Ayala,** The 8051 Micro Controller Architecture, Programming and Applications.
4. **John B. Peatman,** Design with PIC Microcontrollers.
5. **R. S. Gaonkar,** Microprocessor Architecture, programming and Application with the 8085.

Physics of Nanomaterials

Course Code: SPMS PHY 01 307 DCEC 3104

Introduction to Nanostructure Materials:
Nanoscience & nanotechnology, Size dependence of properties, Moor's law, Surface energy and Melting point (quasi melting) of nanoparticles.
Band structure of solids: Free electron theory (qualitative idea) and its features, Idea of band structure, insulators, semiconductors and conductors, Energy band gaps of semiconductors, Effective masses and Fermi surfaces, Localized particles, Donors, Acceptors and Deep traps, Mobility, Excitons, Density of states, Variation of density of states with energy and Size of crystal.

Quantum Size Effect:
Quantum confinement, Nanomaterials structures, Two dimensional quantum system, Quantum well, Quantum wire and Quantum dot, Fabrication techniques.

Synthesis of Nanomaterials:
Key issue in the synthesis of Nanomaterials, Different approaches of synthesis, Top down and Bottom up approaches, Cluster beam evaporation, Ball Milling, Chemical bath deposition with capping agent, Carbon nanotubes (CNT)- Synthesis, Properties and Applications.

Characterization techniques of Nanomaterials:
Determination of particle size, XRD (Scherrer's formula), Increase in width of XRD peaks of nanoparticles, Shift in absorption spectra peak of nanoparticles, Shift in photoluminescence peaks, Electron Microscopy: Scanning Electron Microscopy (SEM), Transmission Electron Microscopy(TEM), Scanning Probe Microscopy (SPM), Scanning Tunnelling Electron Microscopy(STEM), and Atomic Force Microscopy (AFM).

References:

1. **Guozhong Cao,** Nanostructures & Nanomaterials, Synthesis, Properties & Applications, Imperial College Press.
2. **Charles P. Poole, Jr. Frank J. Owens,** Introduction to Nanotechnology, John Wiley & Sons.
3. **Paul Harrison,** Quantum Wells, Wires and Dots, John Wiley & Sons.
4. **D. Bimberg, M. Grundmann, N. N. Ledenstov,** Quantum Dot Hetrostructures, John Wiley & Sons.
5. **Hornyak G. L., Tibbals H. F., Dutta J., Moore J. J.,** Introduction to Nanoscience and Nanotechnology, CRC Press.
6. **Liming Dai,** Carbon Nanotechnology, Elsevier.
7. **Michael J. O'Connell,** Carbon Nanotubes: Properties and Applications, CRC Press.

Nuclear Physics: Interaction and Model

Course Code: SPMS PHY 01 308 DCEC 3104

N-N interaction:
Phenomenological N-N Potentials (Soft core & hard core) and meson theoretical potentials, Polarization in N-N scattering. Probing charge distribution with electrons, Form factors, Proton form factors, Qualitative ideas on deep inelastic electron-proton scattering, Bjorken scaling and the patron model, Quark structure of the nucleon.

Nuclear Models:
Single particle model of the nucleus, Angular momenta and parities of nuclear ground states, Qualitative discussion and estimates of transition rates, Magnetic moments and Schmidt lines. Classification of shells, Seniority, Configuration mixing, Pairing Force theory, Simple description of Two particle shell model spectroscopy. Deformable liquid drop and nuclear fission, Collective vibrations and excited states, Permanent deformation and collective rotations: Energy levels and electromagnetic properties of even-even and odd-odd formed nuclei, Nilsson model and equilibrium deformation, Coulomb Excitation Studies, Behaviour of Nuclei at high spin, Back-bending.

High Energy Physics: Particle Physics, Higgs Boson, LHC.

References:

1. **S. N. Ghoshal,** Nuclear Physics, S. Chand Limited.
2. **M. A. Preston and R. K. Bhaduri,** Nuclear Structure, Perseus Books Group.
3. **Brown and Jackson,** Nucleon-nucleon Interaction.
4. **S. S. M. Wong,** Introductory Nuclear Physics, Prentice Hall.
5. **M. K. Pal,** Nuclear Structure.

Advanced Quantum Mechanics II

Course Code: SPMS PHY 01 309 DCEC 3104

Relativistic Quantum Mechanics:
Klein Gordon equation, Dirac equation, negative energy solutions, antiparticles, Dirac hole theory, Feynman interpretation of antiparticles, Gamma matrices and their properties, Covariance of Dirac equation, Charge conjugation, Parity & Time reversal invariance, Bilinear covariants, Plane wave solution, Two component theory of neutrino, Spin & Helicity, Relativistic Hydrogen atom problem.

Classical Field Theory:
Lagrangian density and equation of motion for field, Symmetries and conservation laws, Noether's theorem.

Second Quantization:
First Quantization: Many Body Quantum Mechanics; Slater Determinant & Permanent. Second Quantization: Creation & Annihilation Operators, Number Operator; Non-Interacting Bose & Fermi Gas; Hamiltonian for the interacting system; Adding Spin.

Free Field & Quantum Electrodynamics (QED):
Canonical quantization of scalar field, Complex scalar field, and Dirac field. The Feynman Propagator, Feynman diagrams.
Maxwell's Equations: Gauge Symmetry; The Quantization of the Electromagnetic Field: Coulomb Gauge & Lorentz Gauge; Feynman rules; Scattering in QED: The Coulomb Potential.

References:
1. **J. D. Bjorken and S. D. Drell,** Relativistic Quantum Mechanics, McGraw Hill.
2. **J. D. Bjorken and S. D. Drell,** Relativistic Quantum Fields, McGraw Hill.
3. **Amitabha Lahiri and P. B. Pal,** A First Book on Quantum Field Theory, CRC Press.
4. **F. Mandl and G. Shaw,** Introduction to QFT, Wiley.
5. **J. J. Sakurai,** Modern Quantum Mechanics, Pearson.

Advanced Statistical Mechanics

Course Code: SPMS PHY 01 310 SEEC 3104

Phase Transitions and Critical Phenomena
Thermodynamics of phase transitions, metastable states, Van der Waals' equation of state, coexistence of phases, Landau theory, critical phenomena at second-order phase transitions, spatial and temporal fluctuations, scaling hypothesis, critical exponents, universality classes.

Ising Model
Ising model, mean-field theory, exact solution in one dimension, renormalization in one dimension.

Nonequilibrium Systems
Systems out of equilibrium, kinetic theory of a gas, approach to equilibrium and the H theorem, Boltzmann equation and its application to transport problems, master equation and irreversibility, simple examples, ergodic theorem. Brownian motion, Langevin equation, fluctuation-dissipation theorem, Einstein relation, Fokker-Planck equation.

Correlation Functions
Time correlation functions, linear response theory, Kubo formula, Onsager relations.

Coarse-grained Models
Hydrodynamics, Navier-Stokes equation for fluids, simple solutions for fluid flow, conservation laws and diffusion.

References:
1. **K. Huang,** Statistical Mechanics, Wiley.
2. **R. K. Pathria,** Statistical Mechanics, Elsevier.
3. **E. M. Lifshitz and L. P. Pitaevskii,** Physical Kinetics. Elsevier.
4. **D. A. McQuarrie,** Statistical Mechanics, University Science Books.
5. **L. P. Kadanoff,** Statistical Physics: Statistics, Dynamics and Renormalization, Academic.
6. **P. M. Chaikin and T. C. Lubensky,** Principles of Condensed Matter Physics, Cambridge University Press.

Paper Presentation

Course Code: SPMS PHY 01 301 GEC 1102

This may include subject/research oriented topics.

Project/Dissertation

Course Code: SPMS PHY 01 401 PROJ 00024

The dissertation topics will be based on special papers or elective papers and topics of current interest. A departmental committee will distribute the topics according to the skill and merit of the students.

Nonlinear Dynamics

Course Code: SPMS PHY 01 402 SEEC 3100

Introduction to Dynamical Systems
Physics of nonlinear systems, dynamical equations and constants of motion, phase space, fixed points, stability analysis, bifurcations and their classification, Poincaré section and iterative maps.

Dissipative Systems
One-dimensional noninvertible maps, simple and strange attractors, iterative maps, period doubling and universality, intermittency, invariant measure, Lyapunov exponents, higher dimensional systems, Hénon map, Lorenz equations, fractal geometry, generalized dimensions, examples of fractals.

Hamiltonian Systems
Integrability, Liouville's theorem, action-angle variables, introduction to perturbation techniques, KAM theorem, area-preserving maps, concepts of chaos and stochasticity.

Advanced Topics
Selections from quantum chaos, cellular automata and coupled map lattices, pattern formation, solitons and completely integrable systems, turbulence.

References:
1. **E. Ott,** Chaos in Dynamical Systems, Cambridge University Press.
2. **E. A. Jackson,** Perspectives of Nonlinear Dynamics (Volumes 1 and 2), Cambridge University Press.
3. **A. J. Lichtenberg and M. A. Lieberman,** Regular and Stochastic Motion, Springer.
4. **A. M. Ozorio de Almeida,** Hamiltonian Systems: Chaos and Quantization, Cambridge University Press.
5. **M. Tabor,** Chaos and Integrability in Nonlinear Dynamics, Wiley.
6. **M. Lakshmanan and S. Rajasekar,** Nonlinear Dynamics: Integrability, Chaos and Patterns, Springer.

Astrophysics, Gravitation and Cosmology

Course Code: SPMS PHY 01 403 SEEC 3100

Physics of the Universe:
Astronomical observations and instruments, stellar spectra and structure, stellar evolution, nucleosynthesis and formation of elements, evolution and origin of galaxies, quasars, pulsars, expansion of the universe, big-bang model, CMBR, anisotropy.

General Relativity:
Review of special theory of relativity, four-vector formulation of Lorentz transformation, covariant formulation of physical laws, introduction to general relativity, principle of equivalence, tensor analysis and Riemannian geometry, curvature and stress-energy tensors, gravitational field equations, geodesics and particle trajectories, Schwarz-child solution, Kerr-solution, gravitational waves, relativistic stellar structure, TOV equation, basic cosmology.

References:
1. **K. D. Abhyankar,** Astrophysics: Stars and Galaxies, University Press.
2. **J. V. Narlikar,** An Introduction to Cosmology, Cambridge University Press.
3. **C. W. Misner, K. S. Thorne, J. A. Wheeler,** Gravitation, Freeman.
4. **R. Adler, M. Bazin and M. Schiffer,** Introduction to General Relativity, Pergamon Press.
5. **T. Padmanabhan,** Cosmology and Astrophysics through Problems, Cambridge University Press.

केंद्रीय विश्वविद्यालय हरियाणा

CENTRAL UNIVERSITY OF HARYANA

Jant-Pali, Mahendergarh, Haryana

Department of Mathematics

Minutes of BOS Meeting in Mathematics held on 05.03.2016

A meeting of the Board of Studies (BOS) of the Department of Mathematics was held on 05/03/2016 at 11:30 AM in the Department of Mathematics, University of Delhi. The following members were present:

1. Prof. B. K. Dass, University of Delhi, External Member
2. Prof. Kuldeep Bansal, GJUST, Hisar, External Member
3. Dr. Virendra Kumar, Department of Mathematics, CUH.

Dr. Sharanjeet Dhawan, Department of Mathematics, CUH, could not attend the meeting.

Following agenda items were considered

The complete Scheme and Syllabi of M.Sc. (Mathematics, CBCS) was discussed at length and finalized. Several changes suggested by members were incorporated. While finalizing the syllabi, the committee desired to assign 8 credits (instead of 6) to the Project/Dissertation for meaningful training to the students. It may be mentioned that the following faculty members of Dept. of Mathematics, DU, spared their precious time in finalizing the syllabi. The BOS is appreciative of their support.

1. Prof. V. Ravichandran, HOD, Dept. of Mathematics
2. Prof. T. B. Singh
3. Dr. Lalit Kumar
4. Dr. Hemant Kumar Singh
5. Dr. Anuj Bishnoi

The support given by the administrative staff of Dept. of Mathematics, DU is also appreciated.

Prof. Kuldeep Bansal 5/3/16

Prof. B. K. Dass 5/3/16

Dr. Virendra Kumar 5/3/16

Department of Mathematics

Central University of Haryana
Mahendergarh, Haryana-123029

Scheme and Syllabus of M.Sc. Mathematics
(CHOICE BASED CREDIT SYSTEM)

Course Type

Core Course (CC)
Generic Elective Course (GEC)
Discipline Centric Elective Course (DCEC)
Skill Enhancement Elective Course (SEEC)

Total Credit: 88, Semester wise distribution of credits: 20 + 22 + 22 + 24.

CORE COURSE (CC) (Exclusively for M.Sc. Mathematics Students)

S. No.	Course code	Course title	L	T	P	Credit
1.	SPMMAT 01 01 CC 01 3104	Real Analysis	3	1	0	4
2.	SPMMAT 01 01 CC 02 3104	Abstract Algebra	3	1	0	4
3.	SPMMAT 01 01 CC 03 3104	Complex Analysis	3	1	0	4
4.	SPMMAT 01 01 CC 04 3104	Differential Equations and Calculus of Variations	3	1	0	4
5.	SPMMAT 01 02 CC 01 3104	Linear Algebra	3	1	0	4
6.	SPMMAT 01 02 CC 02 3104	Topology	3	1	0	4
7.	SPMMAT 01 02 CC 03 3104	Numerical Analysis	3	1	0	4
8.	SPMMAT 01 02 CC 04 3104	Mathematical Statistics	3	1	0	4
9.	SPMMAT 01 03 CC 01 3104	Integral Equations	3	1	0	4
10.	SPMMAT 01 03 CC 02 3104	Functional Analysis	3	1	0	4
11.	SPMMAT 01 03 CC 03 3104	Operations Research	3	1	0	4
12.	SPMMAT 01 03 CC 04 3104	Number Theory	3	1	0	4

5/3/16

5/3/16

DISCIPLINE CENTRIC ELECTIVE COURSES (DCEC)
(Offered to the students of M.Sc. Mathematics)

S. No.	Course code	Course title	L	T	P	Credit
1.	SPMMAT 01 02 DCEC 01 3104	Advanced Abstract Algebra	3	1	0	4
2.	SPMMAT 01 02 DCEC 02 3104	Measure Theory and Integration	3	1	0	4
3.	SPMMAT 01 02 DCEC 03 3104	Fluid Dynamics	3	1	0	4
4.	SPMMAT 01 02 DCEC 04 3104	Fuzzy Set Theory	3	1	0	4
5.	SPMMAT 01 03 DCEC 01 3104	Wavelet Analysis	3	1	0	4
6.	SPMMAT 01 03 DCEC 02 3104	Theory of Elasticity	3	1	0	4
7.	SPMMAT 01 03 DCEC 03 2124	Object Oriented Programming with C++	2	1	2	4
8.	SPMMAT 01 03 DCEC 04 3104	Information Theory	3	1	0	4
9.	SPMMAT 01 03 DCEC 05 3104	Applied Discrete Mathematics	3	1	0	4
10.	SPMMAT 01 04 DCEC 01 3104	Differential Geometry	3	1	0	4
11.	SPMMAT 01 04 DCEC 02 3104	Mathematical Modelling	3	1	0	4
12.	SPMMAT 01 04 DCEC 03 3104	Finite Element Analysis	3	1	0	4
13.	SPMMAT 01 04 DCEC 04 3104	Mechanics	3	1	0	4
14.	SPMMAT 01 04 DCEC 05 3104	Advanced Complex Analysis	3	1	0	4

GENERIC ELECTIVE COURSE (GEC)
(Offered to PG students of other departments only)

S.N.	Course code	Course title	L	T	P	Credit
1.	SPMMAT 01 01 GEC 01 3104	Introduction to Mathematical Analysis	3	1	0	4
2.	SPMMAT 01 01 GEC 02 3104	Numerical Methods	3	1	0	4
3.	SPMMAT 01 01 GEC 03 3024	Programming in C	3	0	2	4
4.	SPMMAT 01 02 GEC 01 0122	Programming in MATLAB	0	1	2	2

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5.	SPMMAT 01 02 GEC 02 0122	Typesetting in LaTeX	0	1	2	2
6.	SPMMAT 01 02 GEC 03 0122	Numerical Programming in C	0	1	2	2
7.	SPMMAT 01 02 GEC 04 2002	Discrete Mathematics	2	0	0	2

Skill Enhancement Elective Course (Compulsory and exclusively for M.Sc. Mathematics students, non-credit, only qualifying in nature) this may include a course based on Theoretical/Experimental/Computational Techniques/Methods. The department may offer more than one courses depending on specialization and strength of faculty members, and the student has to opt one of them.

Semester I

Total credits: 20 (CC: 16, GEC: 4)

S. No.	Course Title	Course Code	L	T	P	Credits
1	Real Analysis	SPMMAT 01 01 CC 01 3104	3	1	0	4
2	Abstract Algebra	SPMMAT 01 01 CC 02 3104	3	1	0	4
3	Complex Analysis	SPMMAT 01 01 CC 03 3104	3	1	0	4
4	Differential Equations and Calculus of variations	SPMMAT 01 01 CC 04 3104	3	1	0	4
5	GEC (to be taken from other departments)		-	-	-	4

The following GEC courses are offered to PG students of other departments only.

Introduction to Mathematical Analysis	SPMMAT 01 01 GEC 01 3104
Numerical Methods	SPMMAT 01 01 GEC 02 3104
Programming in C	SPMMAT 01 01 GEC 03 3024

Semester II

Total credits: 22 (CC: 16, DCEC: 4, GEC: 2)

S. No.	Course	Course Code	L	T	P	Credits
1	Linear Algebra	SPMMAT 01 02 CC 01 3104	3	1	0	4
2	Topology	SPMMAT 01 02 CC 02 3104	3	1	0	4

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S. No.	Course	Course Code	L	T	P	Credits
3	Numerical Analysis	SPMMAT 01 02 CC 03 3104	3	1	0	4
4	Mathematical Statistics	SPMMAT 01 02 CC 04 3104	3	1	0	4
5	DCEC*		3	1	0	4
6	GEC (to be taken from other departments)		-	-	-	2

***DCEC (For students of M.Sc. (Mathematics) only)**

Advanced Abstract Algebra	SPMMAT 01 02 DCEC 01 3104
Measure Theory and Integration	SPMMAT 01 02 DCEC 02 3104
Fluid Dynamics	SPMMAT 01 02 DCEC 03 3104
Fuzzy Set Theory	SPMMAT 01 02 DCEC 04 3104

GEC courses offered to PG students of other departments only

Programming in MATLAB	SPMMAT 01 02 GEC 01 0122
~~Documentation~~ in LaTeX	SPMMAT 01 02 GEC 02 0122
Numerical Programming in C	SPMMAT 01 02 GEC 03 0122
Discrete Mathematics	SPMMAT 01 02 GEC 04 2002

Semester III

Total credits: 22 (CC: 16, DCEC: 4, SEM: 2)

S. No.	Course	Course Code	L	T	P	Credits
1	Integral Equations	SPMMAT 01 03 CC 01 3104	3	1	0	4
2	Functional Analysis	SPMMAT 01 03 CC 02 3104	3	1	0	4
3	Operations Research	SPMMAT 01 03 CC 03 3104	3	1	0	4
4	Number Theory	SPMMAT 01 03 CC 04 3104	3	1	0	4
5	DCEC*		3	1	0	4
6	Seminar/Presentation**	SPMMAT 01 03 SEM 01 3104	-	-	-	2

***DCEC courses for M.Sc. (Mathematics) students only**

Wavelet Analysis	SPMMAT 01 03 DCEC 01 3104
Theory of Elasticity	SPMMAT 01 03 DCEC 02 3104
Object Oriented Programming C++	SPMMAT 01 03 DCEC 03 2124

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केंद्रीय विश्वविद्यालय हरियाणा

CENTRAL UNIVERSITY OF HARYANA

Jant-Pali, Mahendergarh, Haryana

Department of Mathematics

Minutes of Meeting held on 23.11.2015

A meeting of the Board of Studies (BOS) of the Department of Mathematics was held on 23/11/2015 at 10:30 AM in the Department of Mathematics, Academic Block, Central University of Haryana and the following members were present:

1. Prof. Kuldeep Bansa (GJUST, Hisar, Haryana), External Expert
2. Dr. Sharanjeet Dhawan (Department of Mathematics, CUH), Member
3. Dr. Virendra Kumar (Department of Mathematics, CUH), Chairman

Prof. B. K. Das, University of Delhi, external expert, could not attend the meeting.

Following agenda items were considered and discussed

1. Scheme and Syllabi of M.Sc. (Mathematics, CBCS) 1st and 2nd Semester
2. Panel of Papers Setters and Examiners for M.Sc. (Mathematics, CBCS) 1st and 3rd Semester

I. Scheme and Syllabi of M.Sc. (Mathematics)

The Board recommended the Scheme and Syllabi of M.Sc. (Mathematics, CBCS) for 1st and 2nd Semester.

II. Panel of Papers Setters for theory papers

The Board recommended the Panel of Papers Setters & Examiners for M.Sc. (Mathematics, CBCS) 1st and 3rd Semester for Dec. 2015 examinations. The panel is being sent to COE under cover.

The meeting ended with a vote of thanks to the chair.

Prof. Kuldeep Bansal 23/11/15

Dr. Sharanjeet Dhawan 23/11/2015

Dr. Virendra Kumar 23/11/15

Information Theory SPMMAT 01 03 DCEC 04 3104
Applied Discrete Mathematics SPMMAT 01 03 DCEC 05 3104
**Seminar Presentation: This may include subject/research oriented topics.

Semester IV

Total credits: 24 (DCEC:16, PROJ: 8)

S. No.	Course	Course Code	L	T	P	Credits
1	DCEC*		3	1	0	4
2	DCEC*		3	1	0	4
	DCEC*		3	1	0	4
	DCEC*		3	1	0	4
3	Project/Dissertation	SPMMAT 01 04 PROJ	-	-	-	8
4	SEEC**		3	1	0	-

***DCEC courses for M.Sc. (Mathematics) students only**

SPMMAT 01 04 DCEC 01 3104	Differential Geometry	3	1	0	4
SPMMAT 01 04 DCEC 02 3104	Mathematical Modelling	3	1	0	4
SPMMAT 01 04 DCEC 03 3104	Finite Element Analysis	3	1	0	4
SPMMAT 01 04 DCEC 04 3104	Mechanics	3	1	0	4
SPMMAT 01 04 DCEC 05 3104	Advanced Complex Analysis	3	1	0	4

****SEEC** (Skill Enhancement Elective Course, non-credit, only qualifying in nature): This may include a course based on Theoretical/Experimental/Computational Techniques/Methods. The department may offer more than one courses depending on specialization and strength of faculty members, and the student has to opt one of them. The course code may be given as: SPMMAT 01 04 SEEC 0X 3100, X=1, 2, 3,.... etc.

5/3/16
Prof. Kuldeep Bansal (External Member, BOS)
Department of Mathematics,
GJUST, Hisar

5/3/16
Prof. B. K. Das (External Member, BOS)
Department of Mathematics,
University of Delhi, Delhi

5/3/2016
Dr. Virendra Kumar
Teacher In-Charge
Department of Mathematics
CUH, Haryana

Semester I

Total credits: 20 (CC: 16, GEC: 4)

S. No.	Course Title	Course Code	L	T	P	Credits
1	Real Analysis	SPMMAT 01 01 CC 01 3104	3	1	0	4
2	Abstract Algebra	SPMMAT 01 01 CC 02 3104	3	1	0	4
3	Complex Analysis	SPMMAT 01 01 CC 03 3104	3	1	0	4
4	Differential Equations and calculus of variations	SPMMAT 01 01 CC 04 3104	3	1	0	4
5	GEC (to be taken from other departments)		-	-	-	4

The following GEC courses are offered to PG students of other departments only.

Introduction to Mathematical Analysis	SPMMAT 01 01 GEC 01 3104
Numerical Methods	SPMMAT 01 01 GEC 02 3104
Programming in C	SPMMAT 01 01 GEC 03 3024

Semester II

Total credits: 22 (CC: 16, DCEC: 4, GEC: 2)

S. No.	Course	Course Code	L	T	P	Credits
1	Linear Algebra	SPMMAT 01 02 CC 01 3104	3	1	0	4
2	Topology	SPMMAT 01 02 CC 02 3104	3	1	0	4
3	Numerical Analysis	SPMMAT 01 02 CC 03 3104	3	1	0	4
4	Mathematical Statistics	SPMMAT 01 02 CC 04 3104	3	1	0	4
5	DCEC*		3	1	0	4
6	GEC (to be taken from other departments)		-	-	-	2

***DCEC (For students of M.Sc. (Mathematics) only)**

Advanced Abstract Algebra	SPMMAT 01 02 DCEC 01 3104
Measure Theory and Integration	SPMMAT 01 02 DCEC 02 3104

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Fluid Dynamics	SPMMAT 01 02 DCEC 03 3104
Fuzzy Set Theory	SPMMAT 01 02 DCEC 04 3104

GEC courses offered to PG students of other departments only

Programming in MATLAB	SPMMAT 01 02 GEC 01 0122
Documentation in LaTeX	SPMMAT 01 02 GEC 02 0122
Numerical Programming in C	SPMMAT 01 02 GEC 03 0122
Discrete Mathematics	SPMMAT 01 02 GEC 04 2002

Prof. Kuldeep Bansal (External Member, BOS)
Department of Mathematics,
GJUST, Hisar

Dr. Sharanjeet Dhawan
Department of Mathematics
CUH, Haryana

23/11/15

Dr. Virendra Kumar
Teacher In-Charge
Department of Mathematics
CUH, Haryana

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DEPARTMENT OF MATHEMATICS

Scheme & Syllabus
M.Sc. (Mathematics)
w.e.f. 2015-16

CENTRAL UNIVERSITY OF HARYANA
JANT-PALI, MAHENDERGARH
HARYANA-123029
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Department of Mathematics

Central University of Haryana
Mahendergarh, Haryana-123029

Scheme and Syllabus of M.Sc. Mathematics
(CHOICE BASED CREDIT SYSTEM)

Course Type

Core Course (CC)
Generic Elective Course (GEC)
Discipline Centric Elective Course (DCEC)
Skill Enhancement Elective Course (SEEC)

Total Credit: 88, Semester wise distribution of credits: 20 + 22 + 22 + 24.

CORE COURSE (CC) (Exclusively for M.Sc. Mathematics Students)

S. No.	Course code	Course title	L	T	P	Credit
1.	SPMMAT 01 01 CC 01 3104	Real Analysis	3	1	0	4
2.	SPMMAT 01 01 CC 02 3104	Abstract Algebra	3	1	0	4
3.	SPMMAT 01 01 CC 03 3104	Complex Analysis	3	1	0	4
4.	SPMMAT 01 01 CC 04 3104	Differential Equations and Calculus of Variations	3	1	0	4
5.	SPMMAT 01 02 CC 01 3104	Linear Algebra	3	1	0	4
6.	SPMMAT 01 02 CC 02 3104	Topology	3	1	0	4
7.	SPMMAT 01 02 CC 03 3104	Numerical Analysis	3	1	0	4
8.	SPMMAT 01 02 CC 04 3104	Mathematical Statistics	3	1	0	4
9.	SPMMAT 01 03 CC 01 3104	Integral Equations	3	1	0	4
10.	SPMMAT 01 03 CC 02 3104	Functional Analysis	3	1	0	4
11.	SPMMAT 01 03 CC 03 3104	Operations Research	3	1	0	4
12.	SPMMAT 01 03 CC 04 3104	Number Theory	3	1	0	4

DISCIPLINE CENTRIC ELECTIVE COURSES (DCEC)
(Offered to the students of M.Sc. Mathematics)

S. No.	Course code	Course title	L	T	P	Credit
1.	SPMMAT 01 02 DCEC 01 3104	Advanced Abstract Algebra	3	1	0	4
2.	SPMMAT 01 02 DCEC 02 3104	Measure Theory and Integration	3	1	0	4
3.	SPMMAT 01 02 DCEC 03 3104	Fluid Dynamics	3	1	0	4
4.	SPMMAT 01 02 DCEC 04 3104	Fuzzy Set Theory	3	1	0	4
5.	SPMMAT 01 03 DCEC 01 3104	Wavelet Analysis	3	1	0	4
6.	SPMMAT 01 03 DCEC 02 3104	Theory of Elasticity	3	1	0	4
7.	SPMMAT 01 03 DCEC 03 2124	Object Oriented Programming with C++	2	1	2	4
8.	SPMMAT 01 03 DCEC 04 3104	Information Theory	3	1	0	4
9.	SPMMAT 01 03 DCEC 05 3104	Applied Discrete Mathematics	3	1	0	4
10.	SPMMAT 01 04 DCEC 01 3104	Differential Geometry	3	1	0	4
11.	SPMMAT 01 04 DCEC 02 3104	Mathematical Modelling	3	1	0	4
12.	SPMMAT 01 04 DCEC 03 3104	Finite Element Analysis	3	1	0	4
13.	SPMMAT 01 04 DCEC 04 3104	Mechanics	3	1	0	4
14.	SPMMAT 01 04 DCEC 05 3104	Advanced Complex Analysis	3	1	0	4

GENERIC ELECTIVE COURSE (GEC)
(Offered to PG students of other departments only)

S.N.	Course code	Course title	L	T	P	Credit
1.	SPMMAT 01 01 GEC 01 3104	Introduction to Mathematical Analysis	3	1	0	4
2.	SPMMAT 01 01 GEC 02 3104	Numerical Methods	3	1	0	4
3.	SPMMAT 01 01 GEC 03 3024	Programming in C	3	0	2	4
4.	SPMMAT 01 02 GEC 01 0122	Programming in MATLAB	0	1	2	2

5.	SPMMAT 01 02 GEC 02 0122	Typesetting in LaTeX	0	1	2	2
6.	SPMMAT 01 02 GEC 03 0122	Numerical Programming in C	0	1	2	2
7.	SPMMAT 01 02 GEC 04 2002	Discrete Mathematics	2	0	0	2

Skill Enhancement Elective Course (Compulsory and exclusively for M.Sc. Mathematics students, non-credit, only qualifying in nature) this may include a course based on Theoretical/Experimental/Computational Techniques/Methods. The department may offer more than one courses depending on specialization and strength of faculty members, and the student has to opt one of them.

Semester I

Total credits: 20 (CC: 16, GEC: 4)

S. No.	Course Title	Course Code	L	T	P	Credits
1	Real Analysis	SPMMAT 01 01 CC 01 3104	3	1	0	4
2	Abstract Algebra	SPMMAT 01 01 CC 02 3104	3	1	0	4
3	Complex Analysis	SPMMAT 01 01 CC 03 3104	3	1	0	4
4	Differential Equations and calculus of variations	SPMMAT 01 01 CC 04 3104	3	1	0	4
5	GEC (to be taken from other departments)		-	-	-	4

The following GEC courses are offered to PG students of other departments only.

Introduction to Mathematical Analysis	SPMMAT 01 01 GEC 01 3104
Numerical Methods	SPMMAT 01 01 GEC 02 3104
Programming in C	SPMMAT 01 01 GEC 03 3024

Semester II

Total credits: 22 (CC: 16, DCEC: 4, GEC: 2)

S. No.	Course	Course Code	L	T	P	Credits
1	Linear Algebra	SPMMAT 01 02 CC 01 3104	3	1	0	4
2	Topology	SPMMAT 01 02 CC 02 3104	3	1	0	4

S. No.	Course	Course Code	L	T	P	Credits
3	Numerical Analysis	SPMMAT 01 02 CC 03 3104	3	1	0	4
4	Mathematical Statistics	SPMMAT 01 02 CC 04 3104	3	1	0	4
5	DCEC*		3	1	0	4
6	GEC (to be taken from other departments)		-	-	-	2

***DCEC (For students of M.Sc. (Mathematics) only)**

Advanced Abstract Algebra	SPMMAT 01 02 DCEC 01 3104
Measure Theory and Integration	SPMMAT 01 02 DCEC 02 3104
Fluid Dynamics	SPMMAT 01 02 DCEC 03 3104
Fuzzy Set Theory	SPMMAT 01 02 DCEC 04 3104

GEC courses offered to PG students of other departments only

Programming in MATLAB	SPMMAT 01 02 GEC 01 0122
Typesetting in LaTeX	SPMMAT 01 02 GEC 02 0122
Numerical Programming in C	SPMMAT 01 02 GEC 03 0122
Discrete Mathematics	SPMMAT 01 02 GEC 04 2002

Semester III

Total credits: 22 (CC: 16, DCEC: 4, SEM: 2)

S. No.	Course	Course Code	L	T	P	Credits
1	Integral Equations	SPMMAT 01 03 CC 01 3104	3	1	0	4
2	Functional Analysis	SPMMAT 01 03 CC 02 3104	3	1	0	4
3	Operations Research	SPMMAT 01 03 CC 03 3104	3	1	0	4
4	Number Theory	SPMMAT 01 03 CC 04 3104	3	1	0	4
5	DCEC*		3	1	0	4
6	Seminar/Presentation**	SPMMAT 01 03 SEM 01 3104	-	-	-	2

***DCEC courses for M.Sc. (Mathematics) students only**

Wavelet Analysis	SPMMAT 01 03 DCEC 01 3104
Theory of Elasticity	SPMMAT 01 03 DCEC 02 3104
Object Oriented Programming C++	SPMMAT 01 03 DCEC 03 2124

Information Theory	SPMMAT 01 03 DCEC 04 3104
Applied Discrete Mathematics	SPMMAT 01 03 DCEC 05 3104

****Seminar Presentation:** This may include subject/research oriented topics.

Semester IV

Total credits: 24 (DCEC:16, PROJ: 8)

S. No.	Course	Course Code	L	T	P	Credits
1	DCEC*		3	1	0	4
2	DCEC*		3	1	0	4
3	DCEC*		3	1	0	4
4	DCEC*		3	1	0	4
6	Project/Dissertation	SPMMAT 01 04 PROJ	-	-	-	8
6	SEEC**		3	1	0	-

***DCEC courses for M.Sc. (Mathematics) students only**

SPMMAT 01 04 DCEC 01 3104	Differential Geometry	3	1	0	4
SPMMAT 01 04 DCEC 02 3104	Mathematical Modelling	3	1	0	4
SPMMAT 01 04 DCEC 03 3104	Finite Element Analysis	3	1	0	4
SPMMAT 01 04 DCEC 04 3104	Mechanics	3	1	0	4
SPMMAT 01 04 DCEC 05 3104	Advanced Complex Analysis	3	1	0	4

****SEEC** (Skill Enhancement Elective Course, non-credit, only qualifying in nature): This may include a course based on Theoretical/Experimental/Computational Techniques/Methods. The department may offer more than one courses depending on specialization and strength of faculty members, and the student has to opt one of them. The course code may be given as: SPMMAT 01 04 SEEC 0X 3100, X=1, 2, 3,.... etc.

