CURRICULUM FRAMEWORK

FOR
Innovative B.A.B.Ed./B.Sc.B.Ed. Integrated Programme
(Shastri-cum-Shiksha Shastri)

(Revised 2019)
w.e.f. academic session 2019-20
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Director, Tourism Department
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UNDER THE CHAIRMANSHIP OF
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Former Vice Chancellor, M. G. Kashi Vidyapeeth
Emeritus Professor of Education (UGC)
DIRECTOR
Society for Higher Education & Practical Applications (SHEPA)
SHEPA Campus, Nibia, Bachchaon, Varanasi-221011

CHIEF PATRON
Prof. Geshe Ngawang Samten
Vice Chancellor, Central Institute of Higher Tibetan Studies
Sarnath, Varanasi

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<td>Tibetan History</td>
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SHASTRI-CUM-SHIKSHA SHASTRI
(INNOVATIVE B.A.B.Ed. / B.Sc. B.Ed.)
4 YEARS INTEGRATED COURSE

The purpose of Shastri-cum-Shiksha Shastri (Innovative B.A. B. Ed. / B.Sc. B.Ed.) Integrated Course is to prepare competent and committed teachers who would be able to function effectively at school level notwithstanding the scope for pursuing Higher Education Programmes in any of the streams Science / Humanities / Social Science / Pedagogy after completion of the Integrated Course as formulated hereunder:

OBJECTIVES

The course aims at enabling the student teacher to-

▪ Acquire competencies in respect of Science / Humanities / Social Science discipline for teaching subjects on the basis of accepted principles of learning and teaching.

▪ Develop Skills, understanding, interests and attitude which enable him/her to become effective teacher for the emerging new educational scenario.

▪ Develop skills in identifying, selecting, innovating and organizing learning experiences for teaching the required subjects.

▪ Acquire competence to prepare minor/ major project studies, especially about innovative methods of Quality Intensive Knowledge Flow (QIKF).

▪ Acquire competence in organizing programmes based on Constructivist Paradigm and Experiential Learning.

▪ Develop understanding of Educational, Psychological, Sociological, Administrative and Managerial aspects of schools.

▪ Understand theoretical and practical aspects of values, health, environmental and recreational activities.

▪ To promote needed professionalization for becoming competent teachers rooted in moral ethics and values.

▪ To inculcate the Samskarasa for integration of knowledge and skills leading to the preparation of effective teachers for the 21st century.
ELIGIBILITY FOR ADMISSION

The admission shall be open to a student, who has passed +2 level of education, who has the degree of Madhyama or equivalent of a University or a Vihar recognised by the Govt. of India, with Tibetan Language as an optional or compulsory subject.

Duration of course

The duration of Shastri-cum-Shiksha Shastri (B.A. B. Ed. / B.Sc. B.Ed.) Course will be of eight semesters ranging over a period of 4 years including intensive school teaching internship (practice teaching) of four months.

The odd semester shall commence from the month of July and last till the month of December and the even semester shall commence from the month of January and last till the month of May in each academic year.

The school teaching internship (practice teaching) shall be held in the seventh semester.

Medium of course

The medium of instruction and examination for Shastri-cum-Shiksha Shastri (B.A. B. Ed. / B.Sc. B.Ed.) Course will be English/Hindi.

ELIGIBILITY FOR APPEARING IN EXAMINATION OF SHASTRI-CUM-SHIKSHA SHASTRI (B.A. B. Ed. / B.Sc. B.Ed.)

Following eligibility conditions will be applicable on student-teacher for appearing in the final term-end (Summative) examination:

(a) Attendance

I. At least 85% of the total number of working days.

II. The Head of the Department will, however, have discretion to condone deficiency in attendance to the extent of 10% for valid reasons.

III. The Vice-Chancellor may consider the question of condoning deficiency in attendance, not covered under clause (ii) above, if he is satisfied on merits of each individual case.

(b) Completion of Internal Semester-wise Experiential Work and Projects

I. Completion of all internal work, including projects (minor/ major) to be done by each student individually and / or jointly in a group, as prescribed in the syllabus.

II. The course transaction will adequately ensure constructivist approach to teaching and learning and as such there will be ample scope provided in each semester for completion of project work / assignment / activities as prescribed.

III. In case a student is sanctioned leave on medical grounds he/she may discuss and assure about the completion of programme required and those students who have not been sanctioned leave shall be required to repeat the course.
EVALUATION AND SCALE OF GRADATION

Following evaluation criteria will be applicable -

I. Credit Description:

(a) For transactional activities, one credit equals:-

- In Theory Papers: One hour Teaching Learning activity per week for one entire Semester.
- In Practicum: Two hour practical work per week for one entire semester.

(b) For evaluation related activities, one Credit is equal to 25 marks.

II. In each semester the two types of evaluation will be carried out – Formative and Summative. There will be two formative tests and one summative test in each semester and the weightage assigned to them shall be 30% and 70% respectively. Formative evaluation will take into account the Sessional Assessment/Unit Test / Grading as prescribed from time to time.

III. Summative Tests will be conducted towards the end of each semester. In order to be eligible for automatic promotion to subsequent semester the candidate should have cleared all the prescribed papers / courses and should obtain a minimum of 40% of total-marks-in-Summative-Assessment and 50% of total-marks-in-formative-assessment for each paper separately.