FIRST SEMESTER

REAL ANALYSIS

(SPMMAT 01 01 CC 01 3104)

UNIT - I

Metric Space and examples, open sets, closed sets, neighbourhood, unitary space, Euclidean space, Sequences in Metric spaces and convergence.

UNIT- II

Cauchy sequences, complete metric spaces and examples, Baire's theorem, Continuity, spaces of continuous functions, monotonic functions.

UNIT - III

Compactness, sequential compactness, functions continuous on compact sets, Boazano-Weierstrass property, connectedness, components, Uniform continuity, totally disconnected.

UNIT- IV

Functions of Bounded variation, Total variations, functions of bounded variations expressed as difference of increasing functions, continuous function of bounded variations, Riemann and Riemann-Stieltjes integral.

Text Books:

1. Tom M. Apostol, Mathematical Analysis, Addition –Wesley.
2. G. F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill Ltd.

Reference Books:

1. Walter Rudin, Principles of Mathematical Analysis, 3rd edition, McGraw-Hill, Kogakusha, 1976, International Student Edition.
2. S. C. Malik and Savita Arora, Mathematical Analysis, New Age International Publishers.
3. H. L. Royden, Real Analysis, Macmillan Pub. Co., Inc. 4th Edition, New York, 1993.
4. D. Somasundram and B. Chaudhary, A first course in Mathematical Analysis, Narosa Publishing House, New Delhi.
5. Terence Tao, Analysis II, Hindustan Book Agency, 2006.

ABSTARCT ALGEBRA

(SPMMAT 01 01 CC 02 3104)

UNIT - I

Review of group theory, the class equation, Cauchy`s theorem, Sylow p-subgroups and its applications, Direct product of groups, description of group of order p^2 and pq, where p and q are distinct primes(In general survey of groups upto order 15).

UNIT - II

Zassenhaus lemma, Normal and subnormal series, Composition series, Jordan-Holder theorem, Solvable series, Derived series, Solvable groups, Solvability of S_n – the symmetric group of degree $n \geq 2$ Structure theorem for finitely generated abelian groups.

UNIT – III

Extension fields. Finite, algebraic, and transcendental extensions. Splitting fields. Simple and normal extensions. Perfect fields. Primitive elements. Algebraically closed fields.

UNIT – IV

Automorphisms of extensions. Galois extensions. Fundamental theorem of Galois theory. Galois group over the rationals.

Text Books:

1. I. N. Herstein, Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1975.
2. Joseph Gallian, Contemporary abstract algebra, Narosa Publishing House.

Reference Books *:*

1. V. K. Khanna and S. K. Bhammbri, A Course in Abstract Alegebra, Vikas Publishing house.
2. P. B. Bhattacharya, S. K. Jain and S. R. Nagpaul, Basic Abstract Algebra, 2nd Edition, Cambridge University Press, Indian Edition, 1997.
3. S. Lang, Algebra, Addison-Wesley, 3rd editioin, 1993.
4. S. Luther and I. B. S. Passi, Algebra, Vol. I-Groups, Vol. II-Rings, Narosa Publishing House (Vol. I – 1996, Vol. II –1990).
5. P. M. Cohn, Algebra, Vols. I & II, John Wiley & Sons, 1991.
6. N. Jacobson, Basic Algebra, Vol. I & II, W. H. Freeman, 1980.

COMPLEX ANALYSIS
(SPMMAT 01 01 CC 03 3104)

UNIT-I

Power series, analytic functions, analytic functions as mapping, Mobius transformations.

UNIT-II

Power series representation of analytic functions, zeros of analytic functions, the index of a closed curve, Cauchy's theorem and integral formula, Homotopic version of Cauchy's theorem and simple connectivity. Counting zeros, the open mapping theorem, Goursat theorem.

UNIT-III

Classification of singularities, residues, argument principle and their applications.

UNIT-IV

Maximum modulus theorem, Schwarz's lemma and their applications.

Text Book: J.B. Conway, Functions of one complex variable, Springer, 1978.

Reference Books :

1. E. T. Copson, Theory of functions of complex variables, Oxford University Press,1970.
2. L. V. Ahlfors, Complex Analysis. McGraw- Hill, 1966
3. J. B. Conway, Functions of one complex variable, Springer, 1978.
4. Ruel V. Churchill, James W. Brown, Complex Variables and Applications, 8th Edition, Tata McGraw-Hill Education.
5. Edward B. Saff and A D Snider, Fundamentals of complex Analysis with applications to Engineering and Sciences, Pearson Education.

DIFFERENTIAL EQUATIONS AND CALCULUS OF VARIATIONS

(SPMMAT 01 01 CC 04 3104)

UNIT-I

Preliminaries of ODE, PDE, Existence and Uniqueness theorem, Existence of independent solutions, Wronskian, Abel's formula, Orthognality, orthonormal set of functions, Gram-Schmidt process of orthonormalization, Sturm-Liouville problems, method of Variation of parameters.

UNIT-II

Fourier Transform, Fourier sine and cosine transforms, Applications of Fourier Transform for solving differential equations. Regular and singular points, Power series solution of differential equation at regular and irregular singular points, Bessel's and Legendre's equations and their solutions.

UNIT-III

Classification of PDEs, Introduction to Lagrange's method, Charpit's method and Jacobi method. Solution of Laplace, Wave and diffusion equations by method of separation of variables in Cartesian coordinates, polar coordinates and cylindrical coordinates.

UNIT-IV

Extrema of Functionals: Euler's equation, sufficient conditions for the Extremum of a Functional, Geodesics, Brachistochrone problem, Extension of the vibrational method. Hamilton's Principle, Principle of Least action. Distinctions between Hamilton's Principle and the Principle of Least Action.

Text Books:

1. George F Simmons, Differential equations with applications and historical notes, Tata McGraw Hill, New Delhi, 1974.
2. I. M. Gelfand, S. V. Fomin, Calculus of Variations, Dover Book Publication.

Books Recommended :

1. N. N. Lebedev, Special functions and their applications, Prentice Hall of India, New Delhi, 1965.
2. W.T. Reid, Ordinary Differential Equations, John Wiley and Sons, New York, 1971.
3. M. D. Raisinghania, Advanced Differential Equations, S. Chand & Company Ltd., New Delhi, 2001.
4. Shepley L. Ross, Differential Equations, Wiley, India, Third edition.

GEC COURSES OFFERED TO PG STUDENTS OF OTHER DEPARTMENTS

INTRODUCTION TO MATHEMATICAL ANALYSIS

(SPMMAT 01 01 GEC 01 3104)

UNIT-I

Sets, different kinds of sets, infinite and finite sets, countability. Types of relations – void, universal, reflexive, symmetric, transitive and equivalence classes. Complex numbers, graphic representation and properties, polar form of complex numbers, de Movier's theorem.

UNIT-I

Functions, domain, co-domain, range, classification of real functions, algebraic and transcendental functions, even and odd functions, periodic functions, graphs of some important functions.

UNIT-III

Definition of sequence and its convergence, series and convergence. Quadratic equations and roots, nature of roots.

UNIT-IV

Limits, continuity and differentiability: Limit of a function, fundamental theorem on limits, methods of evaluating limits, existence of limit, left hand and right hand limit, continuity at a point, continuity in an interval, Differentiability of a function at a point and in an interval, Geometrical interpretation.

Reference Books:

1. H. L. Royden, Real Analysis, Macmillan Pub. Co., Inc. 4th Edition, New York, 1993.
2. D. Somasundram and B. Chaudhary, A first course in Mathematical Analysis, Narosa Publishing House, New Delhi.
3. S. C. Malik and Savita Arora, Mathematical Analysis, New Age International Publishers.

NUMERICAL METHODS

(SPMMAT 01 01 GEC 02 3104)

UNIT-I

Errors in approximation, Absolute, Relative and percentage errors. Solution of algebraic and transcendental equations: Bisection method, Regula-Falsi method, Newton Raphson method, Secant method. Systems of simultaneous Equations: Crammer's rule, Inversion method, Gauss elimination method, Gauss Jordon method, LU decomposition method, Iterative methods: Jacobi method and Gauss-Seidel method.

UNIT-II

Eigen values and Eigen vectors: Eigen values, Eigen vectors, Cayley Hamilton theorem, Power method for finding largest Eigen value. Curve fitting: Least square curve fit- Straight line fitting, parabolic curve fitting, fitting of exponential curve, fitting of other curves.

UNIT-III

Finite Differences: Forward difference, Backward difference, Central difference, Newton's forward, backward interpolation formulae, Lagrangian interpolation formula, Gauss forward, backward formulae, Stirling formula, Bessel formula.

UNIT-IV

Numerical Differentiation and Integration: Newton's forward difference, Newton's backward difference Formula for differentiation, Trapezoidal and Simpson's one third rules, Simpson's three eight rule for numerical integration, Boole's rule, Weddle's rule, Double integrals using trapezoidal and Simpsons's rules.

Text Book: M. K. Jain, S. R. K. Iyengar and R. K. Jain, Numerical Methods for Scientific & Engg. Computation, New Age International, 2003.

Reference Books:

1. E. Isacson and H. B. Keller, Analysis of Numerical methods, John Wiley & Sons, 1994.
2. K. E. Atkinson, An Introduction to Numerical Analysis, John Wiley & Sons, 1989.
3. A. Maritava Gupta and Subash Chander Bose, Introduction to Numerical Analysis, Academic Publishers.
4. S.D. Conte and Carl De Boor, Elementary Numerical Analysis, An Algorithmic Approach, Tata McGraw Hill, New Delhi, 1981.

PROGRAMMING IN C

(SPMMAT 01 01 GEC 03 3024)

Unit-I

An overview of programming, Programming languages, Classification, C Essentials Program Development, Anatomy of a C Function. Variables, Constants, Expressions, Assignment Statements, Formatting Source files, Continuation character, The Preprocessor. Scalar Data Types-Declarations, Different Types of Integers, Different kinds of integer constants, Floating point types, Initialization, Mixing types, Explicit conversions-casts. Data Types.

Unit-II

Operators and expressions - Precedence and Associatively. Unary Plus and Minus operators. Binary Arithmetic Operators. Arithmetic Assignment Operators. Increment and Decrement Operators. Comma Operator. Relational Operators. Logical Operators. Bit Manipulation Operators. Bitwise Assignment Operators. Cast Operator. Size of Operators. Conditional Operator. Memory Operators, Input/Output functions..

Unit-III

Control Flow - Conditional Branching, The Switch Statement. Looping. Nested Loops, The break and continue Statements. The goto statement. Infinite loops. Arrays - Declaring an array, Arrays and Memory. Initializing arrays, Encryption and Decryption. Multidimensional arrays, Strings.

Unit-IV

Functions - Passing Arguments, declarations and calls. Recursion, The main ( ) Function, Passing Arrays as Function Arguments. Pointers - Pointer Arithmetic, Accessing Array Elements through pointers, Passing Pointers as Function arguments, Arrays of pointers.

Text Books: E. Balagurusamy, Programming in ANSI C, TATA McGraw Hill.

Reference Books:

1. Yashavant P. Kanetkar, Let Us C, BPB, Publication.
2. Byrons, Gottfried. - Programming in C Schaum's Series.
3. Brain W. Kernighan & Dennis M.Ritchie - The C Programme Language 2nd Edi, ANSI features) Prentice Hall 1989.
4. Peter A. Darnell and Phillip E.Margolis - C : A Software Engineering Approach, Narosa Publishing, House (Springer International student Edition) 1993.

SEMESTER – II

LINEAR ALGEBRA

(SPMMAT 01 02 CC 01 3104)

UNIT-I

Vector Spaces: Definition and Examples, Subspaces, Linear dependence, Basis and Dimension, Sum and Direct Sum, Quotient spaces, Linear Transformations: Kernel and Image of a Linear Transformation, Rank and Nullity of a Linear Transformation, Matrix Mappings.

UNIT-II

Linear Mappings and matrices: Matrix representation of Linear Transformation, Change of Basis, Similarity. Polynomial of matrices, Characteristic polynomial, Cayley Hamilton Theorem, diagonalization, minimal polynomial, companion matrix.

UNIT-III

Canonical and Bilinear Forms: Triangular form, invariance, Primary decomposition, Jordon canonical form, Rational canonical Form, Bilinear and Quadratic forms.

UNIT-IV

Inner Product Space, examples and properties, Norms and Distances, Orthonormal basis, The Gram-Schmidt Orthogonalization, Orthogonal complements. The Adjoint of a Linear operator on an inner product space, Normal and self-Adjoint Operators, Unitary and Normal Operators.

Text Books: Seymour Lipschutz, Marc Lipson: Linear Algebra, Third Edition, Tata McGraw-Hill.
Reference Books:

1. K. Hoffman and R. Kunze: Linear algebra, Second Edition, Prentice Hall.
2. S. Axler: Linear Algebra Done Right, Second Edition, Springer-Verlag, 2004.
3. S. Lang: Undergraduate Texts in Mathematics, Third Edition, Springer-Verlag, NewYork, 2004.

TOPOLOGY

(SPMMAT 01 02 CC 02 3104)

UNIT – I

Definition and examples of topological spaces, basis and sub-basis, Open sets, Closed sets. Interior points, Closure points. Limit points, Boundary points, exterior points of a set, Closure of a set, Derived set, Hausdorff spaces.

UNIT – II

Subspace topology, Continuous functions, convergence of sequences, sequential continuity, open and closed mappings, Homeomorphism, pasting lemma, Product topology.

UNIT – III

Connectedness, Continuity and connectedness, Connected subsets of the real line, components, path connectedness, locally connected, locally path connected. Separation axioms, T_0, T_1, T_2 (Hausdorff) spaces.

UNIT – IV

Compactness and its characterizations, Compact subspace of the real line, Continuity and compact sets, Lindelof spaces, Compactness and finite intersection property, Tychonoff theorem, countability and compactness.

Text Book: J. R. Munkres, Toplogy, PHI learning Pvt. Ltd., 2002.
Reference Books:

1. George F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill Book Company, 1963.
2. K. D. Joshi, Introduction to General Topology, Wiley Eastern Ltd, 1983.
3. J. L. Kelly, General Topology, Springer Verlag, New York, 1991.
4. W. J. Pervin, Foundations of General Topology, Academic Press, 1964.
5. T.B.Singh, Elements of Topology, CRC Press, Taylor francis.

NUMERICAL ANALYSIS

(SPMMAT 01 02 CC 03 3104)

UNIT-I

Errors in approximation, Absolute, Relative and percentage errors. Solution of algebraic and transcendental equations: Bisection method, Regula Falsi method, Newton Raphson method. Systems of simultaneous Equations: Gauss elimination method, Gauss Jordon method, LU decomposition method, Iterative methods: Jacobi method and Gauss-Seidel method. Curve fitting: Straight line fitting, parabolic curve fitting, fitting of exponential curve, fitting of other curves. Introduction to splines, B-Splines.

UNIT-II

Finite Differences, Interpolation techniques: Interpolation with equal intervals-Newton Forward, Newton Backward, Gauss forward, Gauss Backward, Stirling, Bessel formulae. Interpolation with unequal intervals-Newton's divided difference, Lagrange interpolation technique. Numerical Differentiation using Newton Forward, Newton Backward formulae.

UNIT-III

Numerical Integration: Newton-Cotes Formulas, Trapezoidal rule, Simpson rule, Romberg's integration, Gauss-Legendre, Gauss-Chebychev formulas.

Solution of Ordinary differential equations: Single step methods: Taylor series method, Picard's method, Euler method, Euler modified method, Runge – Kutta methods, Multistep methods: Milne's and Adam's predictor and corrector methods

UNIT-IV

Classification of PDEs. Solution of partial differential equations by finite difference method. Solution of Laplace equation: standard and diagonal five point formula for solving Laplace and Poisson equations, Solution of One dimensional Heat equation: Schmidt method, Crank-Nicolson method, Solution of wave equation. Introduction to finite elements methods, Solution of boundary value problems by finite element methods.

Text Books: John H. Mathews, Numerical Methods for Mathematics, Science and Engineering, Prentice-Hall International Editions, 1992.

Reference Books:

1. Steven C. Chapra and Raymond P. Canale, Numerical Methods for Engineers, McGraw Hill International Edition, 1998.
2. Richard H. Bartels, John C. Bealty, and John C. Beatty, An Introduction to Spline for use in Computer Graphics and Geometric Modeling, Morgan Kaufmann Publisher, 2006.
3. Carl de Boor, A Practical Guide to Splines, Springer Verlag, 2001.

MATHEMATICAL STATISTICS

(SPMMAT 01 02 CC 04 3104)

UNIT - I

Measures of central tendency and dispersion, moments, Measures of skewness and kurtosis, Correlation and regression. Axiomatic approach to the theory of probability, Sample space, additive and multiplicative law of probability, conditional probability. Definition and properties of random variables, discrete and continuous random variables, probability mass and density functions, distribution function. Concepts of bivariate random variables.

UNIT - II

Mathematical Expectation: Definition and its properties. Variance, Covariance, Moment generating function- definitions and their properties. Discrete distributions: Binomial, Poisson and geometric distributions with their properties.

UNIT - III

Continuous distributions: Uniform, Exponential, Gamma and Normal distributions with their properties. Chebychev's inequality, Central Limit Theorem.

UNIT – IV

Statistical estimation, Testing of Hypothesis: Null and alternative hypotheses, Simple and composite hypotheses, Two types of errors, t, F and Chi-Square as sampling distribution and applications.

Text Book: S.C. Gupta and V.K. Kapoor, Fundamentals of Mathematical Statistics, Sultan Chand & Sons, 2002.

Reference Books:

1. Baisnab and M. Jas, Element of Probability and Statistics, Tata McGraw Hill, 1993.
2. P. L. Meyer, Introductory Probability and Statistical Applications, Addison-Wesley Publishing Company, 1970.

DCEC COURSES OFFRED TO M.SC. (MATHEMATICS) STUDENTS ONLY

ADVANCED ABSTRACT ALGEBRA

(SPMMAT 01 02 DCEC 01 3104)

UNIT – I

Cyclic modules, Simple and semi-simple modules, Schur's lemma, Free modules, Fundamental structure theorem of finitely generated modules over principal ideal domain and its applications to finitely generated abelian groups.

UNIT - II

Uniform modules, Primary modules and Neother- Lasker theorem. Neotherian and Artinian modules and rings with simple properties and examples.

Unit – III

Nilpotent ideals in Neotherian and Artinian rings, Hilbert Basis theorem, Nakayama's lemma, Nilradical and Jacobson radicals, Opertions on ideals , Extension and contraction.

UNIT – IV

Hom(R,R), Opposite rings, Wedderburn – Artin theorem, Maschk's theorem, Equivalent statement for left Artinian rings having non-zero nilpotent ideals.

Text Books: I. N. Herstein, Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1975.

Reference Books:

1. P. B. Bhattacharya, S. K. Jain and S. R. Nagpaul, Basic Abstract Algebra (2nd Edition), Cambridge University Press, Indian Edition, 1997.
2. M. F. Atiyah & I. G. Macdonald, Introduction to Commutative Rings, Addison Wesley.
3. P. M. Cohn, Algebra, Vols. I, II & III, John Wiley & Sons, 1982, 1989, 1991.
4. C. W. Curtis and I. Reiner, Representation Theory of finite Groups and Associative Algebras, Wiley and Sons, 1962.
5. F. W. Anderson and K. R. Fuller, Rings and Categories of Modules, Springer-Verlag New York, 1992.
6. T. Y. Lam, Lectures on Modules and Rings, GTM Vol. 189, Springer-Verlag, 1999.

MEASURE THEORY AND INTEGRATION

(SPMMAT 01 02 DCEC 02 3104)

UNIT - I

Length of an open set, concept of measure, Lebesgue outer measure and measurable sets, example of non-measurable set, sigma algebra, Borel sets, G_δ and F_σ –sets, outer and inner regularity of Lebesgue measure.

UNIT - II

Set function, abstract measure spaces, properties of measures, some examples of measures, measurable spaces, measurable functions, combinations of measurable functions, limits of measurable functions.

UNIT- III

Review of Riemann integral, integrable simple functions, the Lebesgue integration of a measurable function, integration with respect to a measure.

UNIT - I V

Almost everywhere convergence, convergence in measure, Fatou's Lemma, Monotone and Dominated Convergence Theorems.

Text Books:

G. de Barra, Measure and Integration. New Age International (P) Ltd., New Delhi, 2006.
S. K. Berberian, Measure and Integration, Amer. Math. Soc. (reprint), 2011.

Reference Books:

1. H. L. Royden, Real Analysis, Macmillan Pub. Co., Inc. 4th Edition, New York, 1993.
2. P. R. Halmos, Measure Theory, Springer-Verlag New York, 1974.
3. E. Hewitt and K. Stromberg, Real and Abstract Analysis, Springer,
4. G. B. Folland, Real analysis, John Wiley & Sons, 1999.

FLUID DYNAMICS

(SPMMAT 01 02 DCEC 03 3104)

UNIT-I

Kinematics of fluid-Lagrangian and Eulerian methods, Stream lines, Path lines, Streak lines, Velocity potential, Irrotational and rotational motions. Vortex lines, Equation of Continuity. Lagrangian and Eulerian approach, Euler's equation of motion.

UNIT-II

Bernoulli's theorem, Kelvin circulation theorem, Vorticity equation, Energy equation for an incompressible flow. Boundary conditions, Kinetic energy of liquid, Axially symmetric flows, Motion of a sphere through a liquid at rest at infinity, Liquid streaming past a fixed sphere.

UNIT-III

Equation of motion of a sphere, Sources, Sinks and doublets, Images in a rigid impermeable infinite plane and in impermeable spherical surfaces. Two-dimensional irrotational motion produced by motion of circular, co-axial and elliptic cylinders in an infinite mass of liquid, Stream functions, Stokes stream functions.

UNIT-IV

Complex velocity potential, Conformal mapping, Milne-Thomson Circle theorem, Blasius theorem, Vortex Motion and its elementary properties, Kelvin's proof of permanence, Motion due to rectilinear vortices.

Text Book: W.H. Besaint and A.S. Ramsey, A Treatise on Hydromechanics, Part II, CBS Publishers, Delhi,1988.

Reference Books:

1. N. Curle & H. J. Davies, Modern Fluid Dynamics, Vol – I, D Van Nostrand Company Ltd, London.
2. S.W. Yuan, Foundations of Fluid Mechanics, Prentice Hall of India Private Limited, New Delhi, 1976.
3. F. Chorlton, Fluid Dynamics, C.B. S. Publishers Delhi.
4. M. E. O'Neil, and F Choriton, Ideal and Incompressible Fluid Dynamics, John Wiley & Sons.

FUZZY SET THEORY

(SPMMAT 01 02 DCEC 04 3104)

UNIT-I

Concepts of Fuzzy Set, Standard Operations of Fuzzy Set, Fuzzy Complement, Fuzzy Union, Fuzzy Intersection, Other Operations in Fuzzy Set, T- norms and T- conorms. Interval, Fuzzy Number, Operation of Interval, Operation of - cut Interval, Examples of Fuzzy Number Operation.

UNIT-II

Definition of Triangular Fuzzy Number, Operation of Triangular Fuzzy Number, Operation of General Fuzzy Numbers. Approximation of Triangular Fuzzy Number, Operations of Trapezoidal Fuzzy Number, Bell Shape Fuzzy Number. Function with Fuzzy Constraint, Propagation of Fuzziness by Crisp Function, Fuzzifying Function of Crisp Variable, Maximizing and Minimizing Set, Maximum Value of Crisp Function.

UNIT-III

Integration and Differentiation of Fuzzy Function Product Set, Definition of Relation, Characteristics of Relation, Representation Methods of Relations, Operations on Relations, Path and Connectivity in Graph, Fundamental Properties, Equivalence Relation, Compatibility Relation, Pre-order Relation, Order Relation, Definition and Examples of Fuzzy Relation, Fuzzy Matrix, Operations on Fuzzy Relation.

UNIT-IV

Composition of Fuzzy Relation, - cut of Fuzzy Relation, Projection and Cylindrical Extension, Extension by Relation, Extension Principle, Extension by Fuzzy Relation, Fuzzy distance between Fuzzy Sets. Graph and Fuzzy Graph, Fuzzy Graph and Fuzzy Relation, - cut of Fuzzy Graph.

Text Book:

1. Kwang H. Lee, First Course on Fuzzy Theory and Applications, Springer International Edition, 2005.
2. Chander Mohan , An Introduction to Fuzzy Set Theory and Fuzzy Logic, Anshan Publishers.

Reference Books:

1. H.J. Zimmerman, Fuzzy Set Theory and its Applications, Allied Publishers Ltd., New Delhi, 1991.
2. John Yen, Reza Langari, Fuzzy Logic - Intelligence, Control and Information, Pearson Education.

GEC COURSES OFFRED TO PG STUDENTS OF OTHER DEPARTMENTS

PROGRAMMING IN MATLAB

(SPMMAT 01 02 GEC 01 0122)

Overview of MATLAB, operators, Display format, elementary built-in functions, working with variables, General commands, data types, data import, arrays, operations with arrays. Matrices: Eigenvalues and Eigenvectors, Similarity Transformation and Diagonalization, Functions, Script files, operators, Loops and Conditional Statements, Programming in MATLAB, Graphics- 2-D and 3-D Plots, input and output.

Applications in Numerical Methods: System of linear equations, L U Decomposition, Gauss elimination method, Gauss Seidel Method, Gauss Jordan Method. Interpolation: Lagrange and Newton Polynomials, curve fitting, Bisection Method, False Position (Regula-Falsi) Method, Newton–Raphson) Method, Secant Method, Newton Method for a System of Nonlinear Equations, Symbolic Solution for Equations. Applications to Numerical differentiation and integrations: Trapezoidal Method and Simpson Method, Runge–Kutta Method, Introduction to working with modules in MATLAB.

Text Book: S.R. Otto and J.P. Denier, An Introduction to Programming and Numerical Methods in MATLAB, Springer-Verlag London.

Reference Books:

1. Won Young Yang, Wenwu Cao, Tae-Sang Chung and John Morris, Applied numerical methods using MATLAB, John Wiley Interscience.
2. Rudra Pratap, Getting Started with MATLAB: A Quick Introduction for Scientists and Engineers, Oxford University Press.

OTHER USEFUL READING:

Getting started with Matlab, Maths Works Inc. www. in.mathsworks.com

TYPESETTING IN LATEX

(SPMMAT 01 02 GEC 02 0122)

Defining command and environments, Producing and including graphics in a LaTeX file, figures and other floating bodies, lining it up in columns, table of content, cross-reference, bibliography and citation, making index and glossary, slides, overlays and notes, letters.

Design it yourself: document class, page style, title page, customizing the style, line and page breaking, numbering, length, spaces and boxes, formatting with boxes, centring and flushing, list making environments, changing font type size and special symbols, picture, picture environments, picture objects, text, boxes, straight lines, arrow, stacks, circles, oval, framing, curve, grid, repeat patterns.
Making presentation slides in beamer class LaTeX, various styles in beamer presentation, dynamic slides.

Text Book: Leslie Lamport , A Document Preparation System User's Guide and Reference Manual, Addison-Wesley Publishing Company.

Reference Books:

1. Stefan Kottwitz , LaTeX Beginner's Guide, Packt Publishing, UK.

Other Sources for reading:

1. Till Tantau , User Guide to the Beamer Class, http://latex-beamer.sourceforge.net.
2. Tobias Oetiker , The Not So Short Introduction to L ATEX2E, https://tobi.oetiker.ch/lshort/lshort.pdf

NUMERICAL PROGRAMMING IN C

(SPMMAT 01 02 GEC 03 0122)

This course is based on the following courses:

NUMERICAL METHODS--SPMMAT 0101 GEC 02 3104

PROGRAMMING IN C--SPMMAT 0101 GEC 03 3104

DISCRETE MATHEMATICS

(SPMMAT 01 02 GEC 04 2002)

UNIT-I

Mathematical Logic: Statement and notations, proposition and logic operations, connectives (conjunction, disjunction, negation), statement formulas and truth tables, equivalence of formulas and implication laws of logic, variables, quantifiers, , principal of mathematical induction.

Relation and Function: Binary relations, Properties of binary relation in a set, Equivalence relations, Composition of binary relations, Partial ordering and Partial Order set, Hasse diagram, Function and Pigeon hole Principle. Recursion definition, recurrence relations, generating functions and their solutions.

Text Books: Kenneth H. Rosen , Discrete Mathematics and Its Applications, Seventh Edition, Tata McGraw Hill.

Reference Books:

1. J. P. Trembley and R. Manohar, A First Course in Discrete Structure with applications to Computer Science, Tata McGraw Hill (1999).
2. Vijay K. Khanna, Lattices and Boolean Algebras, PHI publication.
3. Babu Ram, Discrete Mathematics, Vinayak Publications.
4. C. L. Liu, Elements of Discrete Mathematics, Tata McGraw Hill.

SEMESTER – III

INTEGRAL EQUATIONS

(SPMMAT 01 03 CC 01 3104)

UNIT - I

Linear integral equations, Some basic identities, Initial value problems reduced to Volterra integral equations, Methods of successive substitution and successive approximation to solve Volterra integral equations of second kind.

UNIT- II

Iterated kernels and Neumann series for Volterra equations. Resolvent kernel as a series, Solution of a Volterra integral equation of the first kind. Boundary value problems reduced to Fredholm integral equations, Methods of successive approximation and successive substitution to solve Fredholm equations of second kind.

UNIT - III

Iterated kernels and Neumann series for Fredholm equations. Resolvent kernel as a sum of series. Fredholm equations with separable kernels, Approximation of a kernel by a separable kernel, Non homogenous Fredholm equations with degenerate kernels.

UNIT - IV

Green's function, Use of method of variation of parameters to construct the Green's function for a nonhomogeneous linear second order boundary value problem, Basic four properties of the Green's function, Orthogonal series representation of Green's function, Alternate procedure for construction of the Green's function by using its basic four properties.

Text Book: R.P. Kanwal, Linear Integral Equation. Theory and Techniques, Academic Press, New York, 1971.

Reference Books:

1. S.G. Mikhlin, Linear Integral Equations (translated from Russian), Hindustan Book Agency, 1960.
2. Abdul J. Jerri, Introduction to Integral Equations with Applications, John Wiley & Sons,1985.
3. Francis B. Hildebrand, Method of Applied Mathematics, Dover Publications; 2nd edition 1992.

FUNCTIONAL ANALYSIS

(SPMMAT 01 03 CC 02 3104)

UNIT-I

Normed linear spaces. Banach spaces. Examples of Banach spaces and subspaces. Continuity of linear maps. Equivalent norms. Normed spaces of bounded linear maps. Bounded linear functionals. Dual spaces of l^p, $\mathbb{R}^n$and Reflexivity.

UNIT-II

Hilbert spaces, examples, Orthogonality, Orthonormal sets, Bessel's inequality, Parsevals's theorem. The conjugate space of a Hilbert space.

UNIT-III

Adjoint operators, Self-adjoint operators, Normal and Unitary operators. Projection operators. Weak convergence. Completely continuous operators.

UNIT-IV

Hahn-Banach theorem and its applications, Uniform boundedness principle. Open mapping theorem, Projections on Banach spaces, Closed graph theorem.

Text Book: E. Kreyszig, Introductory Functional Analysis with Applications, John Wiley.

Reference Books:

1. H. L. Royden, Real Analysis, MacMillan Publishing Co., Inc., New York, 4th Edition, 1993.
3. George F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill Book Company, 1963.
4. G. Bachman and L. Narici, Functional Analysis, Academic Press, 1966.

OPERATIONS RESEARCH

(SPMMAT 01 03 CC 03 3104)

UNIT - I

Operations Research: Origin, definition and scope. Linear Programming: Formulation and solution of linear programming problems by graphical, simplex methods, Big - M and two phase methods, Degeneracy, Duality in linear programming, sensitivity analysis.

UNIT - II

Transportation Problems: Basic feasible solutions, optimum solution by stepping stone and modified distribution methods, unbalanced and degenerate problems, transhipment problem. Assignment problems: Solution by Hungarian method, unbalanced problem, case of maximization, travelling salesman and crew assignment problems.

UNIT - III

Queuing models: Basic components of a queuing system, General birth-death equations, steady-state solution of Markovian queuing models with single and multiple servers (M/M/1. M/M/C, M/M/1/k, M/MC/k)

UNIT- IV

Game Theory : Two person zero sum game, Game with saddle points, rule of dominance; Algebraic, graphical and linear programming, concept of mixed strategy. Sequencing problems: Processing of n jobs through 2 machines, n jobs through 3 machines, 2 jobs through m machines, n jobs through m machines.

Text Book: Kanti Swarup, P.K.Gupta & Man Mohan, S. Chand publisher.

Reference Books:

1. Taha, H.A., Operation Research-An introducton, Printice Hall of India.
2. Gupta, P.K. and Hira, D.S., Operations Research, S. Chand & Co.
3. Sharma, S.D., Operation Research, Kedar Nath Ram Nath Publications.
4. Sharma, J.K., Mathematical Model in Operation Research, Tata McGraw Hill.

NUMBER THEORY

(SPMMAT 01 03 CC 04 3104)

UNIT - I

Representation of the real numbers by decimals, Divisibility, G.C.D and L.C.M., Primes, Fermat numbers, congruences and residues, theorems of Euler, Fermat and Wilson, solutions of congruences, linear congruences, Chinese remainder theorem,

UNIT -II

Arithmetical functions $\varphi(n)$, $\mu(n)$ and $d(n)$ and $\sigma(n)$, Mobius inversion formula, congruences of higher degree, congruences of prime power modulli and prime modulus, power residue,

UNIT - III

Quadratic residue, Legendre symbols, lemma of Gauss and reciprocity law. Jacobi symbols, irrational numbers, irrationality of e and π. Finite continued fractions, simple continued fractions, infinite simple continued fractions.

UNIT - IV

Periodic continued fractions, Approximation of irrational numbers by convergence, best possible approximation, Farey series, rational approximation, Pell's equations, Hurwitz theorem , Lagrange four sphere theorem.

Text Books: D. M. Burton, Elementary Number Theory, Tata McGraw Hill Publishing House, 2006.

***Reference Books*:**

1. G. H. Hardy and E. M. Wright, Theory of Numbers, Oxford Science Publications, 2003.
2. I. Niven and H. S. Zuckerman, Introduction to the Theory of Numbers, John Wiley & Sons, 1960.
3. H. Davenport, Higher Arithmetic, Cambridge University Press, 1999.
4. T. M. Apostol, Introduction to Analytic Number Theory, Narosa Publishing House.

DCEC COURSES OFFRED TO M.SC. (MATHEMATICS STUDENTS)

WAVELET ANALYSIS

(SPMMAT 01 03 DCEC 01 3104)

UNIT-I

Review of Inner Product spaces, orthonormal systems. Frames in C^n. Frames algorithms. Frames and Bessel sequences in infinite dimensional Hilbert spaces, Frame sequence, the Gram matrix associated with Bessel sequences.

UNIT-II

Frames and Operators, characterization of frames, dual frames, tight frames. Riesz bases, Frames versus Riesz bases, conditions for a frame being a Riesz basis, frames containing a Riesz basis. Perturbation of frames.

UNIT-III

Wavelets, Haar Wavelets, basic properties of the Haar scaling function, Haar decomposition And reconstruction algorithms. The Daubechies wavelets, wavelet bases, scaling function. Multiresolution analysis (MRA). Construction of wavelets from MRA.

UNIT-IV

Windowed Fourier Transform (WFT). Continuous Fourier Transform (CFT). Continuous Wavelet Transform (CWT). Comparison between CFT and CWT. Continuous Wavelet Transform as an operator. Inversion formula for Continuous Wavelet Transform.

Text Books:

1. O. Christensen, An introduction to frames and Riesz bases, Birkhauser (2003)
2. S. Mallat , a wavelet tour of signal processing, Academic Press (2009).
3. E. Harnendez and G. Weiss, A first course on wavelets, CRC Press (1996).

Reference Books:

1. D. Han, K.Kornelson , D. Larson and E. Weber, Frames for undergraduates, Student Math. Lib.,(AMS) Vol. 40 (2007). 28
2. Boggess and F.J Narcowich, A first course in Wavelets and Fourier Analysis, Wiley(2009)

THEORY OF ELASTICITY

(SPMMAT 01 03 DCEC 02 3104)

UNIT-I

Cartesian Tensor : Coordinate transformation, Cartesian Tensor of different order, Sum or difference and product of two tensors. Contraction theorem, Quotient law, Symmetric & Skewsymmetric tensors, Kronecker tensor, alternate tensor and relation between them, Scalar invariant of second order tensor, Eigen values & vectors of a symmetric second order tensor, Gradient, divergence & curl of a tensor field. Analysis of Strain : Affine transformations. Infinitesimal affine deformation. Geometrical interpretation of the components of strain.

UNIT-II

Strain quadric of Cauchy. Principal strains and invariants. General infinitesimal deformation. Saint- Venant' s equations of Compatibility, Analysis of stress: Stress tensor. Equation of equilibrium. Transformation of co-ordinates. Stress quadric of Cauchy. Principal stress and Invariants. Maximum normal and shear stresses.

UNIT-III

Equations of elasticity: Generalized Hooke's law. Homogeneous isotropic media. Elastic moduli for isotropic media. Equilibrium and dynamic equations for an isotropic elastic solid. Strain energy function and its connection with Hooke's law. Beltrami-Michell compatibility equations.

UNIT- IV

Two-dimensional problems. Plane stress. Generalized plane stress. Airy stress function. General solution of Biharmonic equation. Stresses and displacements in terms of complex potentials. Waves: Propagation of waves in an isotropic elastic sold medium. Waves of dilation and distortion. Plane waves. Elastic surface waves such as Rayleigh and Love waves.

Text Books:

1. Shanti Narayan, Text Book of Cartesian Tensors, S. Chand & Co., 1950.
2. I.S. Sokolnikoff, Mathematical Theory of Elasticity.

Reference Books:

1. A.E.H. Love, A Treatise on Mathematical Theory of Elasticity.
2. S Timoshenko and I.N. Goodier, Theory of Elasticity.

OBJECT ORIENTED PROGRAMMING WITH C++

(SPMMAT 01 03 DCEC 03 2124)

UNIT - I

Basic concepts of Object-Oriented Programming (OOP). Advantages and applications of OOP. Object-oriented languages. Introduction to C++. Structure of a C++ program. Creating the source files. Compiling and linking. C++ programming basics: Input/Output, Data types, Operators, Expressions, Control structures, Library functions.

UNIT - II

Functions in C++ : Passing arguments to and returning values from functions, Inline functions, Default arguments, Function overloading. Classes and objects : Specifying and using class and object, Arrays within a class, Arrays of objects, Object as a function arguments, Friendly functions, Pointers to members.

UNIT - III

Constructors and destructors. Operator overloading and type conversions. Inheritance : Derived class and their constructs, Overriding member functions, Class hierarchies, Public and private inheritance levels. Polymorphism, Pointers to objects, this pointer, Pointers to derived classes, virtual functions.

UNIT - IV

Streams, stream classes, Unformatted I/O operations, Formatted console I/O operations, Managing output with manipulators. Classes for file stream operations, Opening and Closing a file. File pointers and their manipulations, Random access. Error handling during file operations, Command-line arguments. Exceptional handling.

Text Book: E. Balagrusamy, Object Oriented Programming with C++, 2nd Edition, Tata Mc Graw Hill Pub. Co, 2001.

Reference Books:

1. I. S. Robert Lafore, Object Oriented Programming using C++, Waite's Group Galgotia Pub, 1994.
2. Byron S. Gottfried, Object Oriented Programming using C++, Schaum's Outline Series, Tata Mc-Graw Hill Pub. Co. 2000.
3. J. N. Barakaki, Object Oriented Programming using C++, Prentice Hall of India, 1996.

INFORMATION THEORY

(SPMMAT 01 03 DCEC 04 3104)

UNIT-I

Measure of Information – Axioms for a measure of uncertainty. The Shannon entropy and its properties. Joint and conditional entropies. Transformation and its properties. Axiomatic characterization of the Shannon entropy due to Shannon and Fadeev.

UNIT-II

Noiseless coding - Ingredients of noiseless coding problem. Uniquely decipherable codes. Necessary and sufficient condition for the existence of instantaneous codes. Construction of optimal codes.

UNIT-III

Discrete Memoryless Channel - Classification of channels. Information processed by a channel. Calculation of channel capacity. Decoding schemes. The ideal observer. The fundamental theorem of Information Theory and its strong and weak converses.

UNIT-IV

Continuous Channels - The time-discrete Gaussian channel. Uncertainty of an absolutely continuous random variable. The converse to the coding theorem for time-discrete Gaussian channel. The time-continuous Gaussian channel. Band-limited channels.

Text Book: R. Ash, Information Theory, Interscience Publishers, New York, 1965.

Reference Books:

1. F.M. Reza, An Introduction to Information Theory, MacGraw-Hill Book Company Inc., 1961.
2. J. Aczel and Z. Daroczy, On Measures of Information and their Characterizations, Academic Press, New York.

APPLIED DISCRETE MATHEMATICS

(SPMMAT 01 03 DCEC 05 3104)

UNIT-I

Formal Logic: Statements, Symbolic Representation and Tautologies, Quantifiers, Proposition Logic.

UNIT-II

Lattices - Lattices as partially ordered sets, Their properties, Lattices as Algebraic systems, Some special Lattices, e.g., complete, complemented and Distributive Lattices. Sets Some Special Lattices e.g., Bounded, Complemented & Distributive Lattices..

UNIT-III

Boolean Algebra - Boolean Algebra as Lattices, Various Boolean Identities, The Switching Algebra example, Join - irreducible elements, Atoms and Minterms, Boolean Forms and Their Equivalence, Minterm Boolean Forms, Sum of Products canonical Forms, Minimization of Boolean Functions, Applications of Boolean Algebra to Switching Theory (using AND, OR and NOT gates).

UNIT-IV

Graph Theory - Definition of Graphs, Paths, Circuits, Cycles and Subgraphs, Induced Subgraphs, Degree of a vertex, Connectivity, Planar Graphs and their properties, Trees, Euler's Formula for Connected Planar Graph, Complete and Complete Bipartite Graphs.

Text Book: Kenneth H. Rosen , Discrete Mathematics and Its Applications, Seventh Edition, Tata McGraw Hill.

References Books:

1. J.P. Tremblay & R.Manohar, Discrete Mathematical Structures With Applications To Computer Science, Mcgraw Hill Book Co., 1997.
2. Seymour Lepschutz, Finite Mathematics (International Edition 1983), Mcgraw-Hili Book Company, New York.
3. C.L. Liu, Elements Of Discrete Mathematics, Mcgraw-Hili Book Co.
4. N. Deo, Graph Theory With Applications To Engineering And Computer Sciences, Prentice Hall Of India.

SEMESTER – IV

DIFFERENTIAL GEOMETRY

(SPMMAT 01 04 DCEC 01 3104)

UNIT-I

Curves with torsion: Tangent, Principal Normal, Curvature, Binormal, Torsion, Serret Frenet formulae, Locus of centre of spherical Curvature.

UNIT-II

Envelopes: Surfaces, Tangent plane, Envelope, Characteristics, Edge of regression, Tangent, Principal normal. Curvature, Binomial Torsion, Serret-Frenet formulae, Loous of centre of curvature, Spherical curvature.

UNIT-III

Curvilinear Co-ordinates: First order magnitude, Directions on a surface, Second order magnitudes, Derivative of unit normal, Principal directions and curvatures.

UNIT-IV

Geodesics: Geodesic property, Equations of geodesics, Torsion of a geodesic.

Text Books: C.E., Weatherburn, Differential Geometry of Three Dimensions, Cambridge University Press.

Reference Books:

1. S. Sokolnikoff, Tensor Calculus and Application to Geometry and Mechanics.
2. T. T. Wilmore, An Introduction to Differential Geometry, Willy & sons.
3. Bary Spain, Tensor Calculus: A concise course, Dover Publications.

MATHEMATICAL MODELING

SPMMAT 01 04 DCEC 02 3104

Unit-I

Simple situations requiring mathematical modelling, techniques of mathematical modeling, Classifications, Characteristics and limitations of mathematical models, Some simple illustrations. Mathematical modelling in population dynamics, Mathematical modelling of epidemics through systems of ordinary differential equations of first order Mathematical Models in Medicine, Arms Race, Battles and international Trade in terms of Systems of ordinary differential equations, Mathematical modelling in dynamics through systems of ordinary differential equations of first order.

Unit-II

The need for Mathematical modelling through difference equations, linear growth and decay models, Non linear growth and decay models, Basic theory of linear difference equations with constant coefficients, Mathematical modelling through difference equations in economics and finance.

Unit-III

Mathematical modelling through difference equations in population dynamics and genetics. Mathematical Modelling through difference equations in probability theory. Miscellaneous examples of Mathematical modelling through difference equations.

Unit-IV

Situations that can be modeled through graphs, Mathematical models in terms of directed graphs Mathematical models in terms of signed graphs, Mathematical models in terms of weighted graphs.

Text Book: J. N. Kapur, Mathematical Modelling, Willey Eastern Limited, Reprint, 2000.

Reference Books:

1. D. J. G. James and J. J. Macdonald, Case studies in Mathematical Modelling, Stanly Thames, Cheltonham.
2. J.N. Kapur, Mathematical entropy Models.
3. M. Crossand A. O. Moscrcadini, The art of Mathematical Modelling, Ellis Harwood and John Wiley.
4. C. Dyson, Elvery, Principles of Mathematical Modelling, Academic Press, New York.
5. D. N. Burghes, Modelling with Difference Equations, Ellis Harwood and John Wiley.

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FINITE ELEMENT ANALYSIS

(SPMMAT 01 04 DCEC 03 3104)

UNIT I

General theory of finite element methods, Difference between finite element and finite difference, Review of some integral formulae, Concept of discretization, Different coordinates, One dimensional finite elements, shape functions, stiffness matrix, connectivity, boundary conditions, equilibrium equation, FEM procedure.

UNIT II

Generalization of the finite element concepts-weighted residual and variational Approaches (Ritz method, Galerkin method, collocation method etc.) Numerical integration, Interpolation formulas and shape functions, Axis symmetric formulations, solving one-dimensional problems.

UNIT III

Two dimensional finite element methods, Element types: triangular, rectangular, quadrilateral, sector, curved, isoperimetric elements and numerical integration, two dimensional boundary value problems, connectivity and nodal coordinates, theory of elasticity, variational functions, triangular elements and area coordinates, transformations, cylindrical coordinates.

UNIT IV

Three dimensional finite elements, higher order finite elements, element continuity, plate finite elements, Application of finite element methods to practical elasticity problems, Computer procedures for Finite element analysis.

Text Book: D. Braess, Finite Elements: Theory, Fast Solvers, and Applications in Solid Mechanics, Cambridge University Press.

Reference Books:

1. C. S. Desai, Introductory Finite Element Method, CRC Press, 2001.
2. G. D. Smith, Numerical solution of Partial Differential Equations: Finite difference methods, Oxford Applied Mathematics and Computing Science Series, 1985.
3. B. Bradie, A friendly introduction to Numerical Analysis, Pearson Education, India, 2007.

MECHANICS

(SPMMAT 01 04 DCEC 04 3104)

UNIT-I

Moments and products of Inertia, Theorems of parallel and perpendicular axes, principal axes, The momental ellipsoid, Equimomental systems, Coplanar distributions.

UNIT-II

Generalized coordinates, Holonomic and Non-holonomic systems. Scleronomic and Rheonomic systems. Lagrange's equations for a holonomic system., Lagrange's equations for a conservative and impulsive forces. Kinetic energy as quadratic function of velocities. Generalized potential, Energy equation for conservative fields.

UNIT-III

Hamilton's variables. Donkin's theorem. Hamilton canonical equations. Cyclic coordinates. Routh's equations. Poisson's Bracket. Poisson's Identity. Jacobi-Poisson Theorem. Hamilton's Principle. Principle of least action.

UNIT-IV

Poincare Cartan Integral invariant. Whittaker's equations. Jacobi's equations. Statement of Lee Hwa Chung's theorem. Hamilton-Jacobi equation. Jacobi theorem. Method of separation of variables. Lagrange Brackets. Condition of canonical character of a transformation in terms of Lagrange brackets and Poisson brackets. Invariance of Lagrange brackets and Poisson brackets under canonical transformations.

Text Book: F.Chorlton, A Text Book of Dynamics, CBS Publishers & Dist., New Delhi.

Reference Books:

1. F. Gantmacher, Lectures In Analytic Mechanics, Mir Publishers, Moscow, 1975.
2. Louis N. Hand And Janet D. Finch , Analytical Mechanics, Cup, 1998.
3. K. Sankra Rao , Classical Mechanics, Prentice Hall Of India, 2005.
4. M.R. Speigal, Theoretical Mechanics, Schaum Outline Series
5. A.S. Ramsey, Newtonian Gravitation, the english language book society and the cambridge university press.

ADVANCED COMPLEX ANALYSIS

SPMMAT 01 04 DCEC 05 3104

UNIT-I

Convex functions and Hadamard's Three Circles Theorem Phragmen-Lindelof Theorem

Unit-II

The space of continuous functions, Spaces of analytic functions, The Riemann Mapping Theorem, Weierstrass Factorization Theorem.

Unit-III

Runge's Theorem, Runge's Theorem, Simple connectedness, Mittag-Leffier's Theorem, Schwarz Reflection Principle.

Unit-IV

Basic Properties of harmonic functions, Harmonic functions on a disk, Jensen's Formula, Bloch's Theorem, The Little Picard Theorem, Schottky's Theorem, The Great Picard Theorem

Text Book: J.B. Conway, Functions of one complex variable, Springer, 1978.

Reference Books:

1. E.T.Copson,: Theory of functions of complex variables, Oxford University Press,1970.
2. L.V .Ahlfors: Complex Analysis. McGraw- Hill, 1966
3. Ruel V. Churchill, James W. Brown, Complex Variables and Applications 8th Edition, Tata McGraw-Hill Education.
4. Edward B. Saff and A D Snider, Fundamental of complex Analysis with applications to Engineering and Sciences, Pearson Education.

SKILL ENHANCEMENT ELECTIVCE COURSES

Department may also offer skill enhancement courses besides the following two courses depending on the availability and expertise of the faculty members in the Department.

PROGRAMMING IN MATLAB
(SPMMAT 01 04 SEEC 01 0120)

UNIT-I

Overview of MATLAB, operators, Display format, elementary built-in functions, working with variables, General commands, data types, data import, arrays, operations with arrays.

Unit-II

Matrices: Eigenvalues and Eigenvectors, Similarity Transformation and Diagonalization, Functions, Script files, operators, Loops and Conditional Statements, Programming in MATLAB, Graphics- 2-D and 3-D Plots, input and output.

Unit-III

Applications in Numerical Methods: System of linear equations, L U Decomposition, Gauss elimination method, Gauss Seidel Method, Gauss Jordan Method. Interpolation: Lagrange and Newton Polynomials, curve fitting, Bisection Method, False Position (Regula-Falsi) Method, Newton–Raphson) Method, Secant Method, Newton Method for a System of Nonlinear Equations, Symbolic Solution for Equations.

Unit-IV

Applications to Numerical differentiation and integrations: Trapezoidal Method and Simpson Method, Runge–Kutta Method, Introduction to working with modules in MATLAB.

Reference Books:

3. Won Young Yang, Wenwu Cao, Tae-Sang Chung and John Morris, Applied numerical methods using MATLAB, John Wiley Interscience.
4. S.R. Otto and J.P. Denier, An Introduction to Programming and Numerical Methods in MATLAB, Springer-Verlag London.
5. Rudra Pratap, Getting Started with MATLAB: A Quick Introduction for Scientists and Engineers, Oxford University Press.

Other Useful Reading: Getting started with Matlab, Maths Works Inc. www. in.mathsworks.com

TYPESETTING IN LATEX

(SPMMAT 01 04 SEEC 02 0120)

UNIT I

Preparing an input file, sentences and paragraphs, the document class, sectioning, display material, running LaTeX, changing the type style, producing mathematical symbols and mathematical formulae, arrays, delimiters, multiline formulae, putting one thing on other, spacing in math mode.

UNIT II

Defining command and environments, Producing and including graphics in a LaTeX file, figures and other floating bodies, lining it up in columns, table of content, cross-reference, bibliography and citation, making index and glossary, slides, overlays and notes, letters.

UNIT III

Design it yourself: document class, page style, title page, customizing the style, line and page breaking, numbering, length, spaces and boxes, formatting with boxes, centring and flushing, list making environments, changing font type size and special symbols, picture, picture environments, picture objects, text, boxes, straight lines, arrow, stacks, circles, oval, framing, curve, grid, repeat patterns.

UNIT IV

Making presentation slides in beamer class LaTeX, various styles in beamer presentation, dynamic slides. PostScript macros for Generic TeX (PsTrix): arguments, dimension, coordinates, angles, line styles, fill styles, custom styles, custom graphics, picture tools, text tricks, node and connection special tricks. Basics of MathJax, Mathjax configuration options.

Reference Books:

1. Leslie Lamport , A Document Preparation System User's Guide and Reference Manual, Addison-Wesley Publishing Company.
2. Stefan Kottwitz , LaTeX Beginner's Guide, Packt Publishing, UK.

Other Sources for reading:

1. Till Tantau , User Guide to the Beamer Class, http://latex-beamer.sourceforge.net.
2. Tobias Oetiker , The Not So Short Introduction to L ATEX2E, https://tobi.oetiker.ch/lshort/lshort.pdf

Journalism and Mass Communication

6

ANNEXURE-'A'

CENTRAL UNIVERSITY OF HARYANA

Scheme of Examination and Syllabi
Master of Journalism and Mass Communication
(For the year 2015-16 and beyond)

A. Core Courses (CC)

(Compulsory Courses offered to JMC Students)

S.No.	Course Code	Course Title	L	T	P	Credit
Semester I						
1	SJM JMC 11 01 C 3104	Introduction to Communication	3	1	0	4
2	SJM JMC 11 02 C 3104	Growth and Development of Media	3	1	0	4
3	SJM JMC 11 03 C 3014	Print Journalism Practice	3	0	1	4
4	SJM JMC 11 04 C 3104	Intercultural Communication	3	1	0	4
Semester II						
5	SJM JMC 12 05 C 3104	Communication Theory	3	1	0	4
6	SJM JMC 12 06 C 3014	Radio & TV Journalism	3	0	1	4
7	SJM JMC 12 07 C 3014	PR & Corporate Communication	3	0	1	4
8	SJM JMC 12 08 C 3104	Media Management	3	1	0	4
9	SJM JMC 12 09 C 0004	Internship (4-week and compulsory)				4
Semester III						
10	SJM JMC 13 10 C 2024	Radio & TV Production	2	0	2	4
11	SJM JMC 1311C 3014	Advertising	3	0	1	4
12	SJM JMC 13 12 C 3104	Communication Research	3	1	0	4
Semester IV						
13	SJM JMC 14 13 C 2114	New Media	2	1	1	4
14	SJM JMC 1414 C 2024	Media Writing	2	0	2	4
15	SJM JMC 1415 C 3104	Media Laws & Ethics	3	1	0	4
16	SJM JMC 1416 C 3104	Communication for Development	3	1	0	4

B. Discipline Centric Elective Courses (DCEC)

(Offered to students of JMC)

S.No.	Course Code	Course Title	L	T	P	Credit
Semester I No DCEC course offered in Semester I						
Semester II (Any one course to be chosen)						
1	SJM JMC 12 01 DCEC 2024	Basic Computers	2	0	2	4
2	SJM JMC 12 02 DCEC 2024	Graphics and Design	2	0	2	4
3	SJM JMC 12 03 DCEC 2024	Photography	2	0	2	4
Semester III (Any one course to be chosen)						
4	SJM JMC 13 04 DCEC 2024	Community Radio	2	0	2	4
5	SJM JMC 13 05 DCEC 3104	Popular Culture and Media	3	1	0	4
6	SJM JMC 13 06 DCEC 2024	Visual Communication	2	0	2	4
Semester IV (Any one course to be chosen)						
7	SJM JMC 14 07 DCEC 0808	Project and Portfolio	0	4	0	8
8	SJM JMC 14 08 DCEC 0808	Dissertation and Portfolio	0	4	0	8

C. Generic Elective Courses (GEC)

(Offered exclusively to students of other Departments)

S.No.	Course Code	Course Title	L	T	P	Credit
Semester I						
1	SJM JMC 11 01 GE 4004	Media Literacy	4	0	0	4
2	SJM JMC 11 02 GE 4004	Media and Society	4	0	0	4
Semester II		No GE course offered in the semester				
Semester III						
3	SJM JMC 13 03 GE 2114	Film Appreciation	2	1	1	4
4	SJM JMC 13 04 GE 2114	Event Management	2	1	1	4
Semester IV No GE course offered in the semester						

D. Skill Enhancement Elective Courses (SEEC)

(Open to all)

S.No.	Course Code	Course Title	L	T	P	Credit
Semester I No SEEC course offered in this semester						
Semester II						
1	SJM JMC 12 01 SEEC 2010	Communication skills (Open to all)	2	0	1	0
Semester III No SEEC course offered in this semester						
Semester IV						
2	SJM JMC 14 02 SEEC 2010	Soft Skills (Open to all)	2	0	1	0

CENTRAL UNIVERSITY OF HARYANA

Scheme of Examination and Syllabi (Semester-wise Scheme)

Master of Journalism and Mass Communication

Semester-I **Total Credits: 20**

The first semester shall consist of 20 credits with 4 core courses. There shall be a 4-credit GEcourse which students are required to choose from among courses offered by any other department of the university.

S.No.	Course Code	Course Title	L	T	P	Credit
Core Courses						
1	SJM JMC 11 01 C 3104	Introduction to Communication	3	1	0	4
2	SJM JMC 11 02 C 3104	Growth of Media	3	1	0	4
3	SJM JMC 11 03 C 3014	Print Journalism Practice	3	0	1	4
4	SJM JMC 11 04 C 3104	Intercultural Communication	3	1	0	4
GEC						
5	**Course to be chosen from other departments**					4
Generic Elective Courses (GEC) offered by the department to students of other departments(Any one to be chosen)						
6	SJM JMC 11 01 GE 4004	Media Literacy	4	0	0	4
7	SJM JMC 11 02 GE 4004	Media and Society	4	0	0	4

Semester-II **Total Credits: 24**

The second semester shall consist of 24 credits with 5 core papers including a compulsory 4-week internship. There shall be a 4-credit Discipline Centric Elective Course to be chosen out of DCEC courses. A non-credit skills enhancement course on "Communication Skills" is also offered in the semester and is open to everyone including students from other departments also.

S.No.	Course Code	Course Title	L	T	P	Credit
Core Courses						
1	SJM JMC 12 05 C 3104	Communication Theory	3	1	0	4
2	SJM JMC 12 06 C 3014	Radio & TV Journalism	3	0	1	4
3	SJM JMC 12 07 C 3014	PR & Corporate Communication	3	0	1	4
4	SJM JMC 12 08 C 3104	Media Management	3	1	0	4
5	SJM JMC 12 09 C 0004	Internship (4-week and compulsory)				4
No GEC offered in this semester						
DCEC (Any one of the following courses)						
6	SJM JMC 12 01 DCEC 2024	Basics of Computer	2	0	2	4
7	SJM JMC 12 02 DCEC 2024	Graphics and Design	2	0	2	4
8	SJM JMC 12 03 DCEC 2024	Photography	2	0	2	4
Skill Enhancement Elective Courses (SEEC)						
9	SJM JMC 12 01 SEEC 2010	Communication Skills	2	0	1	0

With the end of Second Semester End Exam all students are required to go for a 4-week internship with a media house/organizations of their choice and/or in consultation with concerned teacher. They are also required to submit a comprehensive Internship Report (IR) preferably accompanied by a Power Point Presentation of the same.

Semester-III

Total Credits: 20

The third semester shall consist of 20 credits with 4 core papers. There shall be a 4-credit Discipline Centric Elective Course to be chosen out of DCEC courses.

S.No.	Course Code	Course Title	L	T	P	Credit
Core Courses						
1	SJM JMC 13 10 C 2024	Radio & TV Production	2	0	2	4
2	SJM JMC 1311 C 3014	Advertising	3	0	1	4
3	SJM JMC 13 12 C 3104	Communication Research	3	1	0	4
DCEC						
4	**Course to be taken from other department**					4
5	**Any one of the following courses**					
6	SJM JMC 13 04 DCEC 2024	Community Radio	2	0	2	4
7	SJM JMC 13 05 DCEC 3104	Popular Culture	3	1	0	4
8	SJM JMC 13 06 DCEC 2024	Visual Communication	2	0	2	4
Generic elective courses (GEC) offered by the department to students of other departments						
9	SJM JMC 13 03 GE 2114	Film Appreciation	2	1	1	4
10	SJM JMC 13 04 GE 2114	Event Management	2	1	1	4

Semester-IV Total Credits: 24

The fourth semester shall consist of 22 credits with 4 core papers. There shall be an 8-credit compulsory Discipline Centric Elective Course (DCEC) to be chosen out of 2 papers. A non-credit skills enhancement course on "Soft Skills" is also offered in the semester and is open to everyone including students from other departments also.

S. No.	Course Code	Course Title	L	T	P	Credit
1	SJM JMC 14 13 C 2114	New Media	2	1	1	4
2	SJM JMC 1414 C 2024	Media Writing	2	0	2	4
3	SJM JMC 1415 C 3104	Media Laws & Ethics	3	1	0	4
4	SJM JMC 1416 C 3104	Communication for Development	3	1	0	4
DCEC (Any one paper to be chosen)						
5	SJM JMC 14 07 DCEC 0408	Project and Portfolio	0	4	0	8
6	SJM JMC 14 08 DCEC 0408	Dissertation and Portfolio	0	4	0	8
Skill Enhancement Elective Courses (SEEC)						
7	SJM JMC 14 02 SEEC 2010	Soft Skills	2	0	1	0

DCEC papers-" Project and Portfolio" and "Dissertation and Portfolio" deals with the practical output of students and require them either to submit a project in any area of their specialization plus their work portfolio or to submit a dissertation plus their work portfolio. The paper shall be completed with the guidance of assigned supervisors who shall guide students in completing their dissertation/project and portfolio. The portfolio being important for the students to get jobs shall be carefully supervised by the teachers so as to bring out the talent in a student vis-a-vis his/her abilities and interests.

SEMESTER I PAPER CODE – SJM JMC 11 01 C 3104 PAPER CREDIT- 4
Time allowed: 3 Hours Maximum Marks: 100
Paper Title: INTRODUCTION TO COMMUNICATION

UNIT I Communication

Communication: Meaning, Nature and Process
Features of Human Communication
Functions, Types and Forms of Communication
Barriers to Communication
Role of Communication in Society

UNIT II Communication Models

Aristotle's model, Shannon & Weaver's mathematical model, Berlo's SMCR model, Lasswell's model, Osgood and Schramm's Circular model, Gerbner's Model, Schramm's Field of experience model

UNIT III Communication Situation

Group dynamics, Dyad and Triad
Peer pressures; Reference Group
Groupthink; Communicative Action
Cultural context of communication

UNIT IV Mass Communication

Mass Communication: Concept, Features and Functions
Concept and Characteristics of Mass
Broadcasting and narrowcasting
Global Village and Retribalization
Manufacturing consent: Propaganda, and Hegemony

Readings

Baran and Davis. *Introduction to Mass Communication Theory* 5th Edition (Wadsworth, 2005)

Berlo, David. The Process of Communication (1960)

DeVito Joseph A. *Interpersonal Communication Book* (Pearson Education US, 2006)

Fiske, John. *Introduction to Communication Studies* (Routledge, 1990)

Kumar, J. Keval. *Mass Communication in India*, (Jaico, 2010)

McLuhan, M. *Understanding Media* 2nd ed. (Taylor and Francis,2005)

McQuail , Denis. *Mass Communication Theory*, 6th ed., (Sage, 2010)

Narula , Uma. *Handbook of Communication Models, Perspectives, Strategies* (Atlantic, 2006)

Narula, Uma. Mass Communication Theory and Practice (Har Anand, 2008)

Rogers M. Everett. *A History of Communication Study* (Free Press, 1997)

Sontag, Susan. et al. *The Medium is the Massage: An Inventory of Effects* (Penguin, 2008)

Williams, Raymond. *Communication* (Penguin, 1976)

SEMESTER I PAPER CODE - SJM JMC 11 02 C 3104 PAPER CREDIT- 4

Paper Title: GROWTH AND DEVELOPMENT OF MEDIA

UNIT I Media evolution

Evolution of print media: The World Context
Pre and Post Indian Independence Journalism; Press during Emergency
Major News Agencies: Indian and Foreign
Press Commissions in India; Committees: Chanda, Verghese, Joshi
Mac Bride Commission and NWICO

UNIT II Radio

Beginning of Radio: India and World
Emergence of All India Radio
Radio Ceylon and BBC in Indian Radio scenario
Commercial broadcast: FM Radios
Non-commercial broadcast: Community Radio

UNIT III Television

Genesis and evolution of Television: India and World
Doordarshan and Private Channel eras
Educational Television in India- SITE, Edusat

UNIT IV Internet and Cinema

Evolution of Internet in India; Digital revolution; Digital convergence
Cinema in India: Genesis, Evolution and Response
Bollywood: Commercial, Parallel and Multiplex Cinema

Readings

Adorno.T. The Culture Industry (Psychology Press, 2001)

Asa Briggs, Peter Burke, *Social History of the Media* (Wiley, 2010)

H.R.Luthra *Indian Broadcasting* (Publication Division, 1986)

KC Sharma, & JN Sharma, *Journalism in India: History Growth Development* (Oscar, 2008)

Kumar, Keval, J. *Mass Communication in India*, 4th Edition (Jaico, 1994)

Mazumdar, Aurobindo, *Indian Press and Freedom Struggle*, (Orient-Longman, 1993),

Natarajan, J, *History of Indian Journalism*, (Publications Division, 1955)

R.Partha Sarathi. *Journalism in India*, (Sterling, 2001)

S C Bhatt. *Indian Press since 1955* (Publication Division, 1997)

Vilanilam, J. *Mass Communication in India: A Sociological Perspective* (Sage, 2005)

SEMESTER I PAPER CODE - SJM JMC 11 03 C 3014 PAPER CREDIT- 4

Paper Title: PRINT JOURNALISM PRACTICE

UNIT I Journalism

Journalism: Definition and its role in society

Journalism vehicles: Newspapers, News Magazines, Tabloids

News: Definition and Types; Difference between news and information

Writing News story: Headlines, Leads, Inverted Pyramid Structure, 5 Ws and 1 H

News Photographs: Functions, Selection, Captioning, Cropping

Genres of Journalistic Writing: News, News Articles, Editorials, Features, Opinion, Column writing

UNIT II Reporting

Reporting: Concept and Definition

Reporting Staff and their qualities and responsibilities; Reporters, Correspondents, Stringers, Freelancers; Citizen Journalist

Approaches to reporting: Objective, Interpretive, Investigative

News gathering process and News flow, Reporting Beats; Scoops

UNIT III Editing

Editing: Definitions and purposes

Editing Staff: Sub-editors, Editors, Chief Editor; their roles and qualities

Copy editing procedures: Editing a news story and an article

News Room Operations

UNIT IV Press and Production

The Printing Process

Types of Printing Press: Gutenberg, Letterpress, Offset, Screen printing, Gravure

Layout of Newspaper: Concept, Types and Importance;

Basic Principles and Elements of Design for Print

Typography and Fonts

Practical Syllabus

Print Journalism & Practice

1. Writing News Report-5
2. Writing Feature and article-5
3. Photo Captions-5
4. Headline Writing-5
5. Letter to the Editor

Reading

Arnold, E. . *Modern Newspaper Design*. (Harper & Row 1969)

Baskette, F., Sissors, J. & Brooks, B. *The Art Of Editing* (6th ed.) (1997)

Garcia, M. *Contemporary Newspaper Design*. (Prentice Hall, 1987)

George A. Hough, *News Writing*, Kanishka Publishers, New Delhi, 1998.

Harrower, T. *The Newspaper Designer's Handbook*. (McGraw-Hill ,2005)

Herbert Strentz, *News Reporters and News Sources*, Prentice Hall of India, New Delhi, 1992.

Jan R. Hakemulder *News Reporting and Editing*, Anmol Publications Pvt. Ltd. New Delhi

Jan R. Hakemulder, Fay A.C. de Jonge and P.P. Singh, *News Reporting and Editing*, Anmol Publications, New Delhi, 1998.