IV. The distribution of marks / grading in a semester will be regulated as follows:

<table>
<thead>
<tr>
<th>Percentage of Marks</th>
<th>Categorization</th>
<th>Grading</th>
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</thead>
<tbody>
<tr>
<td>75% and above</td>
<td>Outstanding (Distinction)</td>
<td>A</td>
</tr>
<tr>
<td>60% and above but below 75%</td>
<td>Very Good (First Div)</td>
<td>B</td>
</tr>
<tr>
<td>50% and above but below 60%</td>
<td>Good(Second Div)</td>
<td>C</td>
</tr>
<tr>
<td>40% and above but below 50%</td>
<td>Average (Pass)</td>
<td>D</td>
</tr>
<tr>
<td>Below 40%</td>
<td>Not Satisfactory (Fail)</td>
<td>E</td>
</tr>
</tbody>
</table>
V. A student who obtains E grade in two or more than two papers in a semester will be required to repeat the entire semester whereas a student obtaining E grade in just one paper will be given the facility for re-appearing in the same paper at the time of subsequent semester examination. The re-appear facility will not be allowed more than twice for a particular paper.

VI. The final categorization / grading will be done by averaging the marks/grades obtained by a candidate in all the eight semesters including pedagogy related papers / courses. The pattern of classification or grading will be as indicated above in paragraph (IV).

VII. The evaluation for both general and professional components of courses (B.Sc.B.Ed. /B.A.B.Ed. Integrated) will be reflected with a final grade or marks earned by a candidate in all the semesters. However, the evaluation for Pedagogy related course may also be reflected separately for theory and practicals in order to enable the students to pursue higher level courses in Pedagogy. The same pattern may be followed for B.Sc. /B.A. component of the programme with a view to enabling students to seek admissions in higher education courses of the concerned disciplines.

VIII. At least 50% marks or a 'B' grade in internal Projects/ Assignments is a prerequisite for award of credits / grades in the concerned papers.

IX. For the Internal evaluation, the Head / Director of the Institute will have to certify that the candidate whose Shastri-cum-Shiksha Shastri integrated (B.A. B. Ed. / B.Sc. B.Ed.) Examination Form is sent to the University Office, has complied with the minimum requirements as prescribed.

X. It will be at the discretion of the Head / Director of the Institute to forward or reject the Examination Form, if the student fails to comply with the essential requirements in respect of Attendance, Project and Practical work and general demeanor.

XI. With respect to one credit course papers, evaluation shall be done internally in grades/ marks as applicable.

XII. With respect to evaluation of Project/Practical/ Dissertation, following criteria will be applicable:

- For the even semesters 2, 4 & 6, evaluation of Viva-voce in every Elective subject preferably to be conducted by an External Examiner.

- In the 8th Semester, evaluation of Viva-voce related with in every Major subject shall be conducted by an External Examiner.
SCHEDULE OF SEMESTER EXAMINATION

There will be eight semesters including intensive job training for four months duration for the Shastri-cum-Shiksha Shastri integrated (B.A. B. Ed. / B.Sc. B.Ed.) course. The Practice Teaching (Internship) shall be organized during the 7th semester of the course:

I. First Semester Examination will be held in December month after Deepawali Vacation. The examination will be based on theory/practicals as prescribed. Sessional work / Project work of these subjects will be submitted on the dates prescribed by the Institute before the commencement of terminal examinations of concerned semester.

II. Examination for Second Semester will be held in the month of April/ May. In this Semester students of the B.A. B. Ed./B.Sc.B.Ed. programme will complete Theory/Practicals including one Pedagogy course with a compulsory course in Personality Development as prescribed.

III. Examination for Third Semester will be held in the month of December. In this Semester students of the B.A. B. Ed./B.Sc.B.Ed. programme will complete Theory /Practicals including two Pedagogy courses with a compulsory course in Personality Development as prescribed.

IV. Examination for Fourth Semester will be held in the month of April/ May. In this Semester students of the B.A. B. Ed./B.Sc.B.Ed. programme will complete Theory/practicals including two Pedagogy courses with a compulsory course in Personality Development as prescribed.

V. Examination for Fifth Semester will be held in the month of December. In this Semester students will complete Theory/Practicals including Pedagogy courses with a compulsory course in Moral Ethics as prescribed.

VI. Examination for Sixth Semester will be held in the month of April/ May. In this Semester students will complete Theory/Practicals including Pedagogy courses with a compulsory course in Moral Ethics as prescribed.

VII. In the Seventh Semester students will be placed for School Internship as per specification below:

- Practical Teaching (School attachment programme) of 16 weeks.
- Two Criticism Lessons (Process Related).
- Two Evaluation Lessons.
- Scouting/Guiding and community work.
- Designing Educational Assessment Tool.
- Action Research Project based on Classroom situation.
Evaluation in the above mentioned areas shall be conducted using appropriate methods.

VIII. Examination for Eighth Semester will be held in the month of April/ May. In this Semester students will complete one major subject and two Pedagogy papers as prescribed.