M L Stein and Susan F. Peterno *The News Writers' Handbook*, Blackwell, 2006)

Celluloid reference:

Page 3- A film by Madhur Bhandarkar

Citizen Kane, A film by Orson Welles

SEMESTER I PAPER CODE - SJM JMC 11 04 C 3104 PAPER CREDIT- 4

Paper Title: INTERCULTURURAL COMMUNICATION

UNIT I Theoretical backdrop of Intercultural Communication

Inter-region Migration; World Capitalistic System; Clash of Civilizations; Culture shock; Melting pot; Composite culture; East-West parallelism; Indian diversity

UNIT II Concepts and Definitions

Culture and Civilization, Intercultural Communication; Human Communication, Identities; Socio-linguistic exchange, Ethos and Values; Subcultures; Religious and Spiritual discourses; Global culture

UNIT III Process of Intercultural Communication

Cultural negotiations; understanding similarities and differences in cultures

Experiencing with empathy, Cultural Acquisition and Blending, Skills of adaptation

UNIT IV Facilitating Factors and Barriers of Intercultural Communication

Facilitating Factors: Globalization, Internationalizing Media, UNESCO activities, Colonialism, Great Literature, Business pressures and interests

Restricting Forces: Civilizational and Ethnic Clashes, Social Prejudices and Stereotypes, Identity preservation, Fundamentalism, Food culture

Readings

Edwin R. et al. *Specifications of Intercultural Communication: A Reader* (Cengage Learning, 2014)

Hutington, S.*The Clash of Civilizations and the Remaking of World Order* (Penguin, 1997)

James W. Carey *Communication as Culture: Essays on Media and Society (Psychology Press, 1989)*

Martin, J.N. & Nakayama, T.K. *Intercultural Communication in Contexts* 5th Edition(McGraw- Hill, 2009)

Martin, J.N. & Nakayama, T.K. (2002). *Readings in Intercultural Communication. Experiences and contexts* (McGraw- Hill, 2001)

Samovar, Porter, *Understanding Intercultural Communication: The Working Principles* (2009).

Thombre, A, Ramesh N. Rao *Specifications of Intercultural Communication : The Indian Context* (SAGE Publications India Pvt Ltd, 2015)

Celluloid Reference

La Haine by Mathieu Kassovitz

SEMESTER I PAPER CODE - SJM JMC 11 01 G 4004 PAPER CREDIT- 4

Paper Title: MEDIA LITERACY

UNIT I Introduction to Media Literacy

Definition of Media Literacy

Media Literacy: Nature, Scope and Importance

Sub fields: Digital Literacy and Visual literacy

UNIT II Media Messages

Skills in Media Literacy

Interpreting media messages: Semiotics, Ideology

Media as Text

Commercial messages

UNIT III Media Messages Reception

Process of Message Generation and Communication

Media Vehicles for messages and their types

Nature of media messages; Media Exposure and Filters

Media stereotypes

UNIT IV Media Ecosystem in Globalization

Media Ecosystem, Media Empires and Ownership patterns;

Globalization of Media

Media markets, Propaganda and Hegemony

Readings

Dill, K. How Fantasy Becomes Reality: Seeing Through Media Influence, 1st ed. (OUP, 2009)

Hodkinson,P. Media, Culture and Society: An Introduction (Sage, 2010)

John.V. The Media of Mass Communication (PHI, 2012)

Mackey, M. Literacies Across Media: Playing the Text (Taylor and Francis, 2004)

Pike, D.M. Media Literacy: Seeking Honesty, Independence, and Productivity in Today's Mass Messages (IDEA, 2013)

Potter, W.J. Theory of Media Literacy: A cognitive approach (Sage, 2004)

W.J. Potter, Media Literacy, 7th ed. (Sage,2013)

SEMESTER I PAPER CODE - SJM JMC 11 02 GE 4004 PAPER CREDIT- 4

Paper Title: MEDIA AND SOCIETY

UNIT I Perspectives on Media & Society

Merton (Functions –Dysfunctions); Gramsci (Hegemony); Adorno (Culture Industry); Baudrillard (Hyperreality); Fiske (Understanding Pop Culture); Dube (Cultural Development)

UNIT II Influence of Media on Society

Media structure, Media and Culture, production of Mass Society, Media and Morality, Media and Religious order, Women's representation in media; Media and life style

UNIT III Indian Social Changes & Media

Modernization, Westernization, Sanskritisation; Globalising Culture and Resistance, Indian Social Structure and Digital Divide

UNIT IV Media Effects on Groups & Sub Cultures

Social Deviance & Crimes, Generation of Sub Cultures,
TV effects on Children and Youth, Social Media Uses,
Cognitive Dissonance, Media and Nationalism

Readings

Adorno, T, *Culture Industry* (Routledge, 2001

Baudrillard,J. *Simulations* (Semiotext(e), Inc., 1983)

Dube, S.C. *Indian Society* (National Book Trust, 2005)

Fiske, J. *Television Culture* (Methuen, London, 1987) --*Understanding Popular Culture* (Routledge,1989)

Gramsci,A. *Selections from Prison Notebooks* (International Publishers, 1971)

Krik,J. *Television and Social Change in Rural India* (Sage, 2000)

McQuail, D. *Sociology of Mass Communication*, ed. (Penguin,1972)

Merton, R.K. *Social Theory and Social Structure* (McMillan Co. New York,1968)

Natalie, F. *Mass Media in Sociology: Issues and Debates* (ed.) (Palgrave Macmillan, 2000)

Ritger, G. *Sociological Theory* (Rawat, 2011)

Sriniwas, M.N. *Caste in Modern India & other Essays* (Media promoters and Publishers Ltd. 1962)

Tester,K. *Media, Culture and Morality* (Routledge, 1994)

SEMESTER II PAPER CODE –SJM JMC 12 05 C 3104 PAPER CREDIT- 4

Paper Title: COMMUNICATION THEORY

UNIT I

Bullet Theory,2-step flow theory, Multi-step flow theory, Agenda Setting(McComb& Shaw)Spiral of Silence (Neumann),Hot and Cold media (McLuhan)

UNIT II

Individual Differences theory, UsesandGratification (Blumler and Katz), Cognitive Dissonance (Festinger), Attitude Change (Hovland), Cultivation theory (Gerbner)

UNIT III

Symbolic Interactionism (Goffman), Diffusion of Innovation (Rogers), Signifier and signified (Saussure), Public Sphere (Habermas), Culture Industry (Adorno)

UNIT IV

Normative theories of media: Authoritarian, Libertarian, Social ResponsibilitySoviet Communist, Democratic Participant theory, Development Media theory

References

1. Cummings Publishing Co.
2. Rogers, E.M. (1997). *A history of communication study*. New York: The Free press.
3. Williams, K. (2003).*Understanding Media Theory*. London: Arnold Publication.
4. Blumler, J.G.& Katz, E. (ed.).(1974). *The uses of Mass Communication*.Beverly Hills: Sage.
5. Pool, D.S. (1972). *Handbook on Communication, Ithiel(ed)*. Chicago: Rand McNally College Publishing Co.
6. McQuail, D. (2010). *Mass Communication Theory*. New Delhi: Sage.
7. DeFleur, M.L. & Ball-Rokeach, S. (1982).*Theories of Mass Communication*. New York: Longman.

SEMESTER II PAPER CODE - SJM JMC 12 06 C 3014PAPER CREDIT- 4

Paper Title: RADIO & TV JOURNALISM

UNIT I1

Characteristics of Radio as Medium of Communication

Structure of Public and Private Radio Stations

Types of Radio: Public Radio, Private Radio, Community Radio, Internet radio, Ham radio

Radio Frequencies: FM, AM

UNIT II

Writing for Radio: News Bulletins, Radio Talk, drama, Jingles

Key Radio Program Formats :News Bulletins, Radio Talk, Interview, Discussion, Documentary/Feature, Drama, News, Interactive Program, Discussion, Radio Magazine.

Radio Performers: Radio Jokey, Announcer, Compeer, Radio Artists,

Voice Modulation in Radio Program

UNIT III

TV as visual media of Communication,Broadcast and Webcast

Indian TV Industry,National and International News Channel and News Agencies

Structure of TV news channels: Government and Private

Live and recorded program, Vox-populi,Bytes

UNIT IV

News editors, News Anchors, Reporters, Correspondence and Stringers

Writing for TV: News bulletins, Anchor leads, News Features, Journalistic documentaries

Broadcasting Codes of Ethics

Telecom Regulatory Authority of India

Practical Syllabus

Radio & TV Journalism

Developing Scripts for

1) Talk (10-15 min.)-2
2) News Bulletin (10 min.)-2
3) Feature/Documentary-2
4) Developing research inputs for Discussion on Radio/TV-2
5) Script writing for jingles/ TVC-2

Reference:

1. Boyd, A. (1997).*Broadcast Journalism: Techniques of Radio and TV News* (Media Manuals). London: Focal Press.
2. Sengupta, A. (2006).*Electronic Journalism: Principles and Practices*. New Delhi: Authors Press.
3. Chatterji,P.C. (1991).*Broadcasting in India*. New Delhi: Sage.
4. Awasthy, G.C.(1965). *Broadcasting in India*.Bombay: Allied.
5. Sharda, K. (2000).*Script to Screen: An Introduction to TV Journalism*.New Delhi: Macmillan.
6. Luthra, H.P. (1984).*Indian Broadcasting*. New Delhi: Publications Division.
7. Mcleish R. (2005). *Radio Production*, Oxford: Focal Press.
8. Shivastava, K.M. (1989).*Radio and TV Journalism*.New Delhi: Sterling Publications Pvt. Ltd.

SEMESTER II PAPER CODE - SJM JMC 12 07 C 3014 PAPER CREDIT- 4

Paper Title: PR& CORPORATE COMMUNICATION

UNIT I

Public Relations – Concept and Definition

Evolution of Public Relations

Principles of Public Relations

Functions of Public Relations

UNIT II

Government and Private Public Relations setup

PR organizations: PRSI, IPRA,

Publics in PR: Internal and External

Ethics in Public Relations; PRSI code

UNIT III

PR campaign

PR Tools

Public Relations writing: Press releases, News stories and Features, Coffee Table Book

PR in public and private sector: Practice and Organizational setup

UNIT IV

Corporate communication- concept and scope

Corporate identity for image building

PR and corporate advertising

Case Studies: Corporate Communication

Practical Syllabus

PR & Corporate Communication

1) Writing Press Release-5
2) Preparing PR Case Study-2
3) Writing PR feature-5
4) Developing PR Campaign-2
5) Preparing Press Kit (Organization's brief, press release)-1

Reference

1. Paul, B. (1966). *Corporate Public Relations*. New York: Reinhold.
2. Philips, L. (). *Lesley's Handbook of PR and Communication*. New York: American Management Association.
3. Jetwani, Varma, and Sarkar (1994). *PR concept and strategies tools*.New Delhi: Sterling.
4. Frazier, M. and Carfield (1977). *Public Relations Principles, Cases and problem*. Richard Irwin (Seventh Edition).
5. Burton, P. (1966). *Corporate Public Relations*. New York: Reinhold.
6. Reddi, N.(2015). *C.V. Public Relations Soceity of India - An introduction*. Hyderabad:PRSI.

SEMESTER II PAPER CODE - SJM JMC 12 08 C 3104 PAPER CREDIT- 4

Paper Title: MEDIA MANAGEMENT

Unit-1

Media Management- Definition, Concept and Scope

Principles of Management - Taylor, Fayol, Mayo

Functions of Media Management

Unit-2

Media ownerships

Structure of a Media Organization

Crisis Response in Media Organization

Staff selection in Media Organizations

Unit-3

Media Marketing: Definition, Concept and Scope

Media Products and Media Markets

Instruments of Media Marketing Measurement- TRP, TAM, RAM, ABC, IRS

Revenue- Expenditure in Media

Unit-4

Organizational Behavior: Definition, Importance and Scope.

Types of Conflict- Intrapersonal, Interpersonal and organizational

Conflict Management

Stress Management – Definition and Causes of Stress

References

1. Koontz, H. (2010). *Essential of Management.*New Delhi: Tata McGraw-Hill Education.
2. Saxena, S.C. (2000). *Principles and practices of management*. Africa Beyond: PratiyogitaSahitya.
3. Hannagan, T.(2008). *Management Concepts & Practices*. England: Prentice Hall.
4. Kotler, P. and Armstrong G. (2008). *Principles of Marketing (12th Edition).* India:Prentice Hall.
5. Ramaswamy, V.S. and Namakumari, S. (2002). *Marketing Management*. Macmillan India Limited.
6. Rucker, F.W. and Williams, H.L. (1969). *Newspaper Organization and Management*. Iowa State University Press.
7. Singhal, M. (2014). *Media Management*. New Delhi: Random Publication.

SEMESTER II PAPER CODE - SJM JMC 12 09 C 0004 PAPER CREDIT- 4

Paper Title: Internship (4-week compulsory)

At the end of second semester and after Term-end Exams, all students are required to undergo a 4-week internship with a media house/organization of their choice and/or in consultation with concerned teacher. They are also required to submit Performance Assessment Report (PRA) in prescribed Performa (Performa will be provided by the Department). Performance Assessment Report to be submitted by the organization in which a student has completed the internship.

The PRA shall contain details of the internship (work/duties/tasks performed, copies of work done, assignment details etc.) is to be submitted within a month of commencement of the third semester or as per deadline decided by the department/school.

Based upon this report Internal Examiner evaluate and power-point presentation, External Examiner shall conduct the viva-voce.

SEMESTER II PAPER CODE - SJM JMC 12 01 DCEC2024 PAPER CREDIT- 4

Paper Title: BASICS OF COMPUTER

UNIT I

Origin and growth of Computer; Applications of Computer

Computer hardware: CPU, Data Input and Output devices,

Computer memory: Primary and secondary

Computer Networks: LAN, WAN

UNIT II

Operating and Application Software

Introduction to Ms-Office

Basic file creation, working, editing and saving in MS Word, MS Excel and Power Point

Basic photo editing: Image selection, cropping, enhancing in MS Office Picture Manager

UNIT III

Internet: Origin and brief history

Web Browsers and net surfing

Social Networking Sites, Blogging, Micro blogging website like Twitter

Composing and Sending-Receiving e-mails

UNIT IV

Digital: Definition and Concept

Virtual Technology

Server, Server Farms, Cloud

E-commerce, M-commerce and E-governance

Practical Syllabus

Basics of Computer

1. Power Point Presentation-5
2. Preparing Excel Sheet in Word-5
3. Report Writing in MS Word-5
4. Blog Writing (Posts) -5

References

1. Alexander, T. and Mathew, J. (2014). *Computers and Information Technology*. New Delhi: Raj Publications.

2. Sinha, P.K. (2004). *Computers Fundamental*. New Delhi: BPB Publication.

3. Gralla, P. (2007). *How the Internet works*. Indianapolis: Que Publishing.

SEMESTER II PAPER CODE - SJM JMC 12 02DCEC2024 PAPER CREDIT- 4

Paper Title: GRAPHICS AND DESIGN

Unit-1

Introduction to Graphics
Meaning and Definition
Concept of graphics design, importance and its applications
Principles of design

Unit-2

Visual illusions
Balance in design
Elements of Art: Line, Shape, Space, Color, Tone, Texture, Pattern
Introduction to Layout and its types

Unit-3

Types and tools of Graphics
Designing Logo
Importance and purpose of logo
Poster design

Unit-4

Basic graphics creation inInDesign
Editing in InDesign
Basic graphics creation in Photoshop
Editing in Photoshop

Practical Syllabus

Graphics & Designing

1) Designing logo-5
2) Creating Newspaper layouts-5
3) Designing Poster-5
4) Creating Advertising layouts-5
5) Basic photo edits-5

References

1. Sarkar, N.N. (2008). Art and Production. USA: Oxford University Press.

2. Lidwell, W. (2003). *Universal Principal of Designing*. Singapore: Rockport Publishers.

3. Bringhurst, R. (1996). *The Elements of typographic style*. Canada:Hartley & Marks Inc.,U.S.; 2nd edition.

SEMESTER II PAPER CODE - SJM JMC 12 03DCEC2024 PAPER CREDIT- 4

Paper Title: PHOTOGRAPHY

Unit-1

Evolution of Photography

Types of Camera: Film-based and digital

Parts and Functioning of a camera

Types of Camera Lenses;Micro and Macro photography

Unit-2

Exposure Triangle: Aperture, ISO and Shutter Speed.

Basic Composition of shots

Types of Camera angles and Shots

Concept of Focus and Depth of Field

Unit-3

Types of Camera Lenses

Equipment of photography: Flash, tripods, battery, flash memory, lighting meter, filters

Light: Characteristic and Types

Lighting sources and types and modifiers

Unit-4

Types of Photography:Portrait, Landscape, Sports, Wild-life Photography, Nature Photography, Candid Photography, Street Photography

Studio and Outdoor Photography

Basic working in Photoshop

Layers, Brushes, filters and tools of Photoshop

Practical syllabus

Photography

Creating 5 photos each in following categories

1. Portrait
2. Street
3. Landscape
4. Rural
5. Concept shoot

References

1. Kelby, S. (2006).*The Digital Photography.*San Francisco: Peachpit Press.
2. Barnbaum, B. (1994).*The Art of Photography*. Korea: Rocky Nook.
3. Long, Ben. (2012). *Complete Digital Photography*. Delmar Cengage Learning.
4. Peterson, B. (2010). *Understanding Exposure*. Amphoto Books.
5. Gustavson, T. (2009). *Camera: A History of Photography from Daguerreotype to Digital*. New York: Sterling Innovation.

SEMESTER II PAPER CODE - SJM JMC 12 01 SEEC 2010 PAPER CREDIT- 4

Paper Title: COMMUNICATION SKILLS

Note: As it is non-credit course so there will be two lecture and two practical every week. There will be four units in this course. The students shall be required to submit practical assignments before term end examination based on paper. The examination of the course shall be conducted as theory and practical exam both.

Unit-1

Communication as Process

Motives for Communication

Effective Communication and its benefits

Barriers to effective communication

Unit-2

Formal writing and literary writing

Writing Styles

Writing CV

Formal Letters

Unit-3

Spoken language: Accent and Vocabulary

Greetings and Introduction

Public Speaking, Group Discussion, Extempore

Presentation skills

Unit 4

Personality traits

Communicating through body language: Gestures, Postures, kinesis,

Mannerisms and Etiquettes

Listening with empathy

Practical Syllabus

Communication Skills

1) Writing CV
2) Introduction & Greetings
3) Extempore Practice
4) Group Discussion
5) Presentation Skills

References

1. Sethi, J & et al.*A Practice Course in English Pronunciation*. New Delhi: Prentice Hall of India.

2. Pal, R. and Suri, P.L. (2011). *English Grammar and Composition*.New Delhi: Sultan Chand Publication& Sons.

3. Leena, S. (2009).*Communication Skills*, New Delhi: Prentice Hall of India.

Hindi

हरियाणा केंद्रीय विश्वविद्यालय, महेंद्रगढ़

हिंदी विभाग एवं भारतीय भाषा विभाग

एम.फिल./पीएच.डी. कोर्स वर्क का पाठ्यक्रम

प्रथम प्रश्न-पत्र: **SLCHND 01 101** क्रेडिट : 10

शोध प्रविधि एवं तुलनात्मक साहित्य

खंड- अ

शोध की अवधारणा एवं पर्याय

शोध के तत्त्व, शोध के प्रकार : ऐतिहासिक शोध, अंतरविद्यापरक शोध, पाठालोचानात्मक शोध, तुलनात्मक शोध, लोक साहित्यिक शोध, भाषा वैज्ञानिक/शैली वैज्ञानिक शोध.

शोध की पद्धतियाँ

विषय संकल्पना, रूपरेखा निर्माण, शोध-सामग्री का प्रलेखीकरण, उद्धरण और संदर्भ, सहायक ग्रंथ सूची के निर्माण की प्रविधि, विषय वर्गीकरण, बौद्धिक नकल और शोध.

मानव मूल्य और शोध, संचार क्रांति एवं साहित्यिक शोध, शोध की वस्तुनिष्ठता एवं आत्मपरकता.

खंड- ब

तुलनात्मक साहित्य की अवधारणा और स्वरुप, तुलनात्मक साहित्य के वैचारिक आधार, तुलनात्मक साहित्य के मूल्य एवं मंतव्य, तुलनात्मक साहित्य के अध्ययन की प्रविधि एवं परिप्रेक्ष्य, तुलनात्मक साहित्य के राष्ट्रीय एवं अंतर्राष्ट्रीय संदर्भ, तुलनात्मक साहित्य का भारतीय संदर्भ, भारतीय साहित्य के अध्ययन की समस्याएं, अनुवाद और तुलनात्मक साहित्य, कथाकार प्रेमचंद और चीनी कथाकार लू शून: व्यावहारिक अध्ययन में तुलनात्मक साहित्य की दिशा, साहित्य रूपों का तुलनात्मक अध्ययन.

सन्दर्भ पुस्तकें :

1. शोध प्रविधि : मैथिली प्रसाद भारद्वाज, आधार प्रकाशन, पंचकूला.
2. शोध प्रविधि : डॉ. हरिश्चंद्र वर्मा, हरियाणा साहित्य अकादमी, पंचकूला
3. हिंदी अनुसंधान : विजयपाल सिंह, लोकभारती प्रकाशन, इलाहाबाद.
4. तुलनात्मक अध्ययन : स्वरुप एवं समस्याएं : संपादक डॉ. भ.ह.राजूरकर एवं डॉ. राजमल बोरा, वाणी प्रकाशन, नई दिल्ली
5. तुलनात्मक अध्ययन : स्वरूप और समस्याएँ : राजमल बोरा, वाणी प्रकाशन, नई दिल्ली
6. तुलनात्मक अध्ययन : भारतीय परिपेक्ष्य : इन्द्रनाथ चौधरी, वाणी प्रकाशन, नई दिल्ली
7. तुलनात्मक साहित्य की भूमिका : इन्द्रनाथ चौधरी, वाणी प्रकाशन, नई दिल्ली

हरियाणा केंद्रीय विश्वविद्यालय, महेंद्रगढ़

हिंदी विभाग एवं भारतीय भाषा विभाग

एम.फिल./पी-पीएच.डी. कोर्स वर्क का पाठ्यक्रम

द्वितीय प्रश्न-पत्र:SLCHND01 102 क्रेडिट : 10

साहित्य का इतिहास दर्शन और विचारधारा

खंड- अ

इतिहास दर्शन और साहित्य का इतिहास, साहित्येतिहास के प्रमुख सिद्धांत: विधेयवाद(पाजीटिज्म), विधाओं का इतिहास(महाकाव्य एवं उपन्यास), हिंदी साहित्य के इतिहास लेखन की प्रविधि: उपलब्धि एवं सीमाएं, हिंदी साहित्य के इतिहास के काल विभाजन का आधार, साहित्यिक प्रवृत्तियों का अंतर्संबंध, आचार्य रामचंद्र शुक्ल, हजारी प्रसाद द्विवेदी एवं डॉ. रामविलास शर्मा के साहित्येतिहास लेखन की पद्धति का विशद अध्ययन.

खंड- ब

(इस भाग में साहित्य और विचारधारा के संबंधों का सैद्धांतिक विवेचन करने के साथ हिंदी कृति एवं कृतिकारों की सृजन-प्रक्रिया पर उसके प्रभावों का अध्ययन किया जायेगा.)

सैद्धांतिकी: विचारधारा का स्वरुप, विचाधाराओं का सामाजिक आधार, विचारधारा के रूपों में साहित्य का स्थान, साहित्य की स्वायत्तता और विचारधारा, साहित्य की सैद्धांतिकी के निर्माण में विचारधारा की भूमिका, विचारधारा और साहित्य रूप, साहित्यिक कृति और विचारधारा का संबंध: द्वंद्व और सामंजस्य.

व्यवहार पक्ष : रामचरितमानस(तुलसीदास), राम की शक्तिपूजा(निराला), और अँधेरे में(मुक्तिबोध) का विचारधारात्मक अध्ययन.

संदर्भ पुस्तकें:

1. आलोचना और विचारधारा : नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली.
2. कला का जोखिम : निर्मल वर्मा, राजकमल प्रकाशन, नई दिल्ली.
3. विचारधारा और साहित्य : सं. राजकुमार शर्मा, राज पब्लिशिंग हाउस, नई दिल्ली.
4. शब्द और कर्म : मैनेजर पाण्डेय, वाणी प्रकाशन, नई दिल्ली.
5. The Sublime Object of Ideology: Slavij Zizek, VERSO, London
6. Ideology: Ed. By Terry Eagleton, Routledge, London.
7. साहित्य और इतिहास दृष्टि : मैनेजर पाण्डेय, वाणी प्रकाशन, नई दिल्ली.
8. साहित्य का इतिहास दर्शन : नलिन विलोचन शर्मा, बिहार राष्ट्रभाषा परिषद् , पटना.
9. इतिहास दर्शन : रामविलास शर्मा, वाणी प्रकाशन, नई दिल्ली
10. भारतीय साहित्य के इतिहास की समस्याएँ, रामविलास शर्मा, वाणी प्रकाशन, नई दिल्ली

हरियाणा केन्द्रीय विश्वविद्यालय

हिंदी विभाग

पाठ्यक्रम

स्नातकोत्तर-हिंदी

[सत्र 2015-2016 से प्रभावशील]

प्रस्ताव

पाठ्यक्रम संरचना

Core Course (CC)
(Exclusive for Hindi students)

S.No.	Course code	Course title	L	T	P	Credit
1.	SLLCH HND 1 1 01 C 4004	स्वच्छंदतावादी	4	0	0	4
2.	SLLCH HND 1 1 02 C 4004	हिंदी कथा साहित्य –I	4	0	0	4
3.	SLLCH HND 1 1 03 C 4004	आदिकालीन एवं मध्यकालीन साहित्य का इतिहास	4	0	0	4
4.	SLLCH HND 1 1 04 C 4004	हिंदी भाषा का स्वरूप एवं इतिहास	4	0	0	4
5.	SLLCH HND 1 2 05 C 4004	छायावादोत्तर काव्य	4	0	0	4
6.	SLLCH HND 1 2 06 C 4004	हिंदी कथा साहित्य-II	4	0	0	4
7.	SLLCH HND 1 2 07 C 4004	आधुनिक हिंदी साहित्य का इतिहास	4	0	0	4
8.	SLLCH HND 1 2 08 C 4004	कथेतर गद्य विधाएं	4	0	0	4
9.	SLLCH HND 1 3 09 C 4004	प्राचीन एवं रीतिकालीन काव्य	4	0	0	4
10.	SLLCH HND 1 3 10 C 4004	हिंदी नाटक एवं रंगमंच	4	0	0	4
11.	SLLCH HND 1 3 11 C 4004	भारतीय काव्यशास्त्र	4	0	0	4
12.	SLLCH HND 1 4 12 C 4004	भक्तिकाव्य	4	0	0	4
13.	SLLCH HND 1 4 13 C 4004	हिंदी आलोचना	4	0	0	4
14.	SLLCH HND 1 4 14 C 4004	पाश्चात्य काव्यशास्त्र	4	0	0	4

Generic Elective Course (GEC)
(Offered to other departments)

S.No.	Course code	Course title	L	T	P	Credit
1.	SLLCH HND 1 1 01 GE 4004	हिंदी की संस्कृति	4	0	0	4
2.	SLLCH HND 1 1 02 GE 4004	साहित्य की समझ	4	0	0	4
3.	SLLCH HND 1 2 02 GE 4004	पुस्तक एवं फिल्म समीक्षा (अनिवार्य)	0	2	0	2
4.	SLLCH HND 1 3 03 GE 4004	हिंदी सिनेमा	4	0	0	4
5.	SLLCH HND 1 3 04 GE 4004	अस्मितामूलक साहित्य	4	0	0	4
6.	SLLCH HND 1 3 05 GE 4004	प्रयोजनमूलक हिंदी	4	0	0	4

Discipline Centric Elective Courses (DCEC)
(offered to the students from Hindi and others departments)

S.No.	Course code	Course title	L	T	P	Credit
1.	SLLCH HND 1 2 01 DCEC 4004	समकालीन साहित्य चिंतन	4	0	0	4
2.	SLLCH HND 1 2 02 DCEC 4004	हरियाणा का लोक साहित्य	4	0	0	4
3.	SLLCH HND 1 2 03 DCEC 4004	आधुनिक भारतीय साहित्य	4	0	0	4
4.	SLLCH HND 1 3 12 DCEC 4004	संगोष्ठी पत्र (अनिवार्य)	0	2	0	2
5.	SLLCH HND 1 3 05 DCEC 4004	मीरां	4	0	0	4
6.	SLLCH HND 1 3 06 DCEC 4004	प्रेमचन्द	4	0	0	4

Skill Enhancement Elective Course (Compulsory and exclusively for Hindi students)

S.No.	Course code	Course title	L	T	D	Credit
1.	SLLCH HND 1 4 01 SEEC 0066	लघु शोध-प्रबंध	0	0	12	12

27/4/16 27/4/16 28/04

प्रथम सेमेस्टर

क्रम सं.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	L	T	P	क्रेडिट
1.	SLLCH HND 1 1 01 C 4004	स्वच्छंदतावादी काव्य	4	0	0	4
2.	SLLCH HND 1 1 02 C 4004	हिंदी कथा साहित्य –I	4	0	0	4
3.	SLLCH HND 1 1 03 C 4004	आदिकालीन एवं मध्यकालीन साहित्य का इतिहास	4	0	0	4
4.	SLLCH HND 1 1 04 C 4004	हिंदी भाषा का स्वरूप एवं इतिहास	4	0	0	4
5.		***अन्य विभाग से चयन किया जायेगा***	4	0	0	4

द्वितीय सेमेस्टर

क्रम सं.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	L	T	P	क्रेडिट
1.	SLLCH HND 1 2 05 C 4004	छायावादोत्तर काव्य	4	0	0	4
2.	SLLCH HND 1 2 06 C 4004	हिंदी कथा साहित्य-II	4	0	0	4
3.	SLLCH HND 1 2 07 C 4004	आधुनिक हिंदी साहित्य का इतिहास	4	0	0	4
4.	SLLCH HND 1 2 08 C 4004	कथेतर गद्य विधाएं	4	0	0	4
5.	SLLCH HND 1 2 02 GE 4004	पुस्तक एवं फिल्म समीक्षा (अनिवार्य)	0	2	0	2
6.	SLLCH HND 1 2 DCEC	***अधोलिखित में से किसी एक का चयन करना होगा***	4	0	0	4
	SLLCH HND 1 2 01 DCEC 4004	समकालीन साहित्य चिंतन				
	SLLCH HND 1 2 02 DCEC 4004	हरियाणा का लोक साहित्य				
	SLLCH HND 1 2 03 DCEC 4004	आधुनिक भारतीय साहित्य				

तृतीय सेमेस्टर

क्रम सं.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	L	T	P	क्रेडिट
1.	SLLCH HND 1 3 09 C 4004	प्राचीन एवं रीतिकालीन काव्य	4	0	0	4
2.	SLLCH HND 1 3 10 C 4004	हिंदी नाटक एवं रंगमंच	4	0	0	4
3.	SLLCH HND 1 3 11 C 4004	भारतीय काव्यशास्त्र	4	0	0	4
4.	SLLCH HND 1 3 12 DCEC 4004	संगोष्ठी पत्र (अनिवार्य)	0	2	0	2
5.		*अन्य विभाग से चयन किया जायेगा*	4	0	0	4
6.		*अधोलिखित में से किसी एक का चयन करना होगा*	4	0	0	4
	SLLCH HND 1 3 05 DCEC 4004	मीरां				
	SLLCH HND 1 3 06 DCEC 4004	प्रेमचन्द				

चतुर्थ सेमेस्टर

क्रम सं.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	L	T	D	क्रेडिट
1.	SLLCH HND 1 413 C 4004	भक्तिकाव्य	4	0	0	4
2.	SLLCH HND 1 414 C 4004	हिंदी आलोचना	4	0	0	4
3.	SLLCH HND 1 415 C 4004	पाश्चात्य काव्यशास्त्र	4	0	0	4
4.	SLLCH HND 1 4 01 SEEC 0066	लघु शोध-प्रबंध	0	0	12	12

विभाग द्वारा अन्य विभाग के विद्यार्थियों हेतु प्रस्तावित सामान्य वैकल्पिक पाठ्यक्रमों (GEC) की सूची

क्रम सं.	पाठ्यक्रम कोड	पाठ्यक्रम का शीर्षक	L	T	P	क्रेडिट
प्रथम सेमेस्टर में प्रस्तावित						
1.	SLLCH HND 1 1 01 GE 4004	हिंदी की संस्कृति	4	0	0	4
2.	SLLCH HND 1 1 02 GE 4004	साहित्य की समझ	4	0	0	4
तृतीय सेमेस्टर में प्रस्तावित						
3.	SLLCH HND 1 3 03 GE 4004	हिंदी सिनेमा	4	0	0	4
4.	SLLCH HND 1 3 04 GE 4004	अस्मितामूलक साहित्य	4	0	0	4
5.	SLLCH HND 1 3 05 GE 4004	प्रयोजनमूलक हिंदी	4	0	0	4

प्रथम सेमेस्टर

प्रश्न-पत्र का शीर्षक: स्वच्छंदतावादी काव्य **पूर्णांक : 60**

पाठ्यक्रम कोड : SLL HND 1 1 01 C 4004

इकाई	पाठ्यक्रम
1.	स्वछंदतावाद : राष्ट्रीयतावादी काव्यधारा का सामान्य परिचय छायावाद: परिभाषा, नामकरण एवं काल निर्धारण छायावादयुगीन राजनीतिक, सामाजिक एवं सांस्कृतिक परिदृश्य छायावाद की दार्शनिक पृष्ठभूमि, रहस्यवाद और छायावाद
2.	छायावादी कवियों का प्रकृति, संस्कृति एवं स्त्री विषयक चिंतन काव्यभाषा एवं छंद-विधान : मुक्त-छंद, प्रगीत एवं लंबी कविता की अवधारणा
3.	मैथिलीशरण गुप्त : भारत-भारती (अतीत खंड) जयशंकर प्रसाद : कामायनी (श्रद्धा एवं इड़ा सर्ग)
4.	निराला : राम की शक्तिपूजा, तोड़ती पत्थर सुमित्रानंदन पंत: नौका विहार, अनामिका के कवि के प्रति महादेवी वर्मा : क्या पूजन क्या अर्चन रे, पंथ होने दो अपरिचित, कीर का प्रिय आज पिंजर खोल दो.

अनुदेश: कुल आठ प्रश्न पूछे जाएंगे. किन्हीं पांच प्रश्नों के उत्तर देने होंगे जिसमें व्याख्या से संबंधित प्रश्न अनिवार्य होगा.

संदर्भ पुस्तकें :

- छायावाद : नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली
- निराला की साहित्य साधना-1,2,3 : रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
- निराला: एक आत्महंता आस्था: दूधनाथ सिंह, लोकभारती प्रकाशन, नई दिल्ली
- कामायनी : एक पुनर्विचार: मुक्तिबोध, राजकमल प्रकाशन, नई दिल्ली
- महादेवी वर्मा : दूधनाथ सिंह, राजकमल प्रकाशन, नई दिल्ली
- पंत और पल्लव: सूर्यकांत त्रिपाठी 'निराला', गंगा-ग्रंथागार, लखनऊ
- काव्यकला एवं अन्य निबंध : जयशंकर प्रसाद, लोकभारती प्रकाशन, नई दिल्ली
- जयशंकर प्रसाद : नन्ददुलारे वाजपेयी, भारती भंडार, इलाहाबाद
- छायावाद और नवजागरण: महेन्द्रनाथ राय, राधाकृष्ण प्रकाशन, दिल्ली
- कल्पना और छायावाद: केदारनाथ सिंह, वाणी प्रकाशन, नई दिल्ली
- आधुनिक हिंदी कविता और आलोचना की द्वंद्वात्मकता: कमला प्रसाद, साहित्य वाणी, इलाहाबाद.

प्रश्न-पत्र का शीर्षक: हिंदी कथा साहित्य –I **पूर्णांक : 60**
पाठ्यक्रम कोड : SLL HND 1 1 02 C 4004

इकाई	पाठ्यक्रम
1.	प्रेमचंद पूर्व हिंदी उपन्यास प्रेमचंदयुगीन हिंदी उपन्यास हिंदी की पहली कहानी प्रेमचंद पूर्व हिंदी कहानी प्रेमचंद युगीन हिंदी कहानी
2.	परीक्षा गुरु, चंद्रकांता (कोई एक)
3.	सेवासदन, प्रेमाश्रम, कर्मभूमि, रंगभूमि, गबन, निर्मला, गोदान (कोई एक) त्यागपत्र, कंकाल, कुल्ली भाट (कोई एक)
4.	उसने कहा था, इन्दुमती, आकाशदीप, कफ़न, दो बैलों की कथा, घासवाली, ठाकुर का कुआँ, बड़े भाई साहब, सवा सेर गेहूं (कोई चार)

अनुदेश: कुल आठ प्रश्न पूछे जायेंगे. किन्हीं पांच प्रश्नों के उत्तर देने होंगे जिसमें व्याख्या से संबंधित प्रश्न अनिवार्य होगा.

संदर्भ पुस्तकें :

- हिंदी कहानी संग्रह : सं. भीष्म साहनी, साहित्य अकादमी, दिल्ली
- प्रेमचंद और उनका युग : रामविलास शर्मा, राजकमल प्रकाशन, दिल्ली
- अधूरे साक्षात्कार : नेमिचन्द्र जैन, वाणी प्रकाशन, दिल्ली
- कहानी: नई कहानी : नामवर सिंह, लोकभारती, इलाहाबाद
- नई कहानी : संदर्भ और प्रकृति : देवीशंकर अवस्थी, राजकमल प्रकाशन, दिल्ली
- हिंदी कहानी : प्रक्रिया और पाठ : सुरेंद्र चौधरी, अंतिका प्रकाशन, गाजियाबाद
- हिंदी कहानी : रचना और परिस्थिति: सुरेंद्र चौधरी, अंतिका प्रकाशन, गाजियाबाद
- शांति निकेतन से शिवालिक तक : सं. शिवप्रसाद सिंह, भारतीय ज्ञानपीठ, नई दिल्ली
- हिंदी कहानी : अस्मिता की तलाश : मधुरेश, आधार प्रकाशन, पंचकूला
- हिंदी उपन्यास: एक अंतर्यात्रा : रामदरश मिश्र, राजकमल प्रकाशन, नई दिल्ली
- भारतीय उपन्यास और आधुनिकता : वैभव सिंह, आधार प्रकाशन, पंचकूला
- कहानी का लोकतंत्र : पल्लव, आधार प्रकाशन, पंचकूला

प्रश्न-पत्र का शीर्षक: आदिकालीन एवं मध्यकालीन साहित्य का इतिहास **पूर्णांक : 60**
पाठ्यक्रम कोड : SLL HND 1 1 03 C 4004

इकाई	पाठ्यक्रम
1.	हिंदी साहित्य के इतिहास लेखन की परम्परा कालविभाजन तथा नामकरण आदिकाल एवं युगीन प्रवृत्तियाँ आदिकाल के प्रमुख कवियों का साहित्यिक परिचय रासो ग्रन्थ परंपरा जैन; सिद्ध तथा नाथ साहित्य
2.	भक्ति आंदोलन के उदय के कारण भक्तियुगीन सामान्य प्रवृत्तियाँ निर्गुण एवं सगुणभक्ति का स्वरुप एवं भेद वैष्णव भक्ति का उदय एवं आलावार संत भक्तिकाल के प्रमुख कवियों का साहित्यिक परिचय
3.	भक्तियुगीन काव्य धाराओं का परिचय प्रमुख कवियों के काव्य का साहित्यिक मूल्यांकन
4.	रीतिकालीन साहित्य की प्रमुख प्रवृत्तियाँ नामकरण एवं परिस्थितियाँ रीतिसिद्ध , रीतिबद्ध एवं रीतिमुक्त काव्य धाराएं , रीतिकाल के प्रमुख कवियों का साहित्यिक परिचय

संदर्भ पुस्तकें :

- हिंदी साहित्य का इतिहास: रामचन्द्र शुक्ल, नागरी प्रचारिणी सभा, वाराणसी
- त्रिवेणी: रामचन्द्र शुक्ल, नागरी प्रचारिणी सभा, वाराणसी
- हिंदी साहित्य की भूमिका: हजारी प्रसाद द्विवेदी, राजकमल प्रकाशन, नई दिल्ली
- हिंदी साहित्य का आदिकाल: हजारी प्रसाद द्विवेदी, वाणी प्रकाशन, नई दिल्ली
- हिंदी साहित्य का अतीत (दो खंड): विश्वनाथ प्रसाद मिश्र, वाणी प्रकाशन, नई दिल्ली
- हिंदी साहित्य का इतिहास: डॉ. नगेन्द्र, मयूर पेपर बैक्स, दिल्ली
- हिंदी रीति साहित्य: भगीरथ मिश्र, राजकमल प्रकाशन, नई दिल्ली
- परंपरा का मूल्यांकन: रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
- लोक जागरण और हिंदी साहित्य: रामचन्द्र शुक्ल, वाणी प्रकाशन, नई दिल्ली
- वैष्णव भक्ति का उद्भव और विकास: सुवीरा जायसवाल, ग्रंथशिल्पी,नई दिल्ली

पाठ्यक्रम का शीर्षक: हिंदी भाषा का स्वरूप एवं इतिहास **पूर्णांक : 60**

पाठ्यक्रम कोड :SLLCH HND 1 1 04 C 4004

इकाई	पाठ्यक्रम
1.	भाषा और समाज का अंत:संबंध भारतीय भाषा परिवार का विस्तृत परिचय भाषा एवं बोली में संबंध
2.	अपभ्रंश, अवहट्ट तथा पुरानी हिंदी का संबंध काव्यभाषा के रूप में ब्रज का उदय एवं विकास काव्यभाषा के रूप में अवधी का उदय एवं विकास
3.	हिंदी की प्रमुख बोलियों का परिचय खड़ी बोली हिंदी का उद्भव एवं विकास मानकीकरण एवं मानक हिंदी का स्वरुप हिंदी-उर्दू का परस्पर सम्बन्ध दक्खिनी हिंदी
4.	हिंदी की संवैधानिक स्थिति राजभाषा और राष्ट्रभाषा के रूप में हिंदी हिंदी प्रसार के प्रमुख आन्दोलन तथा प्रमुख संस्थान

संदर्भ पुस्तकें :

- हिंदी का लोकवृत्त : फ्रंचेस्का ओर्सीनी,वाणी प्रकाशन,नई दिल्ली
- हिंदी निरुक्त : किशोरी दास वाजपेयी ,वाणी प्रकाशन ,नई दिल्ली
- हिंदी भाषा का इतिहास : डॉ,भोलानाथ तिवारी .वाणी प्रकाशन ,नई दिल्ली
- भारतीय आर्य भाषा और हिंदी : सुनीति कुमार चटर्जी, वाणी प्रकाशन, नई दिल्ली
- भारत की भाषा समस्या : रामविलास शर्मा,राजकमल प्रकाशन, नई दिल्ली
- भाषा और समाज : रामविलास शर्मा, राजकमल प्रकाशन ,नई दिल्ली
- मध्य और पूर्वी यूरोप में हिंदी: डॉ इमरे बंघा, वाणी प्रकाशन, नई दिल्ली
- अच्छी हिंदी : किशोरी दास वाजपेयी, वाणी प्रकाशन, नई दिल्ली
- हिंदी व्याकरण : कामता प्रसाद गुरु,वाणी प्रकाशन, नई दिल्ली
- भारत के प्राचीन भाषा परिवार और हिंदी : रामविलास शर्मा, राजकमल प्रकाशन ,नई दिल्ली
- हिंदी भाषा : हरदेव बाहरी,अभिव्यक्ति प्रकाशन, इलाहबाद
- हिंदी साहित्य का इतिहास : रामचंद्र शुक्ल,नागरी प्रचारिणीसभा, काशी

27/04/16

द्वितीय सेमेस्टर

पाठ्यक्रम का शीर्षक: छायावादोत्तर काव्य **पूर्णांक : 60**

पाठ्यक्रम कोड : SLLCH HND 1 2 05 C 4004

इकाई	पाठ्यक्रम
1.	छायावादोत्तर काव्य का राजनीतिक, सामाजिक एवं सांस्कृतिक परिवेश. प्रगतिवाद : प्रवृत्तियां एवं प्रमुख रचनाकार प्रयोगवाद : प्रवृत्तियां एवं प्रमुख रचनाकार नयी कविता : आधुनिकता-बोध, अस्तित्त्ववाद, लघुमानववाद अकविता एवं नवगीत : प्रवृत्तियां एवं विशेषताएं
2.	**रामधारी सिंह 'दिनकर'** : उर्वशी (तृतीय सर्ग); **अज्ञेय** : असाध्य वीणा **नरेश मेहता :** समय देवता ; **धर्मवीर भारती** : मुनादी
3.	**गजानन माधव मुक्तिबोध** : अँधेरे में ; **धूमिल** : पटकथा **नागार्जुन :** बहुत दिनों के बाद, मास्टर , मेरी भी आभा है इसमें **त्रिलोचन** : चंपा काले-काले अच्छर नहीं चीन्हती; **शमशेर:** बात बोलेगी, लौट आओ धार **केदारनाथ अग्रवाल**: वीरांगना, मांझी न बजाओ बंशी **रघुवीर सहाय** : दो अर्थ का भय; **श्रीकांत वर्मा** : मगध **केदारनाथ सिंह** : रोटी, जमीन, अनुरोध
4.	**रघुवीर सहाय :** दो अर्थ का भय; **श्रीकांत वर्मा :** मगध **केदारनाथ सिंह :** रोटी, जमीन, **कुंवर नारायण :** अयोध्या -1992 ; **आलोक धन्वा** : सफ़ेद रात **अरूण कमल** : मातृभूमि, अपनी केवल धार **कात्यायनी** : सात भाइयों के बीच चम्पा, हाकी खेलती लड़कियां; **अनामिका**: बेजगह, स्त्रियाँ (किन्ही आठ रचनाकार का अध्ययन अपेक्षित)

अनुदेश: कुल आठ प्रश्न पूछे जाएँगे. किन्हीं पांच प्रश्नों के उत्तर देने होंगे जिसमें व्याख्या से संबंधित प्रश्न अनिवार्य होगा.

संदर्भ पुस्तकें :

- नयी कविता और अस्तित्ववाद: रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
- एक साहित्यिक की डायरी: गजानन माधव मुक्तिबोध, राजकमल प्रकाशन, नई दिल्ली
- कल्पना का उर्वशी विवाद: सं. गोपेश्वर सिंह, वाणी प्रकाशन, नई दिल्ली
- कविता के नये प्रतिमान: नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली
- प्रगतिवाद और समानांतर साहित्य: रेखा अवस्थी, राजकमल प्रकाशन, नई दिल्ली
- मुक्तिबोध: ज्ञान और संवेदना: नंद किशोर नवल, राजकमल प्रकाशन, नई दिल्ली
- नेहरू युग और अकविता: वेद प्रकाश, नवचेतन प्रकाशन, दिल्ली
- सुदामा पाण्डेय 'धूमिल' : अवधेश प्रधान, साहित्य अकादमी, नई दिल्ली
- प्रगतिवाद: शिवदान सिंह चौहान, प्रदीप कार्यालय, मुरादाबाद
- आधुनिक हिंदी साहित्य की प्रवृत्तियां : नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली

27/4/16 27/4/16

पाठ्यक्रम का शीर्षक: हिंदी कथा साहित्य-II **पूर्णांक : 60**

पाठ्यक्रम कोड : SLLCH HND 1 2 06 C 4004

इकाई	पाठ्यक्रम
1.	भारत विभाजन और हिंदी कथा साहित्य विचारधारा और उपन्यास हिंदी उपन्यास और कहानी के विविध आंदोलन
2.	**हजारी प्रसाद द्विवेदी** : बाणभट्ट की आत्मकथा **अज्ञेय** : शेखर : एक जीवनी (भाग-1); **फनीश्वरनाथ रेणु** : मैला आंचल **इलाचंद्र जोशी** : जिप्सी **भीष्म साहनी** : तमस (किन्ही दो का अध्ययन अपेक्षित)
3.	**श्रीलाल शुक्ल** : राग दरबारी ; **मन्नू भंडारी** : महाभोज **कृष्णा सोबती** : मित्रो मरजानी; **मनोहर श्याम जोशी** : कसप **मधु कांकरिया** : सेज पर संस्कृत (किन्ही दो का अध्ययन अपेक्षित)
4.	**यशपाल** : तुमने क्यों कहा था मैं सुंदर हूँ ; **अमरकांत** : जिंदगी और जोंक **मार्कण्डेय** : हंसा जाई अकेला **शेखर जोशी** : कोसी का घटवार **निर्मल वर्मा** : परिंदे **काशीनाथ सिंह** : कविता की नई तारीख; **मन्नू भंडारी** : यही सच है **उदय प्रकाश** : और अंत में प्रार्थना; **हरिशंकर परसाई** : भोलाराम का जीव **ओमप्रकाश वाल्मीकि** : सलाम; **शिवमूर्ति** : तिरिया चरित्तर **उषा प्रियम्वदा** : वापसी (किन्ही चार का अध्ययन अपेक्षित)

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें . किन्हीं पांच प्रश्नों के उत्तर देने होंगे जिसमें व्याख्या से संबंधित प्रश्न अनिवार्य होगा.

संदर्भ पुस्तकें :

- हिंदी कहानी संग्रह: सं. भीष्म साहनी; साहित्य अकादमी, नई दिल्ली
- प्रेमचंद और उनका युग: रामविलास शर्मा, राजकमल प्रकाशन,नई दिल्ली
- अधूरे साक्षात्कार: नेमिचन्द्र जैन; वाणी प्रकाशन, नई दिल्ली
- कहानी, नई कहानी: नामवर सिंह; लोकभारती, इलाहाबाद
- नई कहानी : संदर्भ और प्रवृत्ति: देवीशंकर अवस्थी; राजकमल प्रकाशन, नई दिल्ली
- सुरेंद्र चौधरी; हिंदी कहानी : प्रक्रिया और पाठ (संपादन); अंतिका प्रकाशन, गाजियाबाद
- सुरेंद्र चौधरी; हिंदी कहानी : रचना और परिस्थिति (संपादन); अंतिका प्रकाशन, गाजियाबाद
- शांति निकेतन से शिवालिक तक ; सं. शिवप्रसाद सिंह; भारतीय ज्ञानपीठ, नई दिल्ली
- हिंदी कहानी : अस्मिता की तलाश: मधुरेश, आधार प्रकाशन, पंचकूला
- हिंदी उपन्यास: एक अंतर्यात्रा: रामदरश मिश्र; राजकमल प्रकाशन
- भारतीय उपन्यास और आधुनिकता: वैभव सिंह; आधार प्रकाशन, पंचकूला
- कहानी का लोकतंत्र: पल्लव; आधार प्रकाशन, पंचकूला

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पाठ्यक्रम का शीर्षक: आधुनिक हिंदी साहित्य का इतिहास **पूर्णांक : 60**
पाठ्यक्रम कोड : SLLCH HND 1 2 07 C 4004

इकाई	पाठ्यक्रम
1.	हिंदी गद्य का उद्भव एवं विकास 1857 की क्रांति एवं हिंदी साहित्य भारतेंदु एवं उनका मंडल महावीर प्रसाद द्विवेदी एवं हिंदी नवजागरण राष्ट्रवादी एवं स्वच्छंदतावादी काव्य धाराओं का परिचय
2.	छायावादी काव्य की प्रमुख विशेषताएं छायावाद के प्रतिनिधि कवि एवं उनके काव्य ग्रंथ प्रगतिवाद के उदय के कारण एवं युगीन परिस्थितियाँ प्रगतिवाद के प्रतिनिधि कवियों एवं काव्य का परिचय
3.	मध्य वर्ग एवं आरंभिक हिंदी उपन्यास प्रेमचंद एवं उनके युग का कथा साहित्य हिंदी कथा संसार के प्रतिनिधि उपन्यास एवं कहानियां हिंदी के प्रतिनिधि नाटक एवं रंगमंच के विकास का परिचय हिंदी निबंध एवं अन्य गद्य विधाओं का संक्षिप्त परिचय
4 .	तार सप्तक एवं प्रयोगवादी कवियों के काव्य का परिचय नई कविता एवं समकालीन कविता के प्रमुख हस्ताक्षर समकालीन साहित्यिक पत्रकारिता एवं प्रमुख लेखक संघ

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे.

संदर्भ पुस्तकें :

- हिंदी साहित्य का इतिहास: रामचन्द्र शुक्ल, नागरी प्रचारिणी सभा, वाराणसी
- महावीर प्रसाद द्विवेदी और हिंदी नवजागरण: राम विलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
- हिंदी कविता का अतीत और वर्तमान: मैनेजर पाण्डेय, वाणी प्रकाशन, नई दिल्ली
- उपन्यास और लोकतंत्र: मैनेजर पाण्डेय, वाणी प्रकाशन, नई दिल्ली
- छायावाद: नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली
- कविता के नए प्रतिमान: नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली
- आधुनिक साहित्य की प्रवृत्तियां: नामवर सिंह, लोकभारती प्रकाशन, इलाहाबाद

प्रश्न-पत्र का शीर्षक: कथेतर गद्य विधाएं **पूर्णांक : 60**

पाठ्यक्रम कोड : SLLCH HND 1 2 08 C 4004

इकाई	पाठ्यक्रम
1.	हिंदी गद्य की निर्माण भूमि : फोर्ट विलियम कॉलेज भारतेंदु पूर्व हिंदी गद्य : गिलक्राइस्ट, सदल मिश्र, इंशाअल्ला खां, सदासुख लाल, शिव प्रसाद सितारेहिंद, राजा लक्ष्मण सिंह का परिचयात्मक अध्ययन
2.	भारतेंदु युग : आधुनिकता और गद्य का अंतर्संबंध, हिंदी गद्य के विकास में द्विवेदी युग का महत्त्व हिंदी निबंध, रेखाचित्र, संस्मरण, यात्रा-वृत्तान्त, रिपोर्ताज, आत्मकथा, व्यंग्य, डायरी एवं लघुकथा लेखन की परंपरा.
3.	साहित्य जन समूह के हृदय का विकास है : बालकृष्ण भट्ट कविता क्या है : रामचंद्र शुक्ल अशोक के फूल : हजारी प्रसाद द्विवेदी नयी कविता का आत्मसंघर्ष : मुक्तिबोध पगडंडियों का जमाना : हरिशंकर परसाई
4.	अथातो घुमक्कड़ जिज्ञासा : राहुल सांकृत्यायन भक्तिन : महादेवी वर्मा अपनी खबर : पाण्डेय बेचन शर्मा 'उग्र'

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे.

संदर्भ पुस्तकें :

- हिंदी साहित्य का सरल इतिहास : विश्वनाथ त्रिपाठी, ओरियेंट ब्लैकस्वान, भोपाल
- हिंदी साहित्य का दूसरा इतिहास : बच्चन सिंह, नेशनल पब्लिशिंग, हाउस, दिल्ली
- हिंदी साहित्य और संवेदना का विकास : रामस्वरूप चतुर्वेदी, लोकभारती प्रकाशन, नई दिल्ली
- भारतेंदुयुग और हिंदी गद्य की विकास परम्परा : रामविलास शर्मा, राजकमल प्रकाशन,नई दिल्ली
- हिंदी साहित्य का इतिहास: आचार्य रामचंद्र शुक्ल, नागरी प्रचारिणी सभा, वाराणसी
- सामाजिक क्रांति के दस्तावेज : सं.- शम्भुनाथ, वाणी प्रकाशन, नई दिल्ली
- हिंदी साहित्य आधा इतिहास: सुमन राजे, भारतीय ज्ञानपीठ, नई दिल्ली
- हिंदी गद्य का इतिहास: रामचंद्र तिवारी, विश्वविद्यालय प्रकाशन,वाराणसी

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प्रश्न-पत्र का शीर्षक: पुस्तक/फिल्म समीक्षा पूर्णांक : 60
पाठ्यक्रम कोड : SLL HND 1 2 02 GE 4004

नोट- यह पाठ्यक्रम चयनित फिल्मों एवं पुस्तकों की समीक्षा पर आधारित होगा. फिल्मों एवं पुस्तकों का चयन संबंधित शिक्षक द्वारा किया जायेगा.

पाठ्यक्रम का शीर्षक: समकालीन साहित्य चिंतन **पूर्णांक : 60**
पाठ्यक्रम कोड : SLLCH HND 1 2 01 DCEC 4004

इकाई	पाठ्यक्रम
1.	मार्क्सवाद: वर्ग संघर्ष, ऐतिहासिक विकासवाद, द्वंद्वात्मक भौतिकवाद, अलगाववाद नवमार्क्सवाद: फ्रैंकफर्ट स्कूल का महत्त्व
2.	यथार्थवाद रूपवाद
3.	उत्तर-आधुनिकता की संकल्पना, संरचनावाद उत्तर-संरचनावाद: फूको, देरिदा
4.	साहित्य का समाजशास्त्र भूमंडलीकरण, विस्थापन, बहु-सांस्कृतिकता

अनुदेश: प्रत्येक इकाई से एक प्रश्न अनिवार्य होगा, कुल पांच प्रश्नों के उत्तर देने होंगे.

संदर्भ पुस्तकें :

- यथार्थवाद : जार्ज लुकाच, ग्रंथशिल्पी प्रकाशन, नई दिल्ली
- साहित्य के समाजशास्त्र की भूमिका : मैनेजर पाण्डेय, हरियाणा साहित्य अकादमी, पंचकूला
- संरचनावाद, उत्तर संरचनावाद एवं प्राच्य काव्यशास्त्र: गोपीचंद नारंग,साहित्य अकादमी,नई दिल्ली
- उत्तर आधुनिकता : बहु आयामी सन्दर्भ : पाण्डेय शशिभूषण 'शीतांशु',
- दलित साहित्य का सौंदर्यशास्त्र : शरण कुमार लिम्बाले, वाणी प्रकाशन, नई दिल्ली
- आधुनिकता, उत्तरआधुनिकता एवं समाजशास्त्रीय सिद्धांत: एस.एल.दोषी,रावतपब्लिकेशन,नईदिल्ली
- श्रृंखला की कड़ियाँ : महादेवी वर्मा, लोकभारती प्रकाशन, इलाहाबाद
- स्त्री: उपेक्षिता : सीमोन द बोउवा (अनु. प्रभा खेतान), हिन्द पॉकेट बुक्स
- दलित साहित्य का सौंदर्यशास्त्र: ओमप्रकाश वाल्मीकि, राजकमल प्रकाशन, नई दिल्ली
- आदिवासी स्वर और नयी शताब्दी : सं. रमणिका गुप्ता, वाणी प्रकाशन, नई दिल्ली
- The Postmodern Condition: A Report on Knowledge : Jean-Francois Lyotard

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पाठ्यक्रम का शीर्षक: हरियाणा का लोक साहित्य **पूर्णांक : 60**

पाठ्यक्रम कोड : SLLCH HND 1 2 02 DCEC 4004

इकाई	पाठ्यक्रम
1.	लोक साहित्य : परिचय एवं विभिन्न रूप लोक साहित्य : परंपरा और प्रयोग साहित्य और लोक साहित्य : अंतर एवं अंत:संबंध
2.	हरियाणवी भाषा : उद्भव और विकास हरियाणवी की उपबोलियों का परिचयात्मक अध्ययन
3.	बाजे भगत, लखमीचंद एवं पंडित मांगेराम की चयनित दो-दो रागिनियों का अध्ययन
4.	कहानी : कंवल हरियाणवी : आसा की किरण लोककथा : राजकिशन नैन : लालच बुरी बला एकांकी : रघुवीर सिंह मथाना : स्वर्ण जयंती

अनुदेश: कुल आठ प्रश्न पूछे जाएंगे, किन्हीं पांच प्रश्नों के उत्तर देने होंगे जिसमें व्याख्या से संबंधित प्रश्न अनिवार्य होगा.

संदर्भ पुस्तकें :

- लोक साहित्य की भूमिका : कृष्णदेव उपाध्याय. साहित्य भवन, इलाहाबाद
- भारत में लोक साहित्य: कृष्णदेव उपाध्याय, साहित्य भवन, इलाहाबाद
- भारतीय लोक विश्वास: कृष्णदेव उपाध्याय, हिन्दुस्तानी एकेडमी, इलाहाबाद
- पंचदश लोकभाषा- निबंधावली: बिहार राष्ट्रभाषा परिषद, पटना
- हरियाणा का लोक साहित्य : लालचंद गुप्त 'मंगल'
- लोक संस्कृति के क्षितिज: पूर्णचन्द शर्मा
- भारत की लोक-कथाएँ : सं. ए. के. रामानुजन, नेशनल बुक ट्रस्ट, नई दिल्ली
- हरियाणवी साहित्य और संस्कृति : पूर्णचंद शर्मा, हरियाणा साहित्य अकादमी, चंडीगढ़
- हरियाणा का लोकसाहित्य: शंकर लाल यादव, हिन्दुस्तानी एकेडेमी, इलाहबाद.
- हरियाणवी लोकधारा (प्रतिनिधि रागनियां): सं. सुभाष चंद्र, आधार प्रकाशन, पंचकूला

27/4/16

पाठ्यक्रम का शीर्षक: आधुनिक भारतीय साहित्य **पूर्णांक : 60**
पाठ्यक्रम कोड : SLLCH HND 1 2 03 DCEC 4004

इकाई	पाठ्यक्रम
1.	भारतीय साहित्य की अवधारणा भारत में बहुभाषिकता और बहुसांस्कृतिकता
2.	संस्कार : यू. आर. अनंतमूर्ति माटी मटाल : गोपीनाथ मोहंती हजार चौरासीवें की माँ : महाश्वेता देवी मछुआरे : तकषी शिवशंकर पिल्लै (किन्ही दो का अध्ययन अपेक्षित)
3.	घासीराम कोतवाल : विजय तेंदुलकर तुगलक : गिरीश कर्नाड
4.	रवींद्रनाथ टैगोर: अभिसार, प्राण, मुक्ति त्राण, भारत तीर्थ, बंदी, अपमानित(अनुवाद एवं संपादन : हजारी प्रसाद द्विवेदी, साहित्य अकादमी) ग़ालिब : कोई उम्मीद बर नहीं आती, हजारों ख्वाहिशें ऐसी कि हर ख्वाइश पे दम निकले, बाज़ीचा-ए-अत्फ़ाल है दुनिया मेरे आगे

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे.

संदर्भ पुस्तकें :

- इंडियन लिटरेचर सिंस इंडिपेंडेंस : सं. के. एस. आर. आयंगर, साहित्य अकादमी, नई दिल्ली
- भारतीय साहित्य : नगेंद्र, साहित्य सदन, चिरगांव, झाँसी
- कम्परेटिव लिटरेचर : नगेंद्र, दिल्ली विश्वविद्यालय, दिल्ली
- भारतीय साहित्य : भोलाशंकर व्यास, चौखंभा प्रकाशन, वाराणसी
- भारतीय साहित्य की भूमिका : रामविलास शर्मा, राजकमल प्रकाशन, दिल्ली
- संस्कृति के चार अध्याय : रामधारी सिंह दिनकर, उदयाचल प्रकाशन, पटना
- भारतीय राष्ट्रवाद के उदय की सामाजिक-सांस्कृतिक पृष्ठभूमि : ए.आर. देसाई, मैकमिलन प्रकाशन, नई दिल्ली
- आधुनिक भारतीय चिंतन : विश्वनाथ नारवड़े, राजकमल प्रकाशन, नई दिल्ली
- मृत्युंजय रवींद्रनाथ : हजारी प्रसाद द्विवेदी, राजकमल प्रकाशन, नई दिल्ली
- भारतीय चिंतन परंपरा : के. दामोदरन, पीपुल्स पब्लिशिंग हाउस, नई दिल्ली
- ग़ालिब की कविता : कृष्णदेव गौड़, नागरी प्रचारिणी सभा, वाराणसी.

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तृतीय सेमेस्टर

प्रश्न-पत्र का शीर्षक : प्राचीन एवं रीतिकालीन काव्य **पूर्णांक : 60**

पाठ्यक्रम कोड :SLLCH HND 1 3 09 C 4004

इकाई	पाठ्यक्रम
1.	भारतीय धर्म साधना में नाथ-सिद्धोंका योगदान रासो काव्य परम्परा, हिंदी की आरम्भिक कविता के विविध स्वर सहरपा - चयनित 4 पद (स्फुट संग्रह) पृथ्वीराज रासो - कयमास वध
2.	ढोला मारू रा दूहा - चयनित 6 पद (सं नरोत्तम स्वामी एवं सूर्यकरण पारीक) अमीर खुसरो की मुकरियां पहेलियाँ एवं दो सुखन 10 छंद (स्फुटसंग्रह) विद्यापति की पदावली - चयनित 10 पद (सं. शिव प्रसाद सिंह)
3.	रीतिकालीन कवियों का आचार्यत्व केशव की संवाद योजना एवं काव्य दृष्टि बिहारी की काव्य-कला एवं सौन्दर्य भावना केशवदास-रामचंद्रिका से चयनित 6 पद (सं. विजयपाल सिंह) बिहारी सतसई – चयनित 20 दोहे (सं. जगन्नाथ दास 'रत्नाकर')
4.	रीतिकाव्य में लोकजीवन रीतिकाव्य की अंतर्वस्तु एवं युगबोध घनानंद की प्रेम व्यंजना एवं स्वछंद योजना घनानंद का काव्य - चयनित 10 पद (सं. रामदेव शुक्ल)

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे जिसमें व्याख्या से संबंधित प्रश्न अनिवार्य होगा.

संदर्भ पुस्तकें :

- हिंदी साहित्य का इतिहास : रामचन्द्र शुक्ल, नागरी प्रचारिणी सभा, वाराणसी
- हिंदी साहित्य की भूमिका : हजारी प्रसाद द्विवेदी, राजकमल प्रकाशन, नई दिल्ली
- हिंदी साहित्य का आदिकाल: हजारी प्रसाद द्विवेदी, वाणी प्रकाशन, नयी दिल्ली
- बीसलदेव रासो : माता प्रसाद ,नागरी प्रचारिणी सभा, वाराणसी
- हिंदी साहित्य का अतीत (दो खंड) :विश्वनाथ प्रसाद मिश्र, वाणी प्रकाशन, नयी दिल्ली
- अमीर खुसरों का हिंदवी काव्य : गोपी चंद नारंग,वाणी प्रकाशन, नयी दिल्ली
- हिंदी रीति साहित्य :भागीरथ मिश्र,राजकमल प्रकाशन,नयी दिल्ली
- इमरे बंघा : सनेह को मारग, वाणी प्रकाशन , नयी दिल्ली
- हिंदी स्वछंदतावादी काव्य : प्रेमशंकर,वाणी प्रकाशन. नयी दिल्ली

प्रश्न-पत्र का शीर्षक: हिंदी नाटक एवं रंगमंच **पूर्णांक : 60**

पाठ्यक्रम कोड : :SLLCH HND 1 3 10 C 4004

इकाई	पाठ्यक्रम
1.	हिंदी नाटक एवं रंगमंच का उद्भव और विकास यथार्थबोध एवं भारतेंदु के नाटक अंधेर नगरी : भारतेंदु हरिश्चंद्र
2.	प्रसाद के नाटको में राष्ट्रीय एवं सांस्कृतिक चेतना प्रसाद के नाटकों की अभिनेयता चंद्रगुप्त : जयशंकर प्रसाद
3.	मोहन राकेश के नाटकों में आधुनिकताबोध एवं प्रयोगधर्मिता अंधायुग का नाट्य शिल्प एवं अस्तित्ववाद आधे अधूरे : मोहन राकेश अंधा युग : धर्मवीर भारती
4.	हिंदी एकांकी का उद्भव और विकास

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे जिसमें व्याख्या से संबंधित प्रश्न अनिवार्य होगा.

संदर्भ पुस्तकें :

- भारतेंदु हरिश्चंद्र और हिंदी नवजागरण की समस्याएँ: रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
- भारतेंदु युग और हिंदी भाषा की विकास परंपरा: रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
- प्रसाद के नाटकों का शास्त्रीय अध्ययन: जगन्नाथ शर्मा, वाणी प्रकाशन, नई दिल्ली
- मोहन राकेश और उनके नाटक: गिरीश रस्तोगी, लोकभारती प्रकाशन, इलाहाबाद
- हिंदी नाटक का आत्मसंघर्ष: गिरीश रस्तोगी, लोकभारती प्रकाशन, इलाहाबाद
- आधुनिक भारतीय नाट्य विमर्श: जयदेव तनेजा, राधाकृष्ण प्रकाशन, नई दिल्ली
- मोहन राकेश : रंगशिल्प और प्रदर्शन: जयदेव तनेजा, राधाकृष्ण प्रकाशन, नई दिल्ली
- हिंदी नाटक: बच्चन सिंह, राधाकृष्ण प्रकाशन, नई दिल्ली
- हिंदी साहित्य का इतिहास: रामचंद्र शुक्ल, नागरी प्रचारिणी सभा, वाराणसी
- रंग्दर्शन : नेमीचन्द्र जैन : राधाकृष्ण प्रकाशन, नई दिल्ली
- रंगमंच के सिद्धांत : सं. महेश आनंद, देवेन्द्र राजअंकुर, राजकमल प्रकाशन, नई दिल्ली
- संक्षिप्तनाट्यशास्त्रम : राधा बल्लभ त्रिपाठी, वाणी प्रकाशन, नई दिल्ली
- हिंदी नाट्यदर्पण : सं. डॉ. नगेन्द्र, हिंदी माध्यम कार्यान्वय निदेशालय, नई दिल्ली

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पाठ्यक्रम का शीर्षक: भारतीय काव्यशास्त्र **पूर्णांक : 60**
पाठ्यक्रम कोड : SLLCH HND 1 3 11 C 4004

इकाई	पाठ्यक्रम
1.	काव्य: अर्थ एवं परिभाषा काव्य लक्षण, काव्य हेतु एवं काव्य प्रयोजन काव्य भेद: महाकाव्य, खंड काव्य, गीति काव्य एवं मुक्तक
2.	रस सिद्धांत: रस की परिभाषा एवं स्वरुप रस निष्पत्ति, साधारणीकरण अलंकार सिद्धांत : स्वरुप एवं स्थापनाएं
3.	रीति सिद्धांत : स्वरुप एवं स्थापनाएं वक्रोक्ति सिद्धांत : स्वरुप एवं स्थापनाएं
4.	ध्वनि सिद्धांत: स्वरुप एवं स्थापनाएं औचित्य सिद्धांत : स्वरुप एवं स्थापनाएं

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे.