*****************************
## COURSE STRUCTURE

Summary sheet for 4year Integrated B.Ed. programme

Credit and Marks Semester wise (1 Credit = 25Marks)

<table>
<thead>
<tr>
<th>Table No. 1</th>
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<tbody>
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<td>Semester</td>
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<tr>
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<tr>
<td>---</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
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<td>3</td>
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<td>4</td>
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<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>8</td>
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<tr>
<td>Course Total</td>
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</table>

**Fundamentals of Buddhist Logic, Psychology & Cognitive Science.**

* indicates credits of Personality Development and Moral Ethics, that are evaluated in Grades.

# indicates credits of Innovative Teaching Module in Major Subject relevant to practice teaching with reference to school level.
Semester wise Credit Chart  
(4 year Integrated B.Ed. programme) 
Table No. 2 (a)

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Credits</th>
<th>Marks</th>
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</thead>
<tbody>
<tr>
<td>1st Semester</td>
<td>Elective Sub.1 (P₁+P₂+P₃/Pract.)</td>
<td>2+2+2=6</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Elective Sub.2 (P₁+P₂+P₃/Pract.)</td>
<td>2+2+2=6</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Elective Sub.3 (P₁+P₂+P₃/Pract.)</td>
<td>2+2+2=6</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Pedagogy Related (PDCIE)+PD1</td>
<td>4+1*</td>
<td>100</td>
</tr>
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<td></td>
<td>Tibetan Language &amp; Literature</td>
<td>4</td>
<td>100</td>
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<td></td>
<td>Gen. English</td>
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<td></td>
<td>FBLPCSc. I</td>
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<td></td>
<td>Total</td>
<td><strong>28+1</strong></td>
<td><em><strong>700</strong></em></td>
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* indicates credits of PD, that are evaluated in Grades.  
PDCIE-Philosophical Dimensions and Challenges of Indian Education.  
PD- Personality Development.  
PDE- Psychological Dimensions of Education.  

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<td></td>
<td>Pedagogy Related (PDE)+PD2</td>
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<td>Pedagogy Related (EM+EME+PD3)</td>
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<td>Total</td>
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<td><em><strong>775</strong></em></td>
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<th>Credits</th>
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<td>150</td>
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<tr>
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<td>2+2+2=6</td>
<td>150</td>
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<tr>
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<td>Pedagogy Related (AR+MTTL+PD4)</td>
<td>4+3+2* =7+2*</td>
<td>175</td>
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<td>Tibetan Language &amp; Literature</td>
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<td>Total</td>
<td><strong>31+2</strong></td>
<td><em><strong>775</strong></em></td>
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* indicates credits of PD, that are evaluated in Grades.  
EM-Educational Management.  
EME-Educational Measurement & Evaluation.  
AR-Action Research.  
MTTL- Methodology of teaching Tibetan Language.  
PD-Personality Development.  
### Table No. 2 (c)

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<thead>
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<th>Course</th>
<th>Credits</th>
<th>Marks</th>
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<tbody>
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<td>Elective Sub.1 (P₁+P₂+P₃/Pract.)</td>
<td>2+2+2=6</td>
<td>150</td>
</tr>
<tr>
<td>Elective Sub.2 (P₁+P₂+P₃/Pract.)</td>
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<td>150</td>
</tr>
<tr>
<td>Elective Sub.3 (P₁+P₂+P₃/Pract.)</td>
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<td>150</td>
</tr>
<tr>
<td>Pedagogy Related (ET+TS₁+MT+Sim₁+ME₁)</td>
<td>4+3+4+3+1'=14+1'= 9+1'</td>
<td>350</td>
</tr>
<tr>
<td>Tibetan Language &amp; Literature</td>
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<td>50</td>
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<td>FBLPCSc. V</td>
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<td><strong>Total</strong></td>
<td><strong>35+1'</strong></td>
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<th>Marks</th>
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<td>Elective Sub.1 (P₁+P₂+P₃/Pract.)</td>
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<td>Elective Sub.2 (P₁+P₂+P₃/Pract.)</td>
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<tr>
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<td>Pedagogy Related (EE+TS₂+Sim₂+ME₂)</td>
<td>3+3+3+1'=9+1'</td>
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<td><strong>32+1'</strong></td>
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</table>

* indicates credits of Moral Ethics (ME), that are evaluated in Grades.

SE- Special Education.  
MT-Micro Teaching.  
EE-Environment Education.  
ME-Moral Ethics.  


### Table No. 2 (d)

<table>
<thead>
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<th>Course</th>
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<th>Marks</th>
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<tbody>
<tr>
<td>Innovative Teaching Module in Major Subject relevant to practice teaching context with reference to school level</td>
<td>2#</td>
<td>0</td>
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</tbody>
</table>
| Pedagogy Related  
  - Practice teaching  
  - 2 Criticism lesson,  
  - 2 Evaluation lesson  
  - Scout Guiding & community work  
  - Designing Educational Assessment tool  
  - AR Project based on classroom situation | 10+2+2+2+3+3= 22 | 550 |
| FBLPCSc. VII | 1 | 25 |
| **Total** | **23+2#** | **575** |

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Marks</th>
</tr>
</thead>
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<tr>
<td>Major Sub.part 1 (P₁+P₂+P₃/Pract.)</td>
<td>3+3+2=8</td>
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</tr>
<tr>
<td>Major Sub.part 2 (P₁+P₂+P₃/Pract.)</td>
<td>3+3+2=8</td>
<td>200</td>
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<tr>
<td>Pedagogy Related (SE+EVG+ME₃+ME₄)</td>
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<td>Tibetan Language &amp; Literature</td>
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<td><strong>Total</strong></td>
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<td><strong>Grand total</strong></td>
<td><strong>235+9'+2#</strong></td>
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* indicates credits of PD and ME that are evaluated in Grades.  
# indicates credits of Innovative Teaching Module based on Major Subject relevant to School Teaching.