संदर्भ पुस्तकें :

- भारतीय एवं पाश्चात्य काव्य सिद्धांत: गणपति चन्द्र गुप्त, लोकभारती प्रकाशन, इलाहाबाद
- भारतीय काव्य शास्त्र: सत्यदेव शास्त्री, अशोक प्रकाशन, दिल्ली
- हिंदी काव्यशास्त्र का इतिहास : भागीरथ मिश्र, लखनऊ विश्वविद्यालय, लखनऊ
- काव्य के रूप: गुलाब राय, प्रतिभा प्रकाशन, नई दिल्ली
- साहित्यालोचन : श्यामसुन्दर दास, इंडियन प्रेस, प्रयाग
- भारतीय काव्यशास्त्र: योगेन्द्र प्रताप सिंह, लोकभारती प्रकाशन, इलाहाबाद
- काव्यशास्त्र: भगीरथ मिश्र, विश्वविद्यालय प्रकाशन, वाराणसी
- संस्कृत काव्यशास्त्र: बलदेव उपाध्याय, विश्वविद्यालय प्रकाशन, वाराणसी

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पाठ्यक्रम का शीर्षक: संगोष्ठी पत्र **पूर्णांक : 60**

पाठ्यक्रम कोड : SLLCH HND 1 3 12 DCEC 4004

नोट- यह पाठ्यक्रम चयनित बिन्दुओं/विषयों पर आधारित होगा. संगोष्ठी-पत्र हेतु बिंदु/विषय का निर्धारण संबंधित शिक्षक द्वारा किया जायेगा.

27/4/16.

पाठ्यक्रमका शीर्षक: मीरां **पूर्णांक : 60**

पाठ्यक्रम कोड : SLLCH HND 1 3 05 DCEC 4004

इकाई	पाठ्यक्रम
1.	मीरां एवं हिंदी आलोचना मीरां का जीवन एवं स्रोत सामग्री मीरां के युग का समाज मीरां का राजनीतिक परिवेश
2.	कृष्ण काव्य परंपरा में मीरां का स्थान मीरां की कविता में सगुण निर्गुण का प्रश्न भक्तमालों एवं वार्ता साहित्य में मीरां का परिचय
3.	मीरां के काव्य में विद्रोह चेतना लोकजीवन एवं मीरां का काव्य गीतात्मकता एवं मीरां का काव्य
4.	मीरां वृहत पदावली, सं. पुरोहित हरिनारायण, भाग-1. चयनित 20 पदों का अध्ययन

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे जिसमें व्याख्या से संबंधित प्रश्न अनिवार्य होगा.

संदर्भ पुस्तकें :

- मीरांबाई का जीवन चरित्र: मुंशी देवी प्रसाद, बंगीय हिंदी परिषद, कोलकाता
- मीरां स्मृति ग्रन्थ, बंगीय हिंदी परिषद, कोलकाता
- मीरां का जीवन और काव्य (दो भाग): डॉ. सी. एल. प्रभात, राजस्थानी ग्रंथागार, जोधपुर
- श्रीभक्तमाल (टीका-कवित्त): प्रियादास, श्रीवेंकटेश्वर प्रेस, मुंबई
- चौरासी वैष्णवन की वार्ता, पूजा प्रकाशन, अहमदाबाद
- पदप्रसंग माला: नागरीदास, राजस्थान प्राच्य विद्या प्रतिष्ठान, जोधपुर
- वीर विनोद (भाग दो): श्यामलदास, मोतीलाल बनारसीदास, दिल्ली
- उदयपुर राज्य का इतिहास: गौ. ही. ओझा, राजस्थानी ग्रंथागार, जोधपुर
- मीरां का जीवन: अरविंद सिंह तेजावत, लोकभारती प्रकाशन, इलाहाबाद
- Parita Mukta- Upholding the Common Life, Oxford University Press, Delhi
- C.J. Todd- Annals and Antiquities of Rajasthan, Rupa & Co., New Delhi
- मीरां : विश्वनाथ त्रिपाठी,

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पाठ्यक्रम का शीर्षक: प्रेमचंद **पूर्णांक : 60**

पाठ्यक्रम कोड : SLLCH HND 1 3 06 DCEC 4004

इकाई	पाठ्यक्रम
1.	प्रेमचंद और राष्ट्रवाद प्रेमचंद और पत्रकारिता प्रेमचंद का उर्दू लेखन प्रेमचंद : स्त्री एवं दलित प्रश्न प्रेमचंद और किसान प्रेमचंद का आदर्श और यथार्थ
2.	उपन्यास : रंगभूमि, प्रेमाश्रम
3.	निर्धारित कहानियां : पंच परमेश्वर, बड़े घर की बेटी, बड़े भाई साहब, नशा, ईदगाह, पूस की रात, नमक का दरोगा, ठाकुर का कुआं, बूढ़ी काकी, दो बैलों की कथा, सद्गति, शतरंज के खिलाड़ी, सवा सेर गेहूं (किन्हीं पांच अध्ययन अपेक्षित)
4.	निबंध : साहित्य का उददेश्य, कहानी कला 1,2,3; महाजनी सभ्यता

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे जिसमें व्याख्या से संबंधित प्रश्न अनिवार्य होगा.

संदर्भ पुस्तकें :

- मानसरोवर (भाग 1 से 8) : प्रेमचंद, प्रकाशन संस्थान, दिल्ली
- कलम का सिपाही : अमृत राय, साहित्य अकादमी, नई दिल्ली
- प्रेमचंद घर में : शिवरानी देवी, सरस्वती प्रकाशन, वाराणसी
- प्रेमचंद और उनका युग : रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
- प्रेमचंद और भारतीय किसान : रामबक्ष; वाणी प्रकाशन, दिल्ली
- प्रेमचंद : साहित्यिक विवेचन: नंददुलारे वाजपेयी, लोकभारती प्रकाशन, इलाहाबाद
- प्रेमचंद के उपन्यासों का शिल्प विधान: कमल किशोर गोयनका
- आलोचना का जनपक्ष: चंद्रबली सिंह, वाणी प्रकाशन, नई दिल्ली
- प्रेमचंद : एक विवेचन : इन्द्रनाथ मदान

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चतुर्थ सेमेस्टर

प्रश्न-पत्र का शीर्षक : भक्तिकाव्य **पूर्णांक : 60**

पाठ्यक्रम कोड : SLLCH HND 1 4 13 C 4004

इकाई	पाठ्यक्रम
1.	संत काव्य का वैचारिक आधार कबीर की भक्ति-भावना, समाज दर्शन एवं काव्यकला कबीर काव्य में विद्रोह के स्वर, कबीर के राम एवं रहस्य साधना कबीर चयनित 6 पद एवं 15 दोहे (सं. हजारी प्रसाद द्विवेदी)
2.	हिंदी के प्रमुख सूफ़ी कवि एवं सूफ़ी काव्य की विशेषताएं जायसी के काव्य में प्रेम भावना एवं लोक तत्व पद्मावत में प्रकृति चित्रण, सौन्दर्य दृष्टि एवं रूपक तत्त्व पद्मावत - नागमती वियोग खंड (सं. रामचंद्र शुक्ल)
3.	मध्यकाल में स्त्री स्वर एवं मीरां का काव्य मीरां का जीवन, मीरां के काव्य में लोकतत्त्व एवं गीति-तत्त्व कृष्ण काव्य धारा एवं अष्टछाप के प्रमुख कवि सूर काव्य में गीति-तत्त्व, वाग्विदग्धता एवं लोकतत्त्व सूरदास का श्रृंगार एवं वात्सल्य वर्णन मीरां वृहत पदावली भाग-1(सं. पुरोहित हरिनारायण) भ्रमरगीत सार चयनित 6 पद (सं. रामचंद्र शुक्ल)
4.	तुलसीदास का महत्त्व एवं उनकी प्रमुख कृतियाँ तुलसी काव्य में निहित सामाजिक-सांस्कृतिक दृष्टि लोकमंगल की अवधारणा एवं तुलसीदास तुलसी की काव्य कला एवं प्रबंध कल्पना विनय पत्रिका - चयनित 10 पद (सं. रामचंद्र शुक्ल)

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे जिसमें व्याख्या से संबंधित प्रश्न अनिवार्य होगा.

संदर्भ पुस्तकें :

- हिंदी साहित्य का इतिहास: रामचन्द्र शुक्ल, नागरी प्रचारिणी सभा ,वाराणसी
- मलिक मुहम्मद जायसी : रामचन्द्र शुक्ल,नागरी प्रचारिणी सभा ,वाराणसी
- भ्रमरगीत सार : रामचन्द्र शुक्ल, नागरी प्रचारिणी सभा ,वाराणसी
- गोस्वामी तुलसीदास : रामचन्द्र शुक्ल, नागरी प्रचारिणी सभा ,वाराणसी
- हिंदी साहित्य की भूमिका: हजारी प्रसाद द्विवेदी, राजकमल प्रकाशन, नई दिल्ली
- कबीर :हजारी प्रसाद द्विवेदी, राजकमल प्रकाशन नई दिल्ली
- सूर साहित्य : हजारी प्रसाद द्विवेदी, राजकमल प्रकाशन, नई दिल्ली
- जायसी :विजयदेव नारायण साही,हिन्दुस्तानी अकादमी, इलाहाबाद
- भक्ति आन्दोलन और सूरदास का काव्य : मैनेजर पाण्डेय, वाणी प्रकाशन, नई दिल्ली

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- लोकवादी तुलसीदास :विश्वनाथ त्रिपाठी, राजकमल प्रकाशन, नई दिल्ली
- मीरां का जीवन :अरविंद सिंह तेजावत, लोकभारती प्रकाशन ,इलाहाबाद

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प्रश्न-पत्र का शीर्षक: हिंदी आलोचना पूर्णांक : 60

पाठ्यक्रम कोड : SLL HND 03 403 C 3104

इकाई	पाठ्यक्रम
1.	हिंदी आलोचना का उद्भव और विकास शुक्ल पूर्व आलोचना, शुक्ल युग, मार्क्सवादी आलोचना
2.	रामचंद्र शुक्ल : इतिहास दृष्टि, रस-दृष्टि, लोकमंगल की अवधारणा नंददुलारे वाजपेयी : सौष्ठववादी आलोचना हजारी प्रसाद द्विवेदी और आलोचना की दूसरी परम्परा
3.	मार्क्सवादी आलोचना : रामविलास शर्मा, नामवर सिंह
4.	रचनाकार आलोचक : प्रेमचंद, प्रसाद, पंत, निराला, अज्ञेय, मुक्तिबोध, विजयदेव नारायण साही

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे.

संदर्भ पुस्तकें :

- हिंदी आलोचना: विश्वनाथ त्रिपाठी, राजकमल प्रकाशन, नई दिल्ली
- आचार्य रामचंद्र शुक्ल और हिंदी आलोचना : रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
- साहित्य की परख : शिवदान सिंह चौहान
- हिंदी साहित्य : बीसवीं शताब्दी: नंददुलारे वाजपेयी, लोकभारती प्रकाशन, नई दिल्ली
- कबीर : हजारी प्रसाद द्विवेदी, राजकमल प्रकाशन, नई दिल्ली
- पंत और पल्लव : सूर्यकांत त्रिपाठी 'निराला', गंगा-ग्रन्थागार, लखनऊ
- काव्यकला एवं अन्य निबंध: जयशंकर प्रसाद, लोकभारती प्रकाशन, नई दिल्ली
- इतिहास और आलोचना: नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली
- एक साहित्यिक की डायरी : गजानन माधव मुक्तिबोध, राजकमल प्रकाशन, दिल्ली
- दूसरी परंपरा की खोज: नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली

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प्रश्न-पत्र का शीर्षक: पाश्चात्य काव्यशास्त्र **पूर्णांक : 60**
पाठ्यक्रम कोड : SLLCH HND 1 4 15 C 4004

इकाई	पाठ्यक्रम
1.	प्लेटो : काव्य सिद्धांत प्लेटो : अनुकरण सिद्धांत अरस्तू : अनुकरण सिद्धांत अरस्तू : विरेचन सिद्धांत
2.	लोंजाइन : उदात्त की अवधारणा कालरिज : कल्पना सिद्धांत वर्ड्सवर्थ : काव्यभाषा सिद्धांत
3.	क्रोचे : अभिव्यंजनावाद आई.ए. रिचर्ड्स : मूल्य एवं संप्रेषण सिद्धांत टी.एस. इलियट : निर्वैयक्तिकता सिद्धांत
4.	मैथ्यू अर्नाल्ड : आलोचना का स्वरुप और प्रकार्य ड्राईडन : काव्य सिद्धांत नई समीक्षा

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे.

संदर्भ पुस्तकें :

- भारतीय एवं पाश्चात्य काव्य सिद्धांत: गणपति चन्द्र गुप्त, लोकभारती प्रकाशन, इलाहाबाद
- भारतीय एवं पाश्चात्य काव्य शास्त्र: सत्यदेव शास्त्री, अशोक प्रकाशन, दिल्ली
- पाश्चात्य साहित्य लोचन के सिद्धांत: लीलाधर गुप्त, हिन्दुस्तानी एकेडमी, इलाहाबाद
- पाश्चात्य काव्य शास्त्र के सिद्धांत: मैथिली प्रसाद भारद्वाज, हरियाणा साहित्य अकादमी, चंडीगढ़
- पाश्चात्य काव्य शास्त्र की परंपरा: डॉ. नगेन्द्र एवं सावित्री सिन्हा, दिल्ली विश्वविद्यालय, दिल्ली
- पाश्चात्य काव्य शास्त्र : सिद्धांत और वाद:डॉ. नगेन्द्र,दिल्ली विश्वविद्यालय, दिल्ली
- काव्यशास्त्र: भगीरथ मिश्र, विश्वविद्यालय प्रकाशन, वाराणसी

पाठ्यक्रमका शीर्षक: लघु शोध-प्रबंध*

प्रश्न-पत्र का कोड : SLLCH HND 1 4 01 SEEC 0066

*इसमें प्रत्येक विद्यार्थी को निर्धारित निर्देशक से विचार विनिमय करके एक लघु शोध-प्रबंध लिखना होगा.

सामान्य वैकल्पिक पाठ्यक्रम (GEC)

प्रथम सेमेस्टर में प्रस्तावित

पाठ्यक्रमका शीर्षक: हिंदी की संस्कृति **पूर्णांक : 60**

पाठ्यक्रम कोड : SLLCH HND 1 1 01 GE 4004

इकाई	पाठ्यक्रम
1.	साहित्य की परिभाषा एवं स्वरूप साहित्य की प्रकृति एवं उद्देश्य साहित्य एवं समाज का अंतर्संबंध
2.	हिंदी साहित्य का स्वरुप एवं विस्तार भक्ति आंदोलन एवं प्रतिरोध की संस्कृति हिंदी साहित्य में व्यक्तिवाद एवं रीति संस्कृति
3.	आधुनिकता का उदय एवं साहित्य आधुनिक हिंदी साहित्य एवं राजनीति
4.	हिंदी साहित्यिक संसार के प्रमुख स्वर साहित्यिक पत्रकारिता के वर्तमान स्वरूप हिंदी की वर्तमान दशा एवं दिशा

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे.

संदर्भ पुस्तकें :

1. परम्परा का मूल्यांकन : रामविलास शर्मा, राजकमल प्रकाशन, नई दिल्ली
2. हिंदी रीति साहित्य : भागीरथ मिश्र, राजकमल प्रकाशन, नई दिल्ली
3. हिंदी साहित्य का अतीत : विश्वनाथ प्रसाद तिवारी, वाणी प्रकाशन, नई दिल्ली
4. साहित्य का समाज शास्त्र : मैनेजर पाण्डेय, हरियाणा साहित्य अकादमी, पंचकुला, हरियाणा
5. साहित्य और इतिहास दृष्टि : मैनेजर पांडेय, वाणी प्रकाशन, नई दिल्ली
6. आधुनिका साहित्य कि प्रवृतियाँ : नामवर सिंह, लोक प्रकाशन, इलहाबाद
7. भारतीय काव्यशास्त्र : कृष्ण देव झारी, शारदा प्रकाशन, नई दिल्ली
8. पाश्चात्य काव्यशास्त्र : देवेन्द्रनाथ शर्मा, मयूर पेपर बेक्स, नई दिल्ली

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प्रथम सेमेस्टर प्रस्तावित

पाठ्यक्रम का शीर्षक: साहित्य की समझ **पूर्णांक : 60**

पाठ्यक्रम कोड : SLLCH HND 1 1 02 GE 4004

इकाई	पाठ्यक्रम
1.	भाषा और उसका सर्जनात्मक रूप साहित्य संबंधी विविध अवधारणाएं
2.	साहित्य और समाज साहित्य और मनोविज्ञान साहित्य और राजनीति साहित्य और विचारधारा
3.	साहित्य इतिहास और साहित्येतिहास साहित्य और अन्य कलाएं
4.	साहित्य का प्रयोजन छंद-अलंकार: अवधारणा और विकास अप्रस्तुत योजना : बिंब, प्रतीक, रूपक, मिथक और कवि-समय

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे.

संदर्भ पुस्तकें :

- हिंदी साहित्य की भूमिका: हजारी प्रसाद द्विवेदी, राजकमल प्रकाशन, नई दिल्ली.
- साहित्यालोचन : श्यामसुंदर दास, इंडियन प्रेस, इलाहबाद
- सर्जना और सन्दर्भ(राजनीति और साहित्य शीर्षक निबंध): अज्ञेय, नेशनल पब्लिशिंग हाउस, नई दिल्ली.
- साहित्य के समाजशास्त्र की भूमिका : मैनेजर पांडेय, हरियाणा साहित्य अकादमी, पंचकूला. हरियाणा
- साहित्य और इतिहास दृष्टि: मैनेजर पांडेय, वाणी प्रकाशन, नई दिल्ली.
- साहित्य के सिद्धांत और रूप: भगवतीचरण वर्मा, राजकमल प्रकाशन, नई दिल्ली.
- आलोचना और विचारधारा : नामवर सिंह, राजकमल प्रकाशन, नई दिल्ली.
- साहित्य-सहचर : हजारी प्रसाद द्विवेदी, लोकभारती प्रकाशन, इलाहाबाद.
- छठवां दशक : विजयदेव नारायण साही, हिंदुस्तानी एकेडमी, इलाहाबाद.
- मिट्टी की ओर : रामधारी सिंह दिनकर, लोकभारती प्रकाशन, इलाहाबाद.

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तृतीय सेमेस्टर में प्रस्तावित

पाठ्यक्रम का शीर्षक: हिंदी सिनेमा **पूर्णांक : 60**

पाठ्यक्रम का कोड :SLLCH HND 1 3 03 GE 4004

इकाई	पाठ्यक्रम
1.	सिनेमा का उद्भव एवं विकास सिनेमा उद्योग एवं कला का संबंध हिंदी सिनेमा पर पूंजीवाद का प्रभाव
2.	आरम्भिक हिंदी सिनेमा का स्वरूप हिंदी सिनेमा का रूमानी दौर हिंदी सिनेमा का वर्तमान परिदृश्य
3.	सिनेमा में नायकत्व की अवधारणा हिंदी सिनेमा में स्त्री एवं प्रेम वृत्तचित्र एवं सिनेमा का बदलता स्वरुप
4.	चयनित फिल्मों का प्रदर्शन एवं समीक्षा.

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे.

संदर्भ पुस्तकें :

- वर्ल्ड सिनेमा (हिस्ट्री): सं. ज्योफ्री नोवेल-स्मिथ, ऑक्सफ़ोर्ड युनिवर्सिटी प्रेस
- हिंदी सिनेमा: अनिल सारी, ऑक्सफ़ोर्ड, दिल्ली
- लोकप्रिय सिनेमा और सामाजिक यथार्थ: जवरीमल्ल पारख, अनामिका प्रकाशन, नई दिल्ली
- सिनेमा: कल, आज, कल : विनोद भारद्वाज, वाणी प्रकाशन, नई दिल्ली
- भारतीय सिने सिद्धांत : अनुपम ओझा, राधाकृष्ण प्रकाशन, नई दिल्ली.
- हिंदी सिनेमा का इतिहास : मनमोहन चड्ढा,. सचिन प्रकाशन, नई दिल्ली.
- सिनेमा और साहित्य : हरीश कुमार, संजय प्रकाशन, नई दिल्ली.
- हिंदी सिनेमा : आदि से अनंत: प्रह्लाद अग्रवाल, साहित्य भंडार,
- सिनेमा: समकालीन सिनेमा : अजय ब्रह्मात्मज, वाणी प्रकाशन, नई दिल्ली
- भारतीय सिनेमा का सफरनामा : पुनीत बिसारिया-राजनारायण शुक्ल, अटलांटिक प्रकाशन, नई दिल्ली

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तृतीय सेमेस्टर में पढ़ाये

पाठ्यक्रमका शीर्षक: अस्मितामूलक साहित्य **पूर्णांक : 60**

पाठ्यक्रम कोड: SLLCH HND 1 3 04 GE 4004

इकाई	पाठ्यक्रम
1.	अस्मिता की अवधारणा स्मृति, इतिहास और अस्मिता अस्मिता और सत्ता धर्म और अस्मिता
2.	अस्मितामूलक आंदोलन, मुक्ति की आकांक्षा और स्वर, सहानुभूति बनाम स्वानुभूति
3.	तुलसीराम: मुर्दहिया ओमप्रकाश वाल्मीकि : ठाकुर का कुआं, सदियों का संताप निर्मला पुतुल: आदिवासी स्त्रियाँ, उतनी दूर मत ब्याहना बाबा
4.	महादेवी वर्मा : श्रृंखला की कड़ियाँ(कोई एक अध्याय) सिमोन द बुआ : स्त्री उपेक्षिता (प्रथम अध्याय)

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें . किन्हीं पांच प्रश्नों के उत्तर देने होंगे जिसमें.

संदर्भ पुस्तकें :

- दलित दृष्टि : गेल ओमवेट, वाणी प्रकाशन, नई दिल्ली
- आधुनिकता के आईने में दलित : सं. अभय कुमार दुबे, वाणी प्रकाशन, नई दिल्ली
- अस्मिताओं के संघर्ष में दलित समाज: ईश कुमार, अकादमिक प्रतिभा, नई दिल्ली
- दलित कविता का संघर्ष : कंवल भारती, स्वराज प्रकाशन, नई दिल्ली
- आदिवासी साहित्य यात्रा : सं. रमणिका गुप्ता, राधा कृष्ण प्रकाशन, नई दिल्ली
- दलित साहित्य का सौंदर्यशास्त्र : शरण कुमार लिम्बाले, वाणी प्रकाशन, नई दिल्ली

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तृतीय सेमेस्टर में प्रस्तावित

पाठ्यक्रम का शीर्षक: प्रयोजनमूलक हिंदी **पूर्णांक : 60**

पाठ्यक्रम कोड: SLLCH HND 1 3 05GE 4004

इकाई	पाठ्यक्रम
1.	प्रयोजनमूलक हिंदी : परिभाषा एवं स्वरुप हिंदी के विविध रूप : सर्जनात्मक भाषा, राजभाषा, माध्यम भाषा, संचार भाषा (दृश्य, श्रव्य, दृश्य-श्रव्य); पत्रकारिता: परिभाषा, स्वरूप, वर्गीकरण और महत्त्व; हिंदी पत्रकारिता: उद्भव और विकास; संवाददाता के गुण; समाचार के स्रोत; समाचार लेखन; प्रूफ पठन और संशोधन
2.	प्रिंट मीडिया का स्वरूप; फीचर लेखन साक्षात्कार लेखन; प्रिंट मीडिया की भाषा और अभिव्यक्ति श्रव्य माध्यम (आकाशवाणी) का उद्भव और विकास; श्रव्य माध्यम का प्रस्तुतीकरण और स्वरूप(साहित्यिक-भाषायी); दृश्य-श्रव्य माध्यम (दूरदर्शन) का उद्भव एवं विकास; विज्ञापन की भाषा
3.	कंप्यूटर का संरचना: उपयोग एवं महत्त्व इंटरनेट संपर्क उपकरणों का परिचय; इंटरनेट का ऐतिहासिक परिचय;
4.	अनुवाद : परिभाषा, स्वरूप और प्रक्रिया; साहित्यिक अनुवाद : सिद्धांत और प्रयोग विज्ञापन का अनुवाद कार्यालयी (प्रशासनिक शब्दावली); कंप्यूटर पारिभाषिक शब्दावली

अनुदेश: कुल आठ प्रश्न पूछे जाएंगें, किन्हीं पांच प्रश्नों के उत्तर देने होंगे.

संदर्भ पुस्तकें :

- राजभाषा हिंदी : कैलाशचंद्र भाटिया, वाणी प्रकाशन, दिल्ली
- प्रशासनिक हिंदी : महेशचंद्र गुप्त, वाणी प्रकाशन, दिल्ली
- प्रयोजनमूलक हिंदी : दंगल झाल्टे, वाणी प्रकाशन, दिल्ली
- कंप्यूटर सिद्धांत और तकनीक: राजेंद्र कुमार, पूर्वांचल प्रकाशन, दिल्ली
- कंप्यूटर प्रोग्रामिंग एंड ऑपरेटिंग गाइड: शशांक, पूर्वांचल प्रकाशन, दिल्ली
- सैद्धांतिक एवं अनुप्रयुक्त भाषा विज्ञान: डॉ. रवीन्द्रनाथ श्रीवास्तव, साहित्य सहकार,दिल्ली
- प्रयोजनमूलक हिंदी : डॉ. नरेश मिश्र, राजपाल एंड संस, दिल्ली
- प्रयोजनमूलक हिंदी और काव्यांग : डॉ. नरेश मिश्र, अभिनव प्रकाशन, दिल्ली
- प्रयोजनमूलक हिंदी : डॉ. नरेश मिश्र, अभिनव प्रकाशन, दिल्ली
- आधुनिक विज्ञापन : प्रेमचंद पतंजलि, वाणी प्रकाशन, दिल्ली

Master of Science in Geography

CENTRAL UNIVERSITY OF HARYANA
Master of Science in Geography (Comprehensive structure)

1. Core Course (CC)
(Exclusive for Geography students)

Sl.No.	Course code	Course title	L	T	P	Credit
1.	SEE GEO 1 1 01 C 4004	Geographical Thought	4	0	0	4
2.	SEE GEO 1 1 02 C 4004	Quantitative Techniques in Geography	4	0	0	4
3.	SEE GEO 1 1 03 C 4004	Geomorphology	4	0	0	4
4.	SEE GEO 1 1 04 C 0084	Practical I: Practical Geography: Interpretation of Topographical Sheets and Morphometric Analysis	0	0	8	4
5.	SEE GEO 1 2 05 C 4004	Climatology	4	0	0	4
6.	SEE GEO 1 2 06 C 4004	Contemporary Human Geography	4	0	0	4
7.	SEE GEO 1 2 07 C 4004	Advanced Geography of India	4	0	0	4
8.	SEE GEO 1 2 08 C 0084	Practical II: Field Work and Report Writing	0	0	8	4
9.	SEE GEO 1 3 09 C 4004	Interdisciplinary Research Methods and Techniques	4	0	0	4
10.	SEE GEO 1 3 10 C 4004	Fundamentals of Remote Sensing and GIS	4	0	0	4
11.	SEE GEO 1 3 11 C 0084	Practical IV: Interpretation of Aerial Photographs & Satellite Images and Thematic Mapping	0	0	8	4

2. Generic Elective Course (GEC)
(Offered to other departments)

Sl.No.	Course code	Course title	L	T	P	Credit
1.	SEE GEO 1 1 01 GE 4004	Population and Development	4	0	0	4
2.	SEE GEO 1 1 02 GE 4004	Biogeography	4	0	0	4
3.	SEE GEO 1 2 03 GE 0042	Practical III: Computer Aided Statistical Diagrams and Data Processing (compulsory)	0	0	4	2
4.	SEE GEO 1 3 04 GE 4004	Geography of Natural Hazards and Disasters	4	0	0	4
5.	SEE GEO 1 3 05 GE 4004	Cultural Geography	4	0	0	4
6.	SEE GEO 1 3 06 GE 4004	Soil Geography	4	0	0	4

3. Discipline Centric Elective Courses (DCEC)
(offered to the students from Geography and other departments)

Sl.No.	Course code	Course title	L	T	P	Credit
1.	SEE GEO 1 2 01 DCEC 4004	Urban Geography	4	0	0	4
2.	SEE GEO 1 2 02 DCEC 4004	Natural Resource Management	4	0	0	4
3.	SEE GEO 1 2 03 DCEC 4004	Hydrology and Water Resource Management	4	0	0	4
4.	SEE GEO 1 3 03 DCEC 0202	Assignment based Seminar Paper (compulsory)	0	2	0	2
5.	SEE GEO 1 3 04 DCEC 4004	Population Geography	4	0	0	4
6.	SEE GEO 1 3 05 DCEC 4004	Regional Development and Planning	4	0	0	4

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7.	SEE GEO 1 3 06 DCEC 4004	Oceanography	4	0	0	4

4. Skill Enhancement Elective Course
(Compulsory and exclusively for Geography students)

S.No.	Course code	Course title	L	T	D	Credit
1.	SEE GEO 1 4 01 SEEC 0066	Field based Dissertation (including viva voce)	0	0	24	24
2.	SEE GEO 1 4 02 SEEC	Self-Study Course	-	-	-	-

- **Note: L: Lecture; T: Tutorial; P: Practical; D: Dissertation**
- **Core Course (CC)**
  (Exclusive for Geography students)
- **Generic Elective Course (GEC)**
  (Offered to other departments)
- **Discipline Centric Elective Courses (DCEC)**
  (Offered to the students from Geography and other departments)
- **Skill Enhancement Elective Course (SEEC)**
  (Exclusively for Geography students)

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Master of Science in Geography (Semester-wise structure)

Semester I

S. No.	Course code	Course title	L	T	P	Credit
1.	SEE GEO 1 1 01 C 4004	Geographical Thought	4	0	0	4
2.	SEE GEO 1 1 02 C 4004	Quantitative Techniques in Geography	4	0	0	4
3.	SEE GEO 1 1 03 C 4004	Geomorphology	4	0	0	4
4.	SEE GEO 1 1 04 C 0084	Practical I: Practical Geography: Interpretation of Topographical Sheets and Morphometric Analysis	0	0	8	4
5.	**To be taken from other department**		4	0	0	4
Generic Elective Course (GEC) (offered to other departments)						
6.	SEE GEO 1 1 01 GE 4004	Population and Development	4	0	0	4
7.	SEE GEO 1 1 02 GE 4004	Biogeography	4	0	0	4
		Total Credit 20				

Note: Course no. 6 and 7 are exclusively for other departments

Semester II

S. No.	Course code	Course title	L	T	P	Credit
1.	SEE GEO 1 2 05 C 4004	Climatology	4	0	0	4
2.	SEE GEO 1 2 06 C 4004	Contemporary Human Geography	4	0	0	4
3.	SEE GEO 1 2 07 C 4004	Advanced Geography of India	4	0	0	4
4.	SEE GEO 1 2 08 C 0084	Practical II: Field Work and Report Writing	0	0	8	4
5.	SEE GEO 1 2 03 GE 0042	Practical III: Computer Aided Statistical Diagrams and Data Processing	0	0	4	2
6.	***Any one of the following three courses***		4	0	0	4
	SEE GEO 1 2 01 DCEC 4004	Urban Geography				
	SEE GEO 1 2 02 DCEC 4004	Natural Resource Management				
	SEE GEO 1 2 03 DCEC 4004	Hydrology and Water Resource Management				
		Total Credit 22				

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Semester III

S. No.	Course code	Course title	L	T	P	Credit
1.	SEE GEO 1 3 09 C 4004	Interdisciplinary Research Methods and Techniques	4	0	0	4
2.	SEE GEO 1 3 10 C 4004	Fundamentals of Remote Sensing and GIS	4	0	0	4
3.	SEE GEO 1 3 11 C 0084	Practical IV: Interpretation of Aerial Photographs & Satellite Images and Thematic Mapping	0	0	8	4
4.	SEE GEO 1 3 03 DCEC 0202	Assignment based Seminar Paper (compulsory)	0	2	0	2
5.	***To be taken from other department***		4	0	0	4
Generic Elective Course (GEC) (offered to other departments)						
	SEE GEO 1 3 04 GE 4004	Geography of Natural Hazards and Disasters	4	0	0	4
	SEE GEO 1 3 05 GE 4004	Cultural Geography	4	0	0	4
	SEE GEO 1 3 06 GE 4004	Soil Geography	4	0	0	4
6.	***Any one of the following Three courses***		4	0	0	4
	SEE GEO 1 3 04 DCEC 4004	Population Geography				
	SEE GEO 1 3 05 DCEC 4004	Regional Development and Planning				
	SEE GEO 1 3 06 DCEC 4004	Oceanography				
						Total Credit 22

Note: Courses under sl. no. 5 is exclusively for Students of other Department

Semester IV

Skill Enhancement Elective Course (Compulsory and exclusively for Geography students)

S. No.	Course code	Course title	L	T	D	Credit
1.	SEE GEO 1 4 01 SEEC 0066	Field Based Dissertation (including viva voce)	0	0	24	24
2.	SEE GEO 1 4 02 SEEC	Self-Study Course	-	-	-	-

Total Credits: 20+22+22+24 = 88

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Semester I

M.Sc. Geography Semester I

Course: Geographical Thought (SEE GEO 1 1 01 C 4004)

Credit - 4

Course Outline

Unit I

Evolution of Geographic Thought: Changing paradigms – Environmentalism, Possibilism, areal differentiation, spatial organisation

Unit II

Theory in Geography: structure, nature, type and applications in geography; human-environment interactions. Philosophical debates in Contemporary Geography: Critical understanding of positivism, behaviouralism, Marxism, Structuralism, post-structuralism and post-modernism.

Unit III

Methods in Geographical Analysis: Epistemology of geography, critical assessment and debates on quantitative, qualitative, field and cartographic methods in geography

Unit IV

Future of Geography: changing nature, concepts, approaches and methodologies of geography in a Globalising World, Progress and Contributions in Indian Geography

Recommended Readings:

1. Bhaskar, R. (1978): **A Realist Theory of Science**, Hassocks, Sussex.
2. Bhaskar, R. (1989): **Reclaiming Reality: A Critical Introduction to Contemporary Philosophy**, Verso, London.
3. Bunge, W. (1966): **Theoretical Geography**. Lund Studies in Geography, Series C., no.1, Lund, Sweeden
4. Buttimer, A. and Seamon, D. (eds) (1980): **The Human Experience of Space and Place**, Croonhelm, London.
5. Castree, R., Rogers A. and Sherman D. (2005): **Questioning Geography: Fundamental Debates**. Blackwell, Oxford.
6. Clifford, N.J. (2002): **The Future of Geography: when the whole is less than the sum of its parts**. Geoforum, Vol. 33, 431-436.
7. Haggett, P. and Cliff, A.D. and Frey, A. (1977): **Locational Analysis in Human Geography**. Arnold, London
8. Hartshorne R (1939): **The Nature of Geography**. Association of American Geographers
9. Harvey, D., (1969): **Explanation in Geography**. Arnold, London.
10. Harvey, D., (1973): **Social Justice and the City**, John Hopkins University, Baltimore
11. Holt-Jensen A. (1999): ***Geography– History and Concepts***, Sage Publications, London,
12. Cresswell, T. (2014): **Geographic Thought: A Critical Introduction**, Blackwell, New York
13. Johnston, R., Gregory D., Pratt G., Watts, M. and Whatmore, S. (2009): **The Dictionary of Human Geography**, Blackwell Publishers
14. Johnston, R.J. and Sidaway, J.D. (2004): **Geography and Geographers**, Edward Arnold, London.

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15. Peet, R. (1998): **Modern Geographical Thought**, Wiley-Blackwell, New York.
16. Dikshit, R.D. (2010): **Geographical Thought**, Prentice-Hall, New Delhi.

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M.Sc. Geography Semester I
Course - Quantitative Techniques in Geography
(SEE GEO 1 1 02 C 4004)

Credit – 4

Course Outline

Unit I

1. Geography and Statistics; Significance of Statistics in geographical studies; Types of Data; levels of data measurement. Sampling: basic concepts, sample units and design, sampling frame and procedures, standard error and sample size, testing the adequacy of samples.

Unit II

Measures of Central Tendency and their significance; Centrographic techniques: mean centre, median centre and standard distance.
Measures of dispersion and concentration: Range, quartile deviation, mean deviation, standard deviation; coefficient of variation, Lorenz Curve and Gini's Coefficient; location Quotient.

Unit III

Bivariate Analysis: Forms of relation and measuring the strength of association and relation-construction and meanings of scatter diagram; Spearman's Rank Difference and Karl Pearson's Product Moment Correlation Coefficients

Unit IV

Regression analysis- regression equations, construction of regression line-interpolation, prediction, explanation; residual-statistical tests of significance of the estimates; computation of residuals and mapping.
Hypothesis Testing: Needs and types of hypotheses-goodness of fit and significance and confidence levels-parametric and non-parametric procedures: contingency tables, Chi-square test, t-test, Mann-Whitney U test, Analysis of Variance (ANOVA)

Recommended Readings:

1. David M. Smith (1975), ***Patterns in Human Geography***, Penguin, Harmonsworth.
2. David U. (1981), ***Introductory Spatial Analysis***, Methuen, London.
3. Ebdon, D. (1983), ***Statistics in Geography: A Practical Approach***, Blackwell, London.
4. Gregory, S. (1978), ***Statistical Methods and the Geographer*** (4th Edition), Longman, London.
5. Gregory, S. (1978), ***Statistical Methods and the Geographer***, Longman, London.
6. Gupta, S.P. (2010), **Statistical Methods**, Sultan Chand and Sons, Latest Edition.
7. Hammond, R. and McCullagh, P.S. (1974), ***Quantitative Techniques in Geography: An Introduction***, Clarendan Press, Oxford.
8. John P. Cole and Cuchlaine, A. M. King (1968), ***Quantitative Geography***, John Wiley, London.
9. Johnston R. J. (1973), ***Multivariate Statistical Analysis in Geography***, Longman, London.
10. Mathews, J.A. (1987), ***Quantitative and Statistical Approaches to Geography***, Practical Manual, Pergamon, Oxford.

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7.

11. Pal, S.K. (1998), ***Statistics for Geoscientists; Techniques and Applications***, Concept Publishing Company Pvt. Ltd., New Delhi.

12. Haggett, P., Andrew D. C., & Allan F. (1977), ***Location Methods***, Vols. I and II, Edward Arnold, London.

13. Peter J. Taylor (1977), ***Quantitative Methods in Geography***, Houngton Mifflin Company, Boston.

14. Yeates, Mauris (1974), ***An Introduction to Quantitative Analysis in Human Geography***, McGraw Hill, New York.

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8

M.Sc. Geography Semester - I
Course - Geomorphology (SEE GEO 1 1 03 C 4004)

Credit – 4

Course Outline

Unit I

Concepts and Approaches: Fundamental Concepts, Concepts of time: cyclic, graded and steady state, concept of morphogenetic regions, concept of dynamic equilibrium, approaches in geomorphology, Recent trends in geomorphology

Unit II

Geomorphic Processes and Landforms: Earth movements, Plate Tectonic and Sea floor Spreading, Weathering and Mass Movements, Dynamics of fluvial, glacial, aeolian, marine, and karst processes; Landforms: Climatic, Tectonic, Erosional and depositional Landforms

Unit III

Theories and Techniques: Theories of Hill slope evolution, Erosion surfaces; Systems in geomorphology; Models in geomorphology

Unit IV

Applied Geomorphology: nature and objectives, geomorphic hazards and mitigation measures, Application of geomorphological knowledge in mining, constructions and other human activities

Recommended Readings:

1. Bloom, A.L. (1992), ***Geomorphology***, Second Edition, Prentice Hall of India, New Delhi.

2. Chorley, R.J. (1972), ***Spatial Analysis in Geomorphology***, Methuen, London.

3. Cooke, R.U. and Doornkamp, J.C. (1974), ***Geomorphology in Environmental Management—An Introduction***, Clarendon Press, Oxford.

4. Dayal, P. (1990), ***A Text Book of Geomorphology***, Shukla Book Depot, Patna.

5. Dury, G.H. (1959), ***The Face of the Earth***, Penguin, Harmondsworth.

6. Fairbridge, R.W. (1968), ***Encyclopedia of Geomorphology***, Reinholdts, New York.

7. Husain, Majid (2002), ***Fundamentals of Physical Geography***, Second Edition, Rawat Publications, Jaipur and New Delhi.

8. McKnight, T. L. (1987), ***Physical Geography: A Landscape Appreciation***, Second Edition, Prentice Hall, Inc., Englewood Cliffs, N.J.

9. Olliver, C.D. (1979), ***Weathering***, Longman, London.

10. Pitty, A.F. (1971), ***Introduction to Geomorphology***, Methuen, London.

11. Sharma, H.S. (ed.) (1980), ***Perspectives in Geomorphology***, Concept, New Delhi.

12. Singh, Savindra (1993), ***Physical Geography***, Prayag Pustak Bhawan, Allahabad.

13. Singh, Savindra (1998), ***Geomorphology***, Prayag Pustak Bhawan, Allahabad.

14. Skinner, B.J. & Porter, S.C. (1995), n***The Dynamic Earth***, John Wiley, New York.

15. Sparks, B.W. (1960), ***Geomorphology***, Longman, London.

16. Stoddart, D.R. (ed.) (1996), ***Process and Form in Geomorphology***, Routledge, New York.

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18. Strahler, A.H. and Strahler, A.N. (2006), ***Modern Physical Geography***, Fourth Edition, Willey-India, New Delhi.

19. Thornbury, W.D. (1991), ***Principles of Geomorphology***, (Indian Reprint), John Wiley, New Delhi

20. Wooldridge, S. W and Morgan, R.S. (1991), ***An Outline of Geomorphology***, Orient Longmans, Calcutta.

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10

M.Sc. Geography Semester - I

Course:

Practical I: Interpretation of Topographical Sheets and Morphometric Analysis

(SEE GEO 1 1 04 C 0084)

Credit - 4

Course Outline

Unit I

Toposheet Interpretation: Basic information on Topographical sheets, Preliminary information, Conventional Signs, Interpretation of Relief, Drainage, Settlements, Land-use, Vegetation and Transport network on Toposheets (at least 12 Exercises).

Unit II

Morphometric Analysis of Drainage basin- its geographical significance; Basin morphometry of fluvially originated drainage basin

Linear Aspects: Stream ordering based on Horton and Strahler, Bifurcation ratio

Areal Aspects: Geometry of basin shape, Basin Perimeter, Length and Area, Stream frequency and Drainage density.

Relief Aspects: Hypsometric analysis- Hypsometric curve and Integral Hypsometric curve, Clinographic analysis, Altimetric analysis,

Slope Analysis- Average Slope (Wentworth's method), Relative Relief (Smith's method), Dissection Index,

Profile Analysis - Longitudinal profile

Recommended Readings:

1. Monkhouse, F.J. and Wilkinson, H.R. (1980), ***Maps and Diagrams***, B. I. Publications, Bombay.

2. Singh, Savindra (1997), ***Geomorphology***, Prayag Pustak Bhawan, Allahabad.

3. Sparks, B.W. (1982), ***Geomorphology***, Second Edition, Longman.

4. Ishtiaq, M. (1989), ***Practical Geography***, Heritage Publishers, New Delhi.

5. Khan, Md. Z.A. (1998), ***Text Book of Practical Geography***, Concept publishing, New Delhi.

6. Khullar, D.R. (2001), ***Essentials of Practical Geography***, Second Edition, New Academic Publishing Co., Jalandhar.

7. Misra, R.P. and Ramesh, A. (1989), ***Fundamentals of Cartography***, Revised and Enlarged Edition, Concept Publishing Co., New Delhi.

8. Robinson, A.H. *et al.* (2004), ***Elements of Cartography***, Sixth Edition, Wiley-India, New Delhi.

9. Sarkar, A. (2008), ***Practical Geography: A Systematic Approach***, Orient Blackswan, Kolkata.

10. Sharma, J.P. (1996), ***Prayogik Bhoogol***, Rastogi Publications, Meerut.

11. Singh, R.L. (1979), ***Elements of Practical Geography***, Kalyani Publishers, New Delhi.

12. Yadav, H.L. (2002), ***Prayogatamak Bhoogol Ke Aadhar***, Radha Publications, New Delhi.

13. Chorley R.J., (Ed.), (1972), **Spatial Analysis in Geomorphology**, Harper & Row.

14. Doornkamp, J.C. and King, C.A.M. (1971), **Numerical Analysis in Geomorphology:**

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15. Mayer, L. (1990), **Introduction to Quantitative Geomorphology**, Prentice Hall, New Jersey.

16. Morisawa, M. (1983), **Geomorphological Laboratory Mannual**, John Wiley, New York.

17. Pal, S.K. (1998), **Statistics for Geoscientists: Techniques and Application**, Concept, New Delhi.

18. Upton, W.B. (1970), **Landforms and Topographic Maps**, John Wiley & Sons, New York.

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12.

M.Sc. Geography Semester I
Course - Population and Development (SEE GEO 1 1 01 GE 4004)

Credit - 4

Course Outline

Unit I
Conceptual Frame: Population as resource; Population and development: a debate; Population and ecosystem; Demographic transition.

Unit II
Historical Background and Characteristics: History of human population; Relationship between population, food and energy; Debate on The Limits to Growth; Population characteristics: developed and developing countries (case study of India).

Unit III
Problems and Policies: Optimum population; Family welfare and planning; Population policies in developed and developing countries (case study of India).

Unit IV
Population-Development Conflict: Concepts of rich and poor worlds and their global perspectives; Neo-Malthusian theory; Future perspectives: Growth scenario and relationship with development.

Recommended Readings:

1. Champion, T. (ed.) (1993): **Population Matters**. Paul Chapman, London.
2. Ehrlich, P.R. and Ehrlich, A.H. (1996): **Eco-science: Population, Resources and Environment.**, W.H. Freeman and Company, San Francisco.
3. Firor, J. and Jacobsen, J. E. (2003): **The Crowded Greenhouse: Population, Climatic Change and Creating a Sustainable World.** Universities Press, Hyderabad.
4. Haggett, P. (2001): **Geography, A Modern Synthesis**. Harper & Row, New York.
5. Hammett, C. (eds.) (1996): Social Geography: A Reader, Arnold, London.
6. Meadow, D.H., Meadows D.L., Randers J., and Behrens W.W. III. (1973): **The Limits to Growth. I Report of the Club of Rome**. The New American Library, New York.
7. Meadows, D.H., Meadows, D.L. and Randers, J. (1992): **Beyond the Limits. Confronting Global Collapse, Envisioning a Sustainable Future. (A sequel to The Limits to Growth)**. Chelsa Green Publishers, Post Mills VT, USA.
8. Mesarovic, M. and Pester, E. (1974): **Mankind at the Turning Point. II Report of the Club of Rome.** The New American Library, New York.
9. Middleton, N. and O'Keefe, P. (2001): **Redefining Sustainable Development,** Pluto Press, London.
10. Ross, J. A. (ed.) (1982): **International Encyclopaedia of Population,** Free Press, New York.
11. Sharma, P. R. (ed.) (1991): **Perspectives on the Third World Development**. Rishi Publications., Varanasi.
12. Simon, J. L. (1977): **The Economics of Population Growth,** Princeton University Press, Princeton.
13. Thakur, B. (ed.) (2004): **Population, Resources and Development**. Vol. II, Perspectives in Resource Management in Developing Countries. Concept Publishing Company, New Delhi.
14. Tinbergen, J. (1976): **RIO. Reshaping the International Order. III Report of the**

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13

M.Sc. Geography Semester I
Course - Biogeography (SEE GEO 1 1 02 GE 4004)

Credit - 4

Course Outline

Unit I
Biogeography – Development and scope; Biosphere - definition, nature and composition; Environment, Habitat and Plant-animal association.

Unit II
Biogeochemical cycles - the hydrological cycle, the carbon cycle, the oxygen cycle, the nitrogen cycle, the phosphorous cycle and the sediment cycle.

Unit III
Ecosystem - Meaning, types, components and functioning of ecosystem; Evolution of living organism and factors influencing their distribution on the earth; Biomes- Meaning and types.
Elements of plant geography, distribution of forests and major communities; Plant successions in newly formed landforms; National Forest Policy of India; Conservation of Biotic Resources.

Unit IV
Bio-geographical realms: Zoogeography and Zoogeographical realms; Zoogeography and its Environmental Relationship; Palaeo-botanical and Palaeo-climatological records of environmental change in India.

Recommended Readings:
1. Agarwal, D.P. (1992), ***Man and Environment in India through Ages***, Books & Books, New Delhi.
2. Bradshaw, M.J. (1979), ***Earth and Living Planet***, ELBS, London.
3. Cox. C.D. and Moore, P.D. (1993), ***Biogeography: An Ecological and Evolutionary Approach*** (Fifth Edition), Blackwell.
4. Gaur, R. (1987), ***Environment and Ecology of Early Man in Northern India***, R.B. Publication, New Delhi.
5. Hoyt, J.B. (1992), ***Man and the Earth***, Prentice Hall, U.S.A.
6. Huggett, R.J. (1998), **Fundamentals of Biogeography**, Routledge, New York.
7. Illics, J. (1974), ***Introduction to Zoogeography***, Mcmillian, London.
8. Khoshoo, T.N. and Sharma, M. (eds.) (1991), ***Indian Geosphere-Biosphere,*** Har-Anand Publication, Delhi.
9. Lapedes, D.N. (ed.) (1974), **Encyclopedia of Environmental Science**, McGraw Hill, New York.
10. Mathur, H.S. (1998), ***Essentials of Biogeography***, Anuj Printers, Jaipur.
11. Pears, N. (1985), ***Basic Biogeography***. 2nd ed., Longman, London.
12. Simmon. I.G. (1974), ***Biogeography, Natural and Cultural***, Longman, London.
13. Tivy, J. (1992), ***Biogeography: A Study of Plants in Ecosphere,*** 3rd Edition. Oliver and Boyd, U.S.A.

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14.

Semester II

M.Sc. Geography Semester - II

Course - Climatology (SEE GEO 1 2 05 C 4004)

Credit – 4

Course Outline

Unit I

Nature and Scope of Climatology, Climatic elements – atmospheric temperature, pressure, moisture: forms of condensation and precipitation, general atmospheric circulations and processes, jet stream.

Unit II

Weather system and disturbances – Concept of atmospheric stability, Air mass, fronts, Cyclones, Tornades; Ocean atmospheric interaction- EI Nino, ENSO, Monsoon winds (case study of India).

Unit III

Global climate system – Approaches to climatic classification; Classification of Koppen, and Thornthwaite, Major climates of the world – tropical, Temperate and polar.

Unit IV

Climatic changes – evidences, causes, global warming, Impact of Global Warming.

Recommended Readings:

1. Menon, P.A. (1989), ***Our Weather***, N.B.T., New Delhi.
2. Das, P.K. (1987), ***Monsoons,*** National Book Trust, New Delhi.
3. Fein, J.S. and Stephens, P.N.(1987), ***Monsoons,*** Wiley Interscience
4. Peterson, S. (1969), ***Introduction to Meteorology***, McGraw Hill Book, London.
5. Thompson, R.D. and Perry, A. (ed.) (1997), ***Applied Climatology: Principles and Practice,*** Routledge, London.
6. Barry, R.G. and Chorely, R.J., (2004), **Atmosphere, Weather and Climate**, Methuen, London.
7. Bhutani S., (2000), **Our Atmosphere**, Kalyanai Publishers, New Delhi.
8. Critchfield, H.J. (1987), **Climatology**, Prentice Hall, New Delhi.
9. Griffith, J.F. and Driscell, D.M. (1982), **Survey of Climatology**, Charles Merril.
10. Lal, D.S. (1993), **Climatology**, Chaitanya Publishing House, Allahabad.
11. Riehl, H. (1968), **Introduction to Atmosphere**, McGraw Hill, New York.
12. Robinson, P.J. and Sellers, H. (1986), **Contemporary Climatology**, Longman, London.
13. Trewartha, G.T. (Latest edition) **Introduction to Climate**, McGraw Hill, New York.

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15

M.Sc. Geography Semester - II
Course: Contemporary Human Geography (SEE GEO 1 2 06 C 4004)

Credit - 4

Course Outline

Unit I

Introduction to Human Geography: changing views, concerns and deliberations. Human Geography and Social perspectives: Analytical understanding of social theory and human Geography

Unit II

Space and place: Format of space, changes in space; comparative structure of space and place; social development of space and time; Ethics of space and place

Unit III

Geography of difference and separation: Geographies of identity and difference related to class, religion, caste, gender and location; social justice and political geography of difference.

Geographic system of power: Spatial meaning and definitions of power; changing spatio-social interactions and power; geopolitics of power-territoriality and globalization

Unit IV

Geography of progress: meaning, definitions and approaches; construction of progress indicators; linking globalisation and new types of development; local efforts towards progress.

Geography of movements: logic and ways to social movements; forms of social security; social-environmental movements in India.

Recommended Readings:

1. Agnew, J.A and Corbridge, S. 1995: ***Masterering Space: Hegemony, Territory and International Political Economy***, Routledge, London.
2. Benko, G. and Strohmayer, U. 1997: ***Space and Social Theory: Interpreting Modernity and Postmodernity,*** Blackwell Publishers, Oxford, London.
3. Bhabha, H., 1994: ***The Location of Culture***, Routledge, New York.
4. Corbridge, S., Martin, R. and Thrift, N., 1997: ***Money, Power and Space***, Blackwell, Oxford.
5. Derek, G., Martin, R., and Smith, G., 1994: ***Human Geography: Society, Space and Social Science***. Macmillan publishers, Cambridge.
6. Johnston, R.J., 1991: ***A Question of Place: Exploring the Practice of Human Geography***. Blackwell Publishers, Cambridge.
7. Harvey, D., 1996: ***Justice, Nature and Geography of Difference,*** Blackwell Publishers, Cambridge.
8. Callinicos, A. 1999: ***Social Theory: A Historical Introduction***. Quality press, Cambridge.
9. Diani, M., 1992: ***The concept of social movement***. The Sociological Review, Vol. 40.
10. Allen J. S. & Gioacchino G., 2007: ***Development on the Ground.*** Rutledge, London.
11. Heilbron, J., 1995: ***The Rise of Social Theory***. Cambridge University Press. Cambridge.

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16

M.Sc. Geography Semester - II
Course - Advanced Geography of India (SEE GEO 1 2 07 C 4004)

Credit – 4

Course Outline

Unit I
Introduction: Geological structure and Physiographic Regions, Drainage Systems, Climatic Characteristics, Natural Vegetation and Soil

Unit II
Agriculture: nature, problems and prospects; Infrastructure: irrigation, power, fertiliser, HYV seeds and farm technology; Green revolution and its socio-economic and ecological implications; Recent trends in agriculture
Industry: New industrial policy: Globalisation and liberalisation; Industrial complexes and industrial regions

Unit III
Growth, distribution and density of population; Population characteristics and composition (Literacy, Sex, Age, work structure, etc.); Population problems and policies

Unit IV
Contemporary Issues: Environmental Pollution and degradation, Regional Disparities in regional Development, globalization and Indian Economy, Development of transport and Information technology and its impact on society and economy

Recommended Books:

1. Centre for Science & Environment (1988), ***State of India's, Environment***, New Delhi.
2. Deshpande, C.D. (1992), ***India: A Regional Interpretation***, ICSSR & Northern Book Centre, New Delhi.
3. Dreze, Jean & Sen Amartya (ed.) (1996), ***India's Economic Development and Social Opportunity,*** Oxford University Press, New Delhi.
4. Gautam, Alka (2009), ***Advanced Geography of India,*** Second Edition, Sharada Pustak Bhawan, Allahabad.
5. Husain, Majid (2008), ***Geography of India,*** Tata McGraw-Hill, New Delhi.
6. Khullar, D.R. (2006), ***India: A Comprehensive Geography***, Kalyani Pub., New Delhi.
7. Kundu A. and Raza, Moonis (1982), ***Indian Economy: The Regional Dimension***. Spectrum Publishers, New Delhi.
8. Robinson, Francis (1989), ***The Cambridge Encyclopedia of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan & Maldives,*** Cambridge University Press, London.
9. Singh R.L. (ed.) (1971), ***India-A Regional Geography,*** National Geographical Society, India, Varanasi.
10. Spate, O.H.K. & Learmonth, A.T.A. (1967), ***India & Pakistan***, Methuen, London.
11. Tirtha R. & Krishan, Gopal (1996), ***Emerging India***, Reprinted by Rawat Publications, Jaipur.
12. Tiwari, R.C. (2010), ***Geography of India,***Sixth Edition, Prayag Pustak Bhawan, Allahabad.

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17.

M.Sc. Geography Semester - II
Course - Practical II: Field Work and Report Writing (SEE GEO 1 2 08 C 0084)

Credit – 4

Course Outline

Unit I

Sources of data; Collection of primary data: methods of primary data collection – observation method, interview method, through questionnaire, through schedule and other methods; questionnaire and schedule; processing and analysis of data.

Unit II

Field work and report writing: Identification of research problem; preparing research design; data collection through field visit; Report writing.

Recommended Readings:

1. Dey, Ian (1993), **Quantitative Data Analysis**, Routledge, London.
2. Eyles, John and David M. Smith (1988), **Qualitative Methods in Human Geography**, Polity Press, Oxford.
3. Gupta, S.P. (2010), **Statistical Methods**, Twenty Fifth Edition, Sultan Chand & Sons, New Delhi.
4. Kidder, Louise H. (1981), **Research Methods in the Social Relations**, Fourth Editions, Hault-Saunders International Editions.
5. Kitchin, Rob and Nicholas J. Tate (2002), **Conducting Research in Human Geography**, Prentice Hall, London.
6. Krishnaswamy, and Ranganatham, (2005), **Methodology of Research in Social Sciences**, Himalayan Publishing House, New Delhi.
7. Limb, Melanie and Claire Dwyer (2001), **Qualitative Methodologies for Geographers**, Arnold, London.
8. Robinson, Guy M. (1998), **Methods and Techniques in Human Geography**, John Wiley, New York.
9. Sadhu, A. N. and Singh, Amarjit (1983), **Research Methodology in Social Sciences**, Second Edition, Himalayan Publishing House, New Delhi.
10. Scale, Clive (ed.) (2008), **Social Research Methods**, (India Edition), Routledge, London.
11. Somekh, Bridget and Cathy Lewin (eds.) (2005), **Research Methods in the Social Sciences**, Vistaar Publications, New Delhi.
12. Tondon, B.C. (1979), **Research Methodology in the Social Sciences**, Chaitanya Publishing House, Allahabad.

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18.

M.Sc. Geography Semester - II
Course - Practical III: Computer Aided Statistical Diagrams and Data Processing
(SEE GEO 1 2 03 GE 0042)

Credit – 2

Course Outline

Unit I

Introduction to computer: Components of Computer - Hardware and Software); Use of Computers in Geography. Introduction to MS-Excel : Drawing of line graph, Bar Diagram, Pie diagram, Scatter diagram, (changes from colour to different shade patterns, placement of Legend, different weight to X and Y coordinates, Placement of Headings and Sub-headings, Font Size, Style, Bold and Italics.

Unit II

Data Processing: Students are required to learn data analysis using any software preferably SPSS (Statistical Package for Social Sciences). They are expected to learn statistical methods and techniques through computer.

SPSS: Introduction, managing Data, frequencies and cross tabulation, Graphs, Central Tendencies, Measures of Distribution, Measures of Asymmetry, Estimation and Hypothesis Testing, Statistical Dependence, Correlation and Regression

Recommended Readings:

1. Field, A., (2013), ***Discovering Statistics using IBM SPSS Statistics,*** Sage Publication.
2. Landau, S. and Everitt B. S., (2004), ***A Handbook of Statistical Analyses using SPSS,*** Chapman & Hall, London
3.http://**www.pearsonhighered.com**/george/SPSS_21_Step_by_Step_Answers_to_Selected_Exercises.pdf
4. Etheridge, D., (2010), ***Excel Data Analysis,*** Wiley, New York
5. Khullar, D.R. (2001), ***Essentials of Practical Geography***, Second Edition, New Academic Publishing Co., Jalandhar.
6. Sharma, J.P. (1996), ***Prayogik Bhoogol***, Rastogi Publications, Meerut.
7. Singh, R.L. (1979), ***Elements of Practical Geography***, Kalyani Publishers, New Delhi.
8. Linoff, G.S., (2007), ***Data Analysis Using SQL and Excel***, Wiley, New York

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M.Sc. Geography Semester - II
Course - Urban Geography (SEE GEO 1 2 01 DCEC 4004)

Credit – 4

Course Outline

Unit I

Urban Geography - Definition, nature and scope; different approaches and recent trends in urban geography; Origin and growth of urban places; classification of urban settlements, Aspects of urban places: Location, site and situation; Major processes of urban growth and change; Urban economic base: Basic and non-basic functions

Unit II

Urban Systems: Concept of National Urban System, Central Place Theory of Christaller and Losch; the rank-size distribution of cities; Primate City distribution, Diffusion theories

Organization of urban space: urban morphology and land use structure, city-region relations, urban sprawl, umland and periphery; rural-urban fringe, Theories of city structure (Burgess, Hoyt, Harris and Ullman, Mann, White)

Unit III

Urbanization: definition and measures of urbanization, factors affecting urbanization, cycle of urbanization; Regional aspects of world urbanization; Patterns and trends of urbanisation in India.

Unit IV

Contemporary urban issues: urban poverty; urban renewal; slums; transportation; housing; urban infrastructure; urban finance; environmental pollution; urban crime

Urban policy and planning: Concept and History of urban planning, urban land use planning, Urban Policy and programmes in India.

Recommended Readings:

1. Alam, S.M. (1964), **Hyderabad-Secunderabad Twin Cities**, Asia Publishing House, Bombay.
2. Bala, Raj (1986), **Urbanisation in India**, Rawat Publishers, Jaipur.
3. Bansal, S.C. (2010), **Urban Geography**, Meenakshi Prakashan, Meerut.
4. Berry, B.J.L. and Horton F.F. (1970), **Geographic Perspectives on Urban Systems**, Prentice Hall, New Jersey.
5. Cadwallader, M. (1986), **Urban Geography**, Prentice Hall, New Jersey.
6. Carter, H. (1995), **The Study of Urban Geography** (4th Edition), Arnold, London.
7. Chorley, R.J. and Haggett, P. (1966), **Models in Geography**, Methuen, London,
8. Dickinson, R.E. (1964), **City and Region**, Routledge, London.
9. Dwyer, D.J. (1971), **The City as a Centre of Change in Asia**, University of Hong Kong Press, Hongkong.
10. Hall P. (1992), **Urban and Regional Planning**, Routledge, London.
11. Hauser, P. M. and Schnore Leo F. (eds.) (1965), **The Study of Urbanisation**, Wiley, New York.
12. James, P.E. and Jones C.F. (eds.) (1954), **American Geography: Inventory and Prospect**, Syracuse University Press, Syracuse.
13. Kundu, A. (1992), **Urban Development and Urban Research in India**, Khanna Publication, New Delhi.

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14. Mayer, H.M. and Kohn, C.F. (eds.) (1958), **Readings in Urban Geography**, University of Chicago Press, Chicago.
15. Mumford, L. (1958), **Culture of Cities**, McMillan, London.
16. Nangia, S. (1976), **Delhi Metropolitan Region: A Study in Settlement Geography**, Rajesh Publication, New Delhi.
17. Pacione, M. (2010), **Urban Geography-A Global Perspective**, Routedge, London,
18. Prakasa Rao, V.L.S.: **Urbanisation in India: Spatial Dimensions**, Concept Publishing Co., New Delhi.
19. Prakasa Rao, V.L.S. (1979), **The Structure of an Indian Metropolis: A Study of Bangalore**, Allied Publishers, Bangalore.
20. Ramachandran, R. (1989), **Urbanisation and Urban Systems in India**, Oxford, New Delhi.
21. Rao, B.P. and Sharma, N. (2000-01), **Urban Geography** (Hindi Edition), Vasundhra Prakashan, Gorkhpur.
22. Singh, K. and Steinberg, F. (eds.) (1998), **Urban India in Crisis**, New Age International, New Delhi.
23. Smailes, A.E. (1953), **The Geography of Towns**. Hutchinson, London.
24. Tewari, V.K., Weinstein, J.A.; Prakasa Rao, V.L.S. (eds.) (1986). **Indian Cities: Ecological Perspectives**, Concept Publishing, New Delhi.

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21

M.Sc. Geography Semester - II
Course - Natural Resource Management (SEE GEO 1 2 02 DCEC 4004)

Credit – 4

Course Outline

Unit I
Nature, scope and significance of the Geography of Resource, Definition and concept of Resources, Classification of Resources

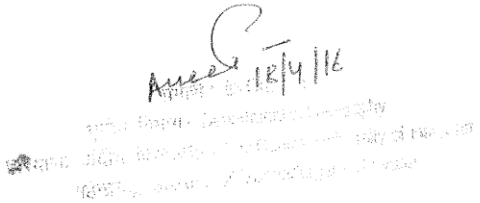
Unit II
Models of Natural Resources Process: Zimmermann's Primitive and Advance Models of natural resource process, Kirk's Decision Model, Brookfield System Model.

Unit III
Use and Misuse of Resources: Soil Resource, Water Resource, Forest Resource and Mineral Resources, Future prospects of Natural resources

Unit IV
Conservation and Management of Natural Resources: Meaning and Concept of conservation of Natural Resources, Resources Conservation and Management Methods of Natural resources: Soil Resource, Water Resource, Forest Resource and Mineral Resources, Problems of Natural Resource Management in India.

Recommended Readings:

1. Borton, I. and R.W. Kates, (1984), **Readings in Resource Management and Conservation**, University of Chicago Press, Chicago.
2. Bruce, Mitchell (1989), **Geography and Resource Analysis**, John Wiley, New York.
3. Eliot Hurst, M.E. (1972), **A Geography of Economic Behaviour : An Introduction**, Duxbury Press, California.
4. Guha, J.L. and Chattroj, P.R., (1994), **Economic geography- A Study of Resources**, The World Press, Calcutta
5. Martino, R.L. (1969), **Resource Management**. McGraw Hill, London.
6. Negi, B.S. (2000), **Geography of Resources**, Kedar Nath and Ram Nath, Meerut.
7. Owen, Oliver, S., (1971), **Natural Resource Conservation : A Ecological Approach**. McMillion, New Delhi.
8. Raja, M. (1989), **Renewable Resource Development**, Concept Pub., New Delhi.
9. Ramesh, A. (1984), in **Resource Geography** (Eds) R.P. Misra, Contribution to Indian geography, Heritage Publishers, New Delhi.
10. Singh, A and Raja, M. (1982), **Geography of Resources and conservation** (Hindi Edition) Pragati Parkashan, Meerut.
11. Zimmermann, E. W. (1951), **World Resources and Industries**, Harper & Brothers, New Delhi.