9 credits are assigned to PD (Personality Development) and ME (Moral Ethics), and 2 Credits in 7th Semester are assigned to ‘Innovative Teaching Module based on Major Subject relevant to School Teaching’ (4 week duration programme) which is evaluated in grades, which reflect in the Marks-Statement (if these 11 credits are also converted into marks, then Total Max. Marks shall be 5950).
PROGRAMME DETAILS

A. For Innovative B.Sc. B. Ed. Programme

In the B.Sc.B.Ed. Programme the students will be required to choose from one of the following science stream. All other courses including compulsory Tibetan Language and Literature, General English, Pedagogy & related courses and Fundamental of Buddhist Logic, Psychology & Cognitive Science will be the same as prescribed.

| Science Stream 1: Physics, Chemistry, Mathematics / Statistics. |
| Science Stream 2: Botany, Zoology, Chemistry. |

Objective: To provide fundamentals of core subjects.

The course/paper layout for all the Eight Semesters is displayed in Table-4.

TABLE-4

SEMESTER-I

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of the subjects</th>
<th>Paper</th>
<th>Caption</th>
<th>Credits</th>
<th>Total Credits</th>
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<tr>
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<td></td>
<td>Philosophical Dimension &amp; Challenges of Education, Personality Development –I (Based on Grading)</td>
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<td>Physics</td>
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<td></td>
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<td>II</td>
<td>BPH 102: Mechanical Properties of matter</td>
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<td>Practical</td>
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<tr>
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<td>BOB 101: Cryptogams I</td>
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<td></td>
<td>II</td>
<td>BOB 102: Cryptogams II</td>
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## SEMESTER-III

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## SEMESTER-IV

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### Methodology of Teaching Tibetan Language

Personality Development-IV (Based on Grading)

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<td>II</td>
<td>BPH 402: Basic Electronics</td>
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<td>Chemistry</td>
<td>I</td>
<td>BCH 401: Inorganic Chemistry-II</td>
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<td>II</td>
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<td>ZOB 402: Genetics</td>
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### SEMESTER-V

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Total Credits: 15
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<td>Environmental Education, Teaching Subject (2&lt;sup&gt;nd&lt;/sup&gt;) (any one from the following groups-PCM/BZC) or subject opted for humanities / social science, Simulation (2&lt;sup&gt;nd&lt;/sup&gt;), 5 Lessons based on Teaching Subject 2&lt;sup&gt;nd&lt;/sup&gt;, Moral Ethics –II (Based on Grading)</td>
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<td>• 2 Evaluation Lessons (Final)</td>
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<td>• Scout Guiding and Community Work</td>
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<td>• Designing Educational Assessment Tool</td>
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Page 21 of 372
B. For Innovative B.A. B.Ed. Programme

The Student opting for B.A.B.Ed. shall be required to choose any three subjects from the list given below in addition to the Compulsory Subjects- Pedagogy related courses, Tibetan language and literature, General English and Fundamental of Buddhist Logic, Psychology & Cognitive Science

List of Subjects prescribed

| History, Economics, Geography, English, Hindi, Psychology, Sociology, Philosophy, Tibetan History, Political Science. |

Objective:

To provide fundamentals of core subjects with appropriate Pedagogy orientation.

The course/paper layout for all the Eight Semesters is displayed in Table-5.

**TABLE-5**

**SEMESTER I**

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| 3 | Pedagogy related | • Educational Management  
• Educational Measurement & Evaluation  
Personality Development-III (Based on Grading) | 3 | 4 | 8 |
| 4 | History | I | History of Medieval India (Part I) | 2 | 6 |
|    |    | II | History of Medieval India (Part II) | 2 | 6 |
|    |    | III | Project / Assignment | 2 | 6 |
| 5 | Economics | I | Money and Banking | 2 | 6 |
|    |    | II | Public Economics-I | 2 | 6 |
|    |    | III | Project/Assignment | 2 | 6 |
| 6 | Geography | I | Regional Study of Selected Developed and Developing Countries: U.S.A. and China | 2 | 6 |
|    |    | II | Practical: Map Projection and Weather Map | 2 | 6 |
|    |    | III | Project / Assignment | 2 | 6 |
| 7 | English | I | Poetry (Renaissance, Romantic)  
Drama, Figures of Speech, Critical Appreciation of poetry (Unseen) | 2 | 6 |
|    |    | II | Language Skills (Internal Assessment) | 2 | 6 |
|    |    | III | Project / Assignment | 2 | 6 |
| 8 | Hindi | I | आधुनिककाव्य-१ (निबन्धवृंदंसंम्भरण) | 2 | 6 |
|    |    | II | हिन्दीनाटक | 2 | 6 |
|    |    | III | परियोजना/दत्तकायय/शैहिककायय-कलाप | 2 | 6 |
| 9 | Psychology | I | Experimental Methods and Elementary Statistics | 2 | 6 |
|    |    | II | Laboratory Work (Practicals) | 2 | 6 |
|    |    | III | Project / Assignment | 2 | 6 |
| 10 | Sociology | I | Social Movement; Concept and theories | 2 | 6 |
|    |    | II | Dynamics of Indian Societies | 2 | 6 |
|    |    | III | Project / Assignment | 2 | 6 |
| 11 | Philosophy | I | Ethics | 2 | 6 |
|    |    | II | Logic | 2 | 6 |
|    |    | III | Project / Assignment | 2 | 6 |
| 12 | Tibetan History | I | (Revival of Buddhism in 11th Century) | 2 | 6 |
|    |    | II | (History of Medieval Tibet (Part I) | 2 | 6 |
|    |    | III | Project / Assignment | 2 | 6 |
| 13 | Political Science | I | Understanding Political Theory | 2 | 6 |
|    |    | II | Introduction to Comparative Government and Politics | 2 | 6 |
|    |    | III | Project / Assignment | 2 | 6 |
| 14 | FBLPCSc. | Fundamentals of Buddhist Logic, Psychology & Cognitive Science- III | 1 | 1 |
# SEMESTER IV

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| 3      | Pedagogy related | • Action Research  
• Methodology of Teaching Tibetan Language  
Personality Development-IV (Based on Grading) | 4  
3  
2 | 9 |
<p>| 4      | History | I History of Modern World (Part I) | 2 | 6 |
|        |        | II History of Modern World (Part II) | 2 | 6 |
|        |        | III Project / Assignment | 2 | 2 |
| 5      | Economics | I Market Analysis | 2 | 2 |
|        |        | II Public Economics-II | 2 | 6 |
|        |        | III Project/Assignment | 2 | 2 |
| 6      | Geography | I Economic Geography | 2 | 6 |
|        |        | II Practical: Surveying | 2 | 2 |
|        |        | III Project / Assignment | 2 | 2 |
| 7      | English | I Poetry (Victorian, Modern) Drama, Prosody, Critical Appreciation of poetry (Unseen) | 2 | 6 |
|        |        | II Language Skills (Integrated) (Internal Assessment) | 2 | 2 |
|        |        | III Project / Assignment | 2 | 2 |
| 8      | Hindi | I हिन्दीउपन्यास और हिन्दीउपन्यासपर बौद्ध भाव | 2 | 6 |
|        |        | II हिन्दीआलोचना और आलोचक | 2 | 2 |
|        |        | III परियोजना/दस्तकार्य/शैक्षिककार्य-कलाप | 2 | 2 |
| 9      | Psychology | I Abnormal Psychology | 2 | 2 |
|        |        | II Laboratory Work (Practicals) | 2 | 6 |
|        |        | III Project / Assignment | 2 | 2 |
| 10     | Sociology | I Major social movements in India | 2 | 2 |
|        |        | II Constitutional safeguards and national issues | 2 | 6 |
|        |        | III Project / Assignment | 2 | 2 |
| 11     | Philosophy | I Philosophy of Religion | 2 | 2 |
|        |        | II Asian Philosophy &amp; Religion | 2 | 6 |
|        |        | III Project / Assignment | 2 | 2 |
| 12     | Tibetan History | I History of Medieval Tibet (Part II) | 2 | 2 |
|        |        | II History of Modern Tibet (Part I) | 2 | 6 |
|        |        | III Project / Assignment | 2 | 2 |
| 13     | Political Science | I Theories of International Relations | 2 | 2 |
|        |        | II Indian Political Thought-I | 2 | 6 |
|        |        | III Project / Assignment | 2 | 2 |
| 14     | FBLPCSc. | Fundamentals of Buddhist Logic, Psychology &amp; Cognitive Science- IV | 1 | 1 |</p>
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| 2     | Pedagogy related | • Educational Technology  
• Teaching Subject (1st) Teaching Subject 1st (any one from the following groups-PCM/BZC) or subject opted for humanities / social science  
• Microteaching: 8 skills in 15 days of 30 hours duration  
• Simulation (1st), 5 Lessons based on Teaching Subject 1st  
Moral Ethics I (Based on Grading) | 4 | 15 |
<p>| 3     | History | I History of Modern India (Part-I) | 2 | 6 |
|       |       | II History of Modern India (Part-II) | 2 | 6 |
|       |       | III Project / Assignment | 2 | 2 |
| 4     | Economics | I Factor Pricing and Welfare Economics | 2 | 6 |
|       |       | II Elementary Statistics | 2 | |
|       |       | III Project/Assignment | 2 | |
| 5     | Geography | I Geography of India | 2 | |
|       |       | II Practical: Representation of Geographical Data | 2 | 6 |
|       |       | III Project / Assignment | 2 | 2 |
| 6     | English | I Prose-I: Short Stories, Essays and Sketches, Novel and Critical Analysis of a prose passage (unseen) | 2 | |
|       |       | II Linguistics-I: Phonetics, Concepts of Modern Grammar and English Language Education | 2 | 6 |
|       |       | III Project / Assignment | 2 | |
| 7     | Hindi | I गद्यकीलयुक्तिविधायांवहिन्दीसाहित्यकालित्हास | 2 | |
|       |       | II प्रयोजन-मूलकहिन्दीऔरहिन्दीसाहित्यकालित्हास | 2 | |
|       |       | III परियोजना/दस्तकार्य/शैक्षिककार्य-कलाप | 2 | |
| 8     | Psychology | I Clinical Psychology | 2 | 6 |
|       |       | II Laboratory Work (Practicals) | 2 | |
|       |       | III Project / Assignment | 2 | |</p>
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• Teaching Subject (2nd) (any one from the following groups-PCM/BZC) or subject opted for humanities / social science  
• Simulation (2nd), 5 Lessons based on Teaching Subject 2nd  
Moral Ethics –II (Based on Grading) | 3      | 10            |
<p>| 3     | History              | I     | History of England, 1485, 1919 (Part-I) | 2       | 6             |
|       |                      | II    | History of England, 1485, 1919 (Part-II) | 2       | 6             |
|       |                      | III   | Project / Assignment              | 2       | 2             |
| 4     | Economics            | I     | International Economics           | 2       | 6             |
|       |                      | II    | Population Studies                | 2       | 6             |
|       |                      | III   | Project/Assignment               | 2       | 2             |
| 5     | Geography            | I     | Geomorphology                     | 2       | 6             |
|       |                      | II    | Practical: Geological Map and Map Projection | 2       | 6             |
|       |                      | III   | Project / Assignment              | 2       | 2             |</p>
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| 1     | Pedagogy related     |       | • Practice Teaching (School Attachment Program)  
• 2 Criticism Lessons (Process Related)  
• 2 Evaluation Lessons (Final) | 10  
2  
2 | 22 |

**SEMESTER VII**
- Scout Guiding and Community Work
- Designing Educational Assessment Tool
- Action Research Project Based on Classroom Situation

| 2 | History | I | Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading) | 2 |
| 3 | Economics | I | Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading) | 2 |
| 4 | Geography | I | Innovative Teaching Module Based on Major Subject Relevant to the School Teaching (Based on Grading) | 2 |
| 5 | English | I | Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading) | 2 |
| 6 | Hindi | I | Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading) | 2 |
| 7 | Psychology | I | Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading) | 2 |
| 8 | Sociology | I | Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading) | 2 |
| 9 | Tibetan History | I | Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading) | 2 |
| 10 | Political Science | I | Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading) | 2 |
| 11 | FBLPCSc. | | Fundamentals of Buddhist Logic, Psychology & Cognitive Science- VII | 1 |

**SEMESTER VIII**

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SPECIAL FEATURES OF INNOVATIVE 4 YEAR B.Sc. B.Ed./B.A B.Ed.
INTEGRATED PROGRAMME

➢ The programme is innovative in character as it attempts to prepare teachers with strong foundation in both content and pedagogy right from the beginning of the semester. Its focus is on professional development with basic grounding in moral ethics and human values.

➢ Pedagogy related courses will be the same in both B.Sc B.Ed. and B.A. B.Ed. Programmes.

➢ A General English course of 4 credits will be compulsory for both B.Sc. B.Ed. and B.A. B.Ed. candidates. The same will be as prescribed and shall be placed in the first four semester.

➢ A course in Tibetan Language and Literature of 26 credits will be compulsory for both B.Sc. B.Ed. and B.A. B.Ed. and the same will be conducted in each semester commencing from the first semester to the eighth semester, except the seventh semester.

➢ A course in Fundamentals of Buddhist Logic, Psychology & Cognitive Science of 8 credits is compulsory for both B.Sc.B.Ed. and B.A.B.Ed. and same has to be transacted in each semester.

➢ A Computer course of 2 credits for both B.Sc.B.Ed. and B.A.B.Ed. will be compulsory. The same will be prescribed and its placement will be decided by the Head/ Director of the Institute.

➢ A compulsory course in Moral Ethics and Personality Development will form part of Pedagogy related courses and its placement for both B.Sc.B.Ed. / B.A.B.Ed. programme will be in the manner as indicated in the integrated programme curriculum. The assessment of these courses will be in the form of Grades which will be reflected in their Degrees / Mark-sheets.

➢ The Pedagogy related courses in fifth and sixth semester pertaining to various teaching subjects (subject 1 and subject 2) will be transacted in terms of content analysis of the school level subject concerned, formulation of behavioral objectives, subject specific Pedagogy, use of ICT and instructional technology formats and evaluation procedures. The specific instructional plan will be developed by the teacher educator transacting the course in consultation with subject experts drawn from the secondary schools / members of the Institute of the concerned subject. While doing so adequate care will be taken to emphasise experiential learning through assignments / projects / field work / practicum.

➢ A compulsory school attachment programme will have to be undertaken as specified in the Pedagogy related course. Prior to school attachment, the candidates will be given intensive skill based training through Micro teaching and simulated sessions arranged in the Institute during fifth and sixth semesters. The details of such programmes shall include the specific core teaching skills, their formats, practice, evaluation and feedback. These core teaching skills will comprise skill in Narration, Questioning,
Probing, Set induction, Closure, use of teaching aids/technology, Reinforcement and formulation of Instructional objectives in behavioural terms.

➢ The project work/ practicum/ assignment/ other activities as prescribed for B.Sc. B.Ed. and B.A. B.Ed. Integrated programme shall be assessed on a Continuous and Comprehensive Pattern of Evaluation.

➢ B.Sc. B.Ed. / B.A. B.Ed. Integrated programme is basically need based and admissions / intake to the courses will be restricted to the requirement of teachers in schools from time-to-time. These schools are by and large spread over the country and are catering to the needs of Tibetan children. To begin with, the intake will be kept at maximum 25 students per programme in an academic session.

➢ SPECIAL NOTE: -

Any change in a course or placement of a course needs to proceed through proper channel via formal initiation by the Head/ Director of the Institute in consultation with Board of Studies, CUTS. The Head/ Director of the Institute will subsequently formalize the same by reporting it to the Vice-Chancellor or (and) the Board of Studies which ever will be expedient.
Syllabus for B.Sc. B.Ed. and B.A. B.Ed.

(Common / Compulsory Subjects)
TIBETAN LANGUAGE AND LITERATURE
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<td>ངོགས་བཅད་སེབ་སོར། རོམ་པ་པོ། དཔལ་དོན་གྲུབ་རྒྱལ།</td>
</tr>
</tbody>
</table>

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SEMESTER-IV

སོབ་ཚན། སྒྲུལ་འབུ་སྒྲོན་པོ་
དཔེ་དེབ། སྒྲུལ་འབུ་སྒྲོན་པོའི་མཁན་པོ་སྐྱེ་ལྗོང་།

SEMESTER-V

སོབ་ཚན། སྒྲོལ་བྱུང་
དཔེ་དེབ། སྒྲོལ་བྱུང་ལས་ཁུངས།
སོབ་ཚན། ་ཨུག་ཚོགས་དཔེ་དེབ། རོམ་སྒྲིག

SEMESTER-VI

སོབ་ཚན། ་ཁུང་ལོངས་སོབ་གྲྭས་རོམ་སྒྲིག་བས། མ་སྐྱེན་རིམ་པོ་

དཔེ་དེབ། ་སྲོད་པ་ནོར་བུའི་སྒྲ་དབངས། རོམ་པ་པོ།

སོབ་ཚན། ་ལེགས་བཤད། དཔེ་དེབ།

དཔེ་དེབ། ་མཁས་བླུན་བརྟག་པའི་རབ་བེད་གཉིས། ས་ས་ལེགས་བཤད།

SEMESTER-VI

སོབ་ཚན། ་བོད་རང་སོང་ལོངས་སོབ་གྲྭས་རོམ་སྒྲིག་བས། མ་སྐྱེན་རིམ་པོ་

དཔེ་དེབ། ་ཚངས་སྲས་བཞད་པའི་སྒྲ་དབངས། རོམ་པ་པོ།

སོབ་ཚན། ་སྲོད་པ་ནོར་བུའི་སྒྲ་དབངས། རོམ་པ་པོ།

SEMESTER-VI

སོབ་ཚན། ་སྨིན་རིག་པཉེ་བཟང་དཔལ་ལྡན། རོམ་པ་པོ།

སོབ་ཚན། ་མཁས་བླུན་བརྟག་པའི་རབ་བེད་གཉིས། ས་ས་ལེགས་བཤད།

SEMESTER-VI

སོབ་ཚན། ་འི་ཤེས་བསྟན་བཟང་དཔལ་ལྡན། རོམ་པ་པོ།

སོབ་ཚན། ་བོད་རང་སོང་ལོངས་སོབ་གྲྭས་རོམ་སྒྲིག་བས། མ་སྐྱེན་རིམ་པོ་

དཔེ་དེབ། ་ཚངས་སྲས་བཞད་པའི་སྒྲ་དབངས། རོམ་པ་པོ།

སོབ་ཚན། ་སྲོད་པ་ནོར་བུའི་སྒྲ་དབངས། རོམ་པ་པོ།

SEMESTER-VI

སོབ་ཚན། ་སྲོད་པ་ནོར་བུའི་སྒྲ་དབངས། རོམ་པ་པོ།

དཔེ་དེབ། ་ཁུང་ལོངས་སོབ་གྲྭས་རོམ་སྒྲིག་བས། མ་སྐྱེན་རིམ་པོ་

SEMESTER-VI

སོབ་ཚན། ་ལེགས་བཤད། དཔེ་དེབ།

དཔེ་དེབ། ་མཁས་བླུན་བརྟག་པའི་རབ་བེད་གཉིས། ས་ས་ལེགས་བཤད།

SEMESTER-VI

སོབ་ཚན། ་བོད་རང་སོང་ལོངས་སོབ་གྲྭས་རོམ་སྒྲིག་བས། མ་སྐྱེན་རིམ་པོ་

དཔེ་དེབ། ་ཚངས་སྲས་བཞད་པའི་སྒྲ་དབངས། རོམ་པ་པོ།

SEMESTER-VI

སོབ་ཚན། ་སྲོད་པ་ནོར་བུའི་སྒྲ་དབངས། རོམ་པ་པོ།

SEMESTER-VI

སོབ་ཚན། ་རྒྱུགས་དུས་དྲུག་པ།

Credits: 4
SEMESTER-VII

སྟོང་དབུན་དབུན་ལས་གུང་ནས ཥྟེབས་པ།

School Attached Program

SEMESTER-VIII

སྟོང་ནས་དཔོན་ལས་

Credits: 4

སྟོང་དབུན

སྟོང་དབུན་ལས་གུང་ནས ཥྟེབས་པ། (ངས་རྣམ་ཐོན་)

དཔེ་དེབ། མོ་སྦྱོར་དོན་ལྡན་

སོབ་ཚན།

སྟོང་དབུན་ལས་གུང་ནས ཥྟེབས་པ།

དཔེ་དེབ། མོ་སྦྱོར་དོན་ལྡན་

སོབ་ཚན།

སྟོང་དབུན་ལས་གུང་ནས ཥྟེབས་པ།

དཔེ་དེབ། མོ་སྦྱོར་དོན་ལྡན་

སོབ་ཚན།

སྟོང་དབུན་ལས་གུང་ནས ཥྟེབས་པ།

དཔེ་དེབ། མོ་སྦྱོར་དོན་ལྡན་

སོབ་ཚན།
GENERAL ENGLISH
SEMESTER – I

General English-I

Credit: 1

Objectives
The student teacher will be able to:
1. Comprehend the given passage.
2. Compose paragraph, write job application and CV on their own.
3. Use the verbs and prepositions.

Content

Unit I: Reading
Comprehension Test Level 1

Unit II: Writing
Paragraph writing Or Writing CVs and Job Application

Unit III: Grammar
Verb, Preposition, Sentence, Voice

Unit IV: Literature
• R.K.Narayan, ‘Out of Business’
• Ruskin Bond, ‘The Thief’s Story’
• S.Radhakrishnan, ‘Intuition and Genius’
• Rabindranath Tagore, ‘Gitanjali:18’

Reading

SEMESTER - II

General English-II Credit: 1

Objectives

The student teacher will be able to:
1. Comprehend the given passage.
2. Compose formal and informal letters etc.
3. Transform the sentences, edit sentence and change the narration of the sentence.

Content

Unit I: Reading
Comprehension Test Level 2

Unit II: Writing
Writing Formal & Informal Letters, Paragraph writing, CV writing and Job Application

Unit III: Grammar
Direct – Indirect, Transformation, Editing, Vocabulary building

Unit IV: Literature
- O. Henry, ‘The Last Leaf’
- William Somerset Maugham, ‘The Man with the Scar’
- Rabindra Nath Tagore, ‘The Artist’ or ‘Ram Mohan Roy’
- Nissim Ezekiel, ‘In the Country Cottage’
- Purushottam Lal, ‘Life’

Reading

SEMESTER - III

General English-III

Credit: 1

Objectives
The student teacher will be able to:
1. Comprehend the passages.
2. Compose report, essays and other guided compositions.
3. Re-arrange words to form correct sentence, change the degrees of adjective and adverbs and use verbs according to the subject.

Content

Unit I: Reading
Comprehension Test Level 3

Unit II: Writing
Guided composition writing, Report writing and writing of essays

Unit III: Grammar
Vocabulary building, Errors and omissions, reordering sentences, degrees, subject-verb agreement

Unit IV: Literature
- M.K. Gandhi, ‘My Experiments with Truth’

Readings
SEMESTER-IV

General English-IV                               Credit: 1

Objectives
The student teacher will be able to: –
1. Comprehend the given excerpt.
2. Compose in artistic and scientific manner.
3. Use the determiners, articles and connectors in given situation.

Content

Unit I: Reading

Comprehension Test Level 4

Unit II: Writing

Structure of a report, art of scientific and literary writing

Unit III: Grammar

Determiners, Articles, Connectors, Idioms and Figures of Speech, Dialogue Completion

Unit IV: Literature

To be prescribed

Readings

Fundamentals of Buddhist Logic, Psychology and Cognitive Science

(Instruction will be arranged in each semester by providing three periods per week in a semester)
Fundamentals of Buddhist Logic, Psychology & Cognitive Science

Course Objectives: After completion of eight units this course, the student will be able to:

1. details many types of the brain related sensory origins from neurology to five sensory origins and, can expand system of the modern psychology.

2. reduce the self-centered attitude, aversion, greed, discrimination, jealousy, competition etc. in our mind.

3. learn the fifty types of mind and mental factors, contradictory among the mental factors, identify the power of particular mind and how-to dissolute others.

4. increase altruism, loving-compassion, awareness, wisdom and etc. in human mind.

5. to identify new educational structures in combination of modern science and psychology for promoting happiness in human society.

6. to develop potential for application of reasoning methods/formulation in the subject in the context of empirical situations and fields of knowledge.
FIRST SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science - I
Credit: 1

Course Content:

Unit 1- Introduction to preliminary part of Collected Topics in pramana

Bse bsdus