M.Sc. Geography Semester - II
Course - Hydrology and Water Resource Management
(SEE GEO 1 2 03 DCEC 4004)

Credit – 4

Course Outline

Unit I

Bases of Hydrology: Meaning, scope, approach and development of Hydrology; Hydrological cycle; Man's influence on the hydrological cycle; Precipitation types, characteristics and measurements; Interception; Evaporation: factors affecting evaporation from free water surface and soil; Evapotranspiration: estimation and its control

Unit II

Water and Its Disposition. Soil moisture and its zones; Infiltration; Groundwater: occurrence, storage, recharge and discharge; Runoff: its sources and components, factors affecting runoff; River regimes; floods and droughts; Hydrograph: components and separation, water balance: measures and time-space characteristics

Unit III

Water as a resource: Factors affecting water resources development, Water Resource Problems: water demand and supply, water quality, interstate water disputes, institutional and financial constraints, eco-hydrological consequences of environmental degradation

Unit IV

Water Resource Management: social and institutional considerations in water management, water quality management and Pollution control, water management in urban areas, watershed management, conjunctive use of surface and ground water

Recommended Readings:

1. Abbas, B.M., 1982: **The Ganges Water Dispute**, Vikas Publishing House, New Delhi.
2. Aggarwal, A., 1991: **Floods, Floodplains and Environmental Myths**, Centre for Science and Environment, New Delhi.
3. Andrew. D. ward and Stanley, Trimble (2004): **Environmental Hydrology**, 2nd edition, Lewis Publishers, CRC Press.
4. Bhattacharya, S.K., 1988: **Urban Domestic Water Supply in Developing Countries**, CBS Publishers and Distributors, Delhi.
5. Karanth, K.R., 1988: **Ground Water: Exploration, Assessment and Development**, Tata-McGraw Hill, New Delhi.
6. Mahajan, G., 1989: **Evaluation and Development of Groundwater**, Ashish Publishing House, New Delhi.
7. Palanisami, K, 1984: **Integrated Water Management: The Determinants of Canal Water Distribution in India: A Micro Analysis**, Aricole, New Delhi.
8. Ramaswamy, C., 1985: **Review of floods in India during the past 75 years: A Perspective**. Indian National Science Academy, New Delhi.
9. Rao, K.L., 1982: **India's Water Wealth,** 2nd edition, Orient Longman, Delhi,.
10. Singh, Vijay P., 1995: **Environmental Hydrology,** Kluwar Academic Publications, The Netherlands.
11. Todd, D.K. 1980: **Groundwater Hydrology**. John Wiley, New York.

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12. Warren Viessman Jr. and Gary L. Lewis, 2002: **Introduction to Hydrology**, Prentice Hall, New York
13. Davie, Tim, 2008: **Fundamentals of Hydrology**, Routledge, London.
14. Rai, V.K. 1993: **Water Resource Planning and Development**, Deep & Deep Publication, New Delhi
15. Bilas, R., 1988: **Rural Water Resource Utilization and Planning**. Concept, New Delhi.
16. Reddy, J.P., 1988: **A Textbook of Hydrology**. Laxmi Publication, New Delhi.
17. Singh, M.B. 1999: **Climatology and Hydrology**. Tara Book Agency, Varanasi. (In Hindi).
18. Ward, R.C. and Robinson, M. 2000: **Principles of Hydrology**. McGraw Hill, New York.
19. Brutsaert, Wilfried, 2005: **Hydrology: An Introduction**, Cambridge University Press.

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Semester III

M.Sc. Geography Semester - III

Course - Interdisciplinary Research Methods and Techniques

(SEE GEO 1 3 09 C 4004)

Credit – 4

Course Outline

Unit I

Introduction to research in Geography: Concept and significance of research in geography; Philosophy and methods; Naturalism and anti-naturalism; realism and idealism.

Unit II

Scientific Research; Inductive and deductive approaches; Research design; Formulation of research problem; Development and testing of hypothesis; Techniques of data collection; Sampling and field survey.

Unit III

Qualitative research: Qualitative research design; Case study; Ethnography; Phenomenology and participatory research.

Unit IV

Data Analysis, interpretation and report writing: Data classification and tabulation; Data analysis and interpretation; Writing thesis, project report and research paper. Scientific journals (impact factor, citation), Ethics in scientific research

Recommended Readings:

1. Montello, D. and Sutton, P. (2013): **An Introduction to Scientific Research Methods in Geography and Environmental Studies**, Sage Publications, London.
2. Gomez, B. and Jones, J. P. III (2010): **Research Methods in Geography: A Critical Introduction**, John Wiley, New York.
3. Warf, B. (Eds.) (2006): **Encyclopedia of Human Geography**, Sage Publications, London.
4. Goudie, A. (Ed) (2004): **Encyclopedia of Geomorphology**, Routledge, London.
5. Gregory, D., Johnston, R., Pratt, G., Watts, M. and Whatmore, S. (2009): **The Dictionary of Human Geography**, Wiley-Blackwell, Singapore.
6. Ahuja, R. (2001): **Research Methods**, Rawat Publications, Jaipur and New Delhi.
7. Bhattacharyya, D. K. (2005): **Research Methodology**, Excel Books, New Delhi
8. Blackburn, J. and Holland, J. (eds.) (1998): **Who Changes? Institutionalising Participation in Development.** IT Publications, London.
9. Blaxter, L., Hughes, C. and Tight, M. (1996): **How to Research**. Open University Press, Buckingham.
10. Crang, Mike 1999. **Cultural Geography**. Routledge, London.
11. Daniels, P., Bradshaw, M., et al. (2000): **Human Geography: Issues for the 21st Century**. Prentice Hall, London, Indian reprint, 2003.
12. Denzin, N. K. and Lincoln, Y.S., (eds.) (2000): **Handbook of Qualitative Research**, Sage Publications.
13. Dikshit, R. D. (2003): **The Art and Science of Geography: Integrated Readings**. Prentice-Hall, New Delhi.

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14. Dorling, D. and Simpson, L. (eds.) (1999): **Statistics in Society**. Edward Arnold, London.
15. Fisher, P. and Unwin, D., (eds.) (2002): **Virtual Reality in Geography**. Taylor & Francis, London.
16. Flowerdew, R. and Martin, D. (eds.) (1997): **Methods in Human Geography: A Guide for Students Doing a Research Project**. Longman, Harlow.
17. Hay, I. (ed.) (2000): **Qualitative Research Methods in Human Geography**. Oxford University Press, New York.
18. Henn, M., Mark W., and Nick F. (2006): **A Short Introduction to Social Research**, Vistaar Publications, New Delhi.
19. Eyles J. and Smith D. M. (1988): **Qualitative Methods in Human Geography**, Polity Press, Dales Brewering Cambridge.
20. Kitchin, R. and Tate, N., (2001): **Conducting Research into Human Geography. Theory, Methodology and Practice**. Prentice-Hall, London.
21. Kitchin, R. and Fuller, D., (2003): **The Academic's Guide to Publishing**, Vistaar Publications, New Delhi
22. Limb, M. (2001): **Qualitative Methodologies for Geographers: Issue and Debates**. Edward Arnold, London.
23. Lofland, J. and Lofland, L.H. (1995): **Analysing Social Setting. A Guide to Qualitative Observation and Analysis**. Wadsworth, Belmont, CA.
24. Longley, P., Goodchild, M.F., Maguire, D. and Rhind, D. (1999): **Geographic Information Systems: Principles, Techniques, Management, Applications**. John Wiley and Sons, New York.
25. Mikkelsen, B. (2005): **Methods for Development Work and Research: A New Guide for Practitioners**. Sage Publications, London.

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M.Sc. Geography Semester - III
Course - Fundamentals of Remote Sensing and GIS (SEE GEO 1 3 10 C 4004)

Credit – 4

Course Outline

Unit I

Fundamentals: Remote sensing: definition and scope; Electro-magnetic radiation, Remote sensing regions and bands; Spectral signature; Types of remote sensing

Unit II

Aerial Photographs and Satellite Imagery.: Aerial photos: types, scale, resolution; Geometric properties of aerial photos; Stereoscopy; Stereoscopic parallax; Relief displacement, General orbital characteristics of remote sensing satellites; General characteristics of remote sensing sensors; Characteristics of MSS, HRV, LISS; Characteristics of raw remote sensing data

Unit III

Interpretation and Application: Elements of image interpretation; Image processing techniques: Visual and digital; Remote sensing data: pre-processing operations, enhancements and classifications; Application of Remote Sensing

Unit IV

GIS: Definition, and Components, Geographical data: types and characteristics; Spherical and plane coordinate systems in GIS; geo-referencing, Digital representation of geographic data: Data structure, spatial data model, raster and vector models; GIS data standards: concepts and components; Integration of Remote sensing and GIS; GIS project design and planning methodologies; GIS data base management systems; Applications of GIS

Recommended Readings:

1. Bhatta, B. (2010), **Remote Sensing and GIS**, Oxford University Press, New Delhi.
2. Bonham, Carter G.F. (1995): **Information Systems for Geoscientists – Modelling with GIS**. Pergamon, Oxford.
3. Burrough, P.A. and McDonnell, R. (1998): **Principles of Geographic Information Systems**. Oxford University Press, Oxford.
4. Campbell, J. B. (2002): **Introduction to Remote Sensing**. Taylor and Francis, London.
5. Chang, K.T. (2003): **Introduction to Geographic Information Systems**. Tata McGraw Hill Publications Company, New Delhi.
6. Chauniyal, D. D. (2004): **Remote Sensing and Geographic Information Systems**. (in Hindi). Sharda Pustak Bhawan, Allahabad.
7. Cracknell, A and Hayes, L. (1990): **Remote Sensing Year Book**, Taylor & Francis, London.
8. Curran, P.J. (1985): **Principles of Remote Sensing**, Longman, London.
9. Deekshatulu, B.L. and Rajan, Y.S. (ed.) (1984): **Remote Sensing**. Indian Academy of Science, Bangalore.
10. Demers, M.N. (2000): **Fundamentals of Geographic Information Systems**. John Wiley and Sons, Singapore.
11. ESRI (1993): **Understanding GIS**. Redlands, USA

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12. Floyd, F. and Sabins, Jr. (1986): **Remote Sensing: Principles and Interpretation**, W.H. Freeman, New York.
13. Fraser Taylor, D.R. (1991): **Geographic Information Systems**. Pergamon Press, Oxford.
14. George, J. (2003): **Fundamentals of Remote Sensing**. Universities Press Private Ltd, Hyderabad.
15. Girard, M.C. and Girard, C.M. (2003): **Processing of Remote Sensing Data**. Oxford and IBH, New Delhi.
16. Glen, E.M. and Harold, C.S. (1993): **GIS Data Conversion Handbook**. Fort Collins, Colorado.
17. Goodchild, M.F.; Park, B.O. and Steyaert, L.T. (eds.) (1993): **Environmental Modelling with GIS**. Oxford University Press, Oxford.
18. Guham, P.K. (2003): **Remote Sensing for Beginners**. Affiliated East-West Press Private Ltd., New Delhi.
19. Guptill, S.C., and Morrison, J.L. (1995): **Elements of Spatial Data Quality**. Elsevier, Oxford.
20. Hallert, B. (1960): **Photogrammetry**, McGraw Hill, New York
21. Harry, C.A. (ed.) (1978): **Digital Image Processing**, IEEE Computer Society, California.
22. Heywood, I. (2003): **An Introduction to Geographical Information Systems**. 2nd edition, Pearson, Singapore.
23. Hord, R.M. (1982): **Digital Image Processing of Remotely Sensed Data**, Academic Press, New York.
24. Leuder, D.R. (1959): **Aerial Photographic Interpretation: Principles and Application**. McGraw Hill, New York.
25. Lillesand, T.M. and Kiefer, R.W. (2000): **Remote Sensing and Image Interpretation.** John Wiley, New York.
26. Lo, C.P. and Yeung, A.K.W. (2002): **Concepts and Techniques of Geographic Information Systems**. Prentice Hall, New Delhi.
27. Longley, P. and Batty, M. (eds.) (1996): **Spatial Analysis: Modelling in a GIS Environment**. Geo-Information International, Cambridge.
28. Longley, P., Goodchild, M.F., Maguire, D. and Rhind, D. (1999): **Geographic Information Systems. Principles, Techniques, Management, Applications**. John Wiley, New York.
29. Maguirre, D.J.; Michael F.G. and David W. R. (1999): **Geographical Information Systems: Principles and Application**. Geo Information International, Vol. 2, Longman Publication, New York.
30. Martin, D. (1996): **Geographic Information Systems: Socio-economic Implications**. Routledge, London.
31. Michael F. G. and Karan K. K. (ed.) (1990): **Introduction to GIS.** NCGIA, Santa Barbara, California.
32. Nag, P. (ed.) 1992: **Thematic Cartography and Remote Sensing**, Concept, New Delhi.
33. Ralston, B. A. (2002): **Developing GIS Solutions with Map Objects and Visual Basic**, Thompson Learning, Singapore.
34. Reddy, M.A. (2001): **Textbook of Remote Sensing and Geographic Information Systems.** B. S. Publications., Hyderabad.
35. Reeves, R.G. (ed.) (1983): **Manual of Remote Sensing**, Vols. 1 & 2, American Society of Photogrammetry and Remote Sensing, Falls Church, Virginia.
36. Ripple, W. J. (ed.) (1989): **Fundamentals of Geographic Information Systems: A**

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37. Siddiqui, M.A. (2005): **Introduction to Geographical Information Systems**, Sharda Pustak Bhawan, Allahabad. (in Hindi)
38. Siegel, B.S. and Gillespie, R. (1985): **Remote Sensing in Geology**, John Wiley & Sons, New York.
39. Silver, M. and Balmori, D. (eds.) (2003): **Mapping in an Age of Digital Media**. Wiley-Academy, New York.
40. Spurr, R. (1960): **Photogrammetry and Photo Interpretation**, Roland Press, London.
41. Star, J. and Estes, J. (1990): **Geographic Information Systems – An Introduction**. Prentice-Hall, New Jersey.
42. Survey of India, (1973): **Photogrammetry**, Survey of India, Dehradun.
43. Swain, P.H. and Davis, S.M. (ed.), (1978): **Remote Sensing: The Quantitative Approach**. McGraw Hill, New York.
44. Worboys, M.F. (1995): **GIS: A Computing Perspective**. Taylor & Francis, London.

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M.Sc. Geography Semester - III

Course - Practical IV: Interpretation of Aerial Photographs & Satellite Images and Thematic Mapping (SEE GEO 1 3 11 C 0084)

Credit – 4

Course Outline

Unit I

Stereo Vision Test, Determination of scale on an aerial photograph; Measurement of height of an object on single vertical aerial photograph; Parallax bar measurement and height determination; Preparation of stereogram, stereo-triplet and mosaic from aerial photographs.

Unit II

Interpretation of Aerial photographs: Identification, mapping and interpretation of Natural and Cultural features (at least two exercises), Interpretation of a Satellite Image (Landsat, LISS III, LISS IV, Cartosat etc.): Identification, mapping and interpretation of Natural and Cultural features (at least two exercises)

Unit III

Comparison of features on Panchromatic, True Colour and False Colour Composite images and Preparation of interpretation keys

Unit IV

Thematic Mapping with any Software: Geo-referencing; creation of PGDB, creation of shape files; on-screen digitization of polygons, points and lines and adding attributes, (at least one exercise each on Point, line and polygon features)

Recommended Readings:

1. Heywood, lan*et al.* (2002), ***Geographical Information Systems*** (Second edition), Pearson Education, Delhi.
2. Lillesand, T.M. and Kiefer, R.W. (2002), ***Remote Sensing and Image Interpretation***, John Wiley, New York.
3. Nag. P. and Kudrat M. (1998), ***Digital Remote Sensing***, Concept Publishing Co., New Delhi.
4. Rampal, K.K. (1999), ***Handbook of Aerial Photography and Interpretation***, Concept Publishing Co., New Delhi.
5. Robbert, G. Reaves et.al. (eds.) (1981), ***Manual of Remote Sensing***, Fourth Edition, Vols. I & II, American Society of Photogrammetry, Falls Church, U.S.A.
6. Sabins, F.F. (1986), ***Remote Sensing-Principles and Interpretation***, Second Edition, WH Freeman and Co., New York.
7. Sharma, J.P. (1996), ***Prayogic Bhoogol***, RastogiPublicatoins, Meerut.
8. Wolf, Paul R. (1983), ***Elements of Photogrammetry***, 2ndEd., McGraw-Hill, New York.

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M.Sc. Geography Semester - III
Course - Assignment based Seminar (SEE GEO 1 3 03 DCEC 0202)

Credit - 2

M.Sc. Geography Semester - III
Course - Geography of Natural Hazards and Disasters
(SEE GEO 1 3 04 GE 4004)

Credit – 4

Course Outline

Unit I

Concept of Hazards, Risk, Vulnerability and Disaster. Types of Hazards: Natural (Tectonic Hazards – Earthquakes and Volcanoes; Hydrological Hazards – Floods and Droughts.

Unit II

Regional Dimension of Natural Hazards: Occurrence and Trends. (Tectonic Hazards – Earthquakes and Volcanoes; Hydrological Hazards – Floods and Droughts.

Unit III

Disaster Losses and Impact – Displacements, Livelihood. Economy and Infrastructure, and Health.

Unit IV

Mitigation and Management: Plans and Policies. Role of Remote Sensing, GIS and GPS in Disaster Management

Recommended Readings:

1. Allan, S., Adam, B. and Carter, C. (eds.), (2000): **Environmental Risks and the Media**, Routledge, London.
2. Ambala-Bertrand, J.M. (1993), **Political Economy of Large Natural Disasters: With Special Reference to Developing Countries**, Claredon Press, Oxford.
3. Blaikie, P., Cannon, T., Davis, I. (1994), **At Risk: Natural Hazards, People's Vulnerability, and Disasters**, Routledge, London.
4. Burton, I., Kates, R.W. and White, G.F., (1993), **Environment as Hazards**, 2nd edition, Guilford Press, New York.
5. Hewitt, K., (1997), **Regions of Risk: A Geographical Introduction to Disasters**, Longman, London.
6. Hood, C. and Jones, D.K.C. (eds.), (1996), **Accident and Design: Contemporary Debates in Risk Management**, UCL Press, London.
7. Kasperson, J.X., Kasperson, R.E. and Turner, B.L. (1995), **Regions at Risk: Comparisons of Threatened Environments**, United Nation University Press, Tokyo.
8. Schneider, S.K. (1995), **Flirting with Disaster: Public Management in Crisis Situations**, M.E. Sharpe, New York.
9. Quarantelli, E.L. (ed.) (1998), **What is a Disaster? Perspective on the Question**, Routledge, London.
10. Schneid, T. and Collins, L. (1998), **Disaster Management and Preparedness**, Lewis Publishers, Washington, D.C.

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11. Godschalk, D.R. et al. (1999), **Natural Hazard Mitigation Recasting Disaster Policy and Planning**, Island Press, Washington, D.C.
12. Smith, Keith (1996), **Environmental Hazards; Assessing Risk and Reducing Disaster**, Routledge, London.
13. Paraswamam, S. and Unikrishnan, P.V. (2013), **India Disaster Report**, Oxford University Press, New Delhi

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M.Sc. Geography Semester - III
Course - Cultural Geography (SEE GEO 1 3 05 GE 4004)

Credit -4

Course Outline

Unit I

The Nature, Scope, approaches in Cultural Geography. The Historical development of cultural Geography. Themes in cultural Geography - The Cultural Region. Functional, Formal. Perceptual, Determinism and Possibilism

Unit II

Environment and Culture : Culture Areas & Cultural Realms of the world and its relationship with environment, Elements of cultural expressions. Folk Culture its Revival. Cultural Adaptation and Environmental perception

Unit III

Spatial structure. Focuses on similarities and differences of various cultures with respect to racial, ethnic, religious, linguistic, demographic, and organizational characteristics in Indian context

Unit IV

Human races, Habitat economy and Society of tribal groups. Racial Elements in India's Population; Tribes of India (Bhil, Gond, Toda, Naga); Tribes of World (Eskimo, Pigmy, Bushman); Patterns of popular Culture and Cultural fusion.

Recommended Readings:

1. Ahmad, Aijazuddin, 1999, **Social Geography**, Rawat Publication, New Delhi.
2. Erin H. Fouberg, Alexander B. Murphy, Harm J. de Blij, 2012, **Human Geography: People, Place, and Culture**. John Wiley & Son, New York.
3. Dreze Jean, Amartya Sen, 1996, **Economic Development and Social Opportunity**, Oxford University press, New Delhi.
4. Dubey, S.C., 1991, **Indian Society**, National Book Trust, New Delhi.
5. Gregory, D. and UJ. Larry. (eds.), 1985, **Social relations and Spatial Structures**, McMillan, London.
6. Haq, Mahbubul: **Reflection on Human Development**. Oxford University Press. New Delhi
7. Maloney, Clarence, 1974, **People of South Asia**, Winston, New York.
8. Planning Commission, 1981, **Report on Development of Tribal areas**. Government of India, New Delhi
9. Rao, M.S.A., 1970, Urban Sociology in India. Orient Longman, Delhi
10. Schwartzberg Joseph, 1978, **An Historical Atlas of South Asia**. University of Chicago Press, Chicago.
11. Sen, Amartya and Dreze Jean, 1996, **Indian Development: Selected Regional Perspectives**. Oxford University Press, New Delhi.
12. Smith, David, 1977, **Geography: A Welfare Approach**. Edward Arnold, London.
13. Sopher, David, 1980, **An Exploration of India**. Cornell University Press. New York.
14. Subba Rao, 1958, **Personality of India: Pre and Proto Historic Foundation of India and Pakistan**, M.S. University, Baroda, Vadodara.

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M.Sc. Geography Semester - III
Course – Soil Geography (SEE GEO 1 3 06 GE 4004)

Credit – 4

Course Outline

Unit I
Introduction to soil geography and pedology, factors and Processes of soil formation and development; Soil Profile; Soil catena, podzolization, laterisation, calcification and gleezation and salinization

Unit II
Soil organisms, Physical and Chemical properties of soils

Unit III
Genetic and Taxonomic classification of soils, their characteristics and world patterns. Land capability classification, Evaluation of land and soil: Parametric and non-parametric systems, soil survey

Unit IV
Soil problems and management: Soil erosion and degradation. integrated soil and water management; Methods of Soil reclamation, quality enhancement and management

Recommended Readings:

1. Backman, H.O and Brady, N.C. (1960), ***The Nature and Properties of Soils***, McMillan, New York.
2. Basile, R.M. (1971), ***A Geography of Soils***, William C. Brown, Dubuque, Ia.
3. Bennet, Hugh H. (), ***Soil Conservation***, McGraw Hill, New York.
4. Bunting, B.T. (1973), ***The Geography of Soils***, Hutchinson, London.
5. Clarke, G.R. (1957), ***Study of the Soil in the Field***, Oxford University Press, Oxford.
6. De, N.K. and Ghos, P. (1993): ***India: A Study in Soil Geography***, Sribhumi Publishing Co., Calcutta.
7. Foth, H.D. and Turk, L.M. (1972): ***Fundamentals of Soil Science***, John Wiley, New York.
8. Gardiner, James S. (1977), ***Physical Geography***, Harper's College Press, New York.
9. GovindaRajan, S.V. and Gopala Rao, H.G. (1978), ***Studies on Soils of India***, Vikas, New Delhi.
10. McBride, M.B. (1999), ***Environmental Chemistry of Soils***, Oxford University Press, New York.
11. Mcknight, Tom L. (1987),***Physical Geography: A Landscape Appreciation*** *(2nd Ed.)*, Prentice Hall, inc., Englewood Cliffs, N.J.
12. Nye, P.H. and Greene, D.J. (1960), ***The Soil under Shifting Cultivation*** Commonwealth Bureau of Soil Science, Technical Communication, No. 51; Harpender, England.
13. Raychoudhuri, S.P. (1958), ***Soils of India***, ICAR, New Delhi.
14. Russell, Sir Edward J. (1961), ***Soil Conditions and Plant Growth***, Wiley, New York.
15. Steila, D. (1976), ***The Geography of Soils***, Prentice Hall, New Jersey.
16. Khan Towhid Osman (2013), **Soil: Principles, Properties and Management**, Springer, New York

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M.Sc. Geography Semester - III
Course - Population Geography (SEE GEO 1 3 04 DCEC 4004)

Credit – 4

Course Outline

Unit I
Concepts, scope and methodology of population geography; Sources of population data with particular reference to India, concept of Human Development

Unit II
Theories of Population: Pre-Malthus, Malthusian and Modern Theories

Unit III
Population dynamics: Measurement, theories, trend and pattern of Fertility, Mortality and Migration

Unit IV
(i) Population Profile of World and India: Population Distribution and Characteristics
(ii) Population issues, problems, and Policies - Population and Resource; Population resource regions; Population and Environment

Recommended Readings:

1. Beaujen- Garnier, J. (1966), Geography of Population, Longman, London
2. Bhende, Asha and Kanitkar, Tara (2006), ***Principles of Population Studies***, 18th Edition, Himalaya Publishing House, Mumbai.
3. Bilasborrow, Richard E. and Daniel Hogan (1999), ***Population and Deforestation in the Humid Tropics***, International Union for the Scientific Study of Population, Belgium.
4. Bogue, D.J. (1969), ***Principles in Demography***, John Wiley, New York.
5. Bose, Ashish *et al.* (1974), ***Population in India's Development (1947-2000)***, Vikas Publishing House, New Delhi.
6. Chandana, R.C. (2008) ***Geography of Population: Concepts, Determination and Patterns***, Seventh Edition, Kalyani Publishers, New Delhi.
7. Clarke, J.I. (1992), ***Population Geography***, Second Edition, Pergamon Press, Oxford England.
8. Crook, Nigel (1997), ***Principles of Population and Development***, Pergamon Press, New York.
9. Daugherty, Helen Gin, Kenneth C.W. Kammeyir (1998), ***An Introduction to Population*** (Second Edition), The Guilford Press, New York, London.
10. Garnier, B.J. (1970), ***Geography of Population***, Longman, London.
11. Mamoria C.B. (1981), ***India's Population Problems***, Kitab Mahal, New Delhi.
12. Mitra, Asok (1978), ***India's Population: Aspects of Quality and Control***. Vol. I&II, Abhinav Publications, New Delhi.
13. Premi M.K. (1991), ***India's Population: Heading Towards a Billion***, B.R. Publishing, New Delhi.

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M.Sc. Geography Semester - III
Course - Regional Development and Planning
(SEE GEO 1 3 05 DCEC 4004)

Credit – 4

Course Outline

Unit I

Fundamentals: Concept, nature and scope of Regional Planning; Different approaches to regional planning; Planning regions: concept and types; Planning regions of India; Regional policies in India

Unit II

Conceptual Outlook: Regional planning and national development; Economic development and regional development; Regional economic complexes; Inter-regional and intra-regional functional interactions; Regional disparities in India

Unit III

Approaches: Approaches to integrated regional planning at different levels: local, regional and national; Multi-level planning in India: State, District and Block level planning; Planning for tribal, agricultural, industrial and urban (metropolitan) regions

Unit IV

Development Perspective: Service and market centres planning; Growth centre and regional development with reference to India and France; Decentralised planning: themes and issues; Regional Planning: Development Strategies in the 21st century

Recommended Readings:

1. Bhatt, L.S. (1972), **Regional Planning in India**, Statistical Publishing Society, Calcutta.
2. Bhatt, L.S. et al. (eds.) (1982), **Regional Inequalities in India**, Society for the study of Regional Disparities, New Delhi.
3. Blunder. J. et al. (1973), **Regional Analysis and Development**, Harper & Row, London.
4. Chand, M. and Puri, V.K. (1985), **Regional Planning in India**, Allied Pub. Pvt. Ltd. New Delhi.
5. Chandna, R. C. (2000): **Regional Planning: A Comprehensive Text**. Kalyani Publishers, New Delhi.
6. Chaudhuri, J. R. (2001): **An Introduction to Development and Regional Planning with special reference to India**. Orient Longman, Hyderabad.
7. Coates, B.R. and R.J. Johnston (1977), **Geography and Inequality**, Oxford University Press, Oxford.
8. Cowen, M.P. and Shenton, R.W. (1996): **Doctrines of Development**. Routledge, London.
9. Doyle, T. and McEachern, D. (1998): **Environment and Politics**. Routledge, London.
10. Friedmann, J. (1992): **Empowerment: The Politics of Alternative Development**. Blackwell, Cambridge MA.
11. Friedmann, J. and Alonso, W. (ed.) (1973): **Regional Development and Planning**. The MIT Press, Cambridge Massachesetts.
12. Hettne, B.; Inotai, A. and Sunkel, O. (eds.) (1999–2000): **Studies in the New Regionalism**. Vol. I-V. Macmillan Press, London.

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36.

13. Isard, W. (1960): **Methods of Regional Analysis**. MIT Press, Cambridge, MA.
14. Kane, M. and William M.K.T. (2007): **Concept Mapping for Planning and Evaluation**, Sage Publications, London.
15. Kuklinski, A. R. (1972): **Growth Poles and Growth Centres in Regional Planning**. Mouton and Co., Paris.
16. Kuklinski, A.R. (ed.) (1975): **Regional Development and Planning: International Perspective**, Sijthoff-Leydor.
17. Leys, C. (1996): **The Rise and Fall of Development Theory**. Indian University Press, Bloomington, and James Curry, Oxford.
18. Mahapatra, A.C. and Pathak, C.R. (eds.) (2003): **Economic liberalisation and Regional Disparities in India. Special Focus on the North Eastern Region**. Star Publishing House, Shillong.
19. Misra, R. P. (ed.) (1992): **Regional Planning: Concepts, Techniques, Policies and Case Studies**. 2nd edition. Concept Publishing Company, New Delhi.
20. Misra, R.P. and Natraj, V.K. (1978): **Regional Planning and National Development**. Vikas, New Delhi.
21. Misra, R.P., Sundaram, K. V. Pradasa Rao, V. L. S. (1976): **Regional Development Planning in India**. Vikas Publishers, New Delhi.
22. Moseley, M.J., (1974): **Growth Centres in Spatial Planning**. Pergamon Press, Oxford.
23. Närman, A. and Karunanayake, K. (eds.) (2002): **Towards a New Regional and Local Development Research Agenda**. Dept. of Geography, Göteborg University (Sweden), series B, No.100.
24. Norgaard, R. B. (1994): **Development Betrayed. The End of Progress and a Co-evolutionary Re-visioning of the Future**. Routledge, London.
25. Pathak, C. R. (2003): **Spatial Structure and Processes of Development in India**. Regional Science Association, Kolkata.
26. Raza, Moonis (1988), **Regional Development**, Heritage, New Delhi.
27. Sanyal, B. M. (2001): **Decentralised Planning: Themes and Issues**. Concept Publishing Company, New Delhi.
28. Sen, A. (1999): **Development as Freedom**. Oxford University Press, Oxford.
29. Sen, A. and Dreze, J. (eds.) (1996): **Indian Development: Selected Regional Perspectives**. Oxford University Press, Oxford.
30. Sharma, P.V., Rao, V.L.S., and Pathak, C.R. (eds.) (2000): **Sustainable Regional Development (with special reference to Andhra Pradesh)**. Regional Science Assocation, Kolkata.
31. Smith, D. and Närman, A. (eds.) (1999): **Development Theory and Practice: Current Perspectives on Development and Development Co-operation**. Longman, London.
32. Stöhr, W. B. and Taylor, D.F.R. (eds.) (1981): **Development from Above and Below? The Dialectics of Regional Planning in Developing Countries**. John Wiley, Chichester.
33. Sundaram, K. V. (1997): **Decentralized Multilevel Planning: Principles and Practice (Asian and African Experiences).** Concept, New Delhi.
34. Sundaram, K. V. (2004): **The Trodden Path: Essays on Regional and Micro Level Planning**. Anaunya Publications., New Delhi.
35. Sundram, K. V. (1977), **Urban and Regional Planning in India**, Vikas Publishig House, New Delhi.
36. Toye, J. (1987): **Dilemmas of Development. Reflections on the Counterrevolution in Development Theory and Policy**. Blackwell, Oxford.

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37.

37. Verhelst, T. (1990): **No Life Without Roots – Culture and Development**. Zed Books, London.
38. World Bank (2000): **Entering the 21st Century. World Development Report**. The World Bank and Oxford University Press, New York and Oxford.
39. Yugandhar, B. N. and Mukherjee, A. (eds.) (1991): **Readings in De-centralised Planning (with special reference to District Planning)**, 2 vols. Concept Publishing. Company, New Delhi.

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M.Sc. Geography Semester - III
Course - Oceanography (SEE GEO 1 3 06 DCEC 4004)

Credit – 4

Course Outline

Unit I

Introduction: Nature and scope of oceanography; Impact of Human activities on the Marine environment, Origin of ocean basins: Wegner's drift hypothesis, sea floor spreading and Plate Tectonics

Unit II

Major topographic features of ocean basins: continental shelf, slope, ridge and deeps, abyssal plains; submarine canyons; Marine Sediments; configuration of ocean floors of Indian Ocean and Atlantic Ocean

Unit III

Physical and chemical Properties: heat, temperature, density, light, sound, chemical composition of sea water, salinity, residence time; Oceanic processes: Interlink between atmospheric and ocean; Upper and Deep ocean circulation; currents, waves, tides and tsunami

Unit IV

Oceanic life and Resources: types of Organisms; coral reefs - origin and distribution, Major Marine Environments: Coastal: estuaries, deltas; Deep sea environment; Marine Resources: Food, Mineral and Energy

Recommended Readings:

1. Davis, Richard J.A. (1986), **Oceanography - An Introduction to the Marine Environment**, C. Brown, Iowa.
2. Denny, M. (2008), **How the Ocean Works: An introduction to Oceanography**, Princeton University Press, New Jersey.
3. Duxbury, C.A and Duxbury, B. (1996), **An Introduction to the world's Oceans**, 2nd Edition, C. Brown, Iowa.
4. Garrison, T. (1995), **Essentials of Oceanography**, Wards worth Pub. Co., London.
5. Garrison, T. (2001), **Oceanography - An Introduction to Marine Science**, Cole Pacific Grove, USA.
6. Gross, M. Grant (1987), **Oceanography: A View of the Earth**, Prantice - Hall Inc. New Jersy.
7. Kennel, J.P. (1982), **Marine Geology**, Prentice Hall, New Jersey.
8. Kerhsaw, S. (2004), **Oceanography: An Earth Science Perspective**, Routledge, UK.
9. Sharma, R.C. (1985), **The Oceans**, Rajesh Publications, New Delhi.
10. Sharma, R.C. and Vatal, V. (1986), **Oceanography for Geographers**, Chatanaya Publishing, Allahabad.
11. Shepart, F. (1969), **The Earth Beneath the Sea**, Athneum, New York.
12. Sieboldt, E. and W.H. Berger (1994), **The Sea Floor**, 2nd ed., Freeman, New York.
13. Stopmmel, H. (1987), **A View of the Sea**, Princeton University Press, New Jersey.
14. Ummerkutty, A.N.P. (1985), **Science of the Oceans and Human Life**, NBT, New Delhi.
15. Von Arx, W.S. (1962), **An Introduction to Physical Oceanography**, Addison, New York.

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Semester IV

M.Sc. Geography Semester – IV
Course: Field Based Dissertation (including viva voce)
(SEE GEO 1 4 01 SEEC 0066)

Credits: 24

M.Sc. Geography Semester – IV
Course: Self-Study Course (SEE GEO 1 4 02 SEEC)

Non Credit Course

Agreed 18/4/16

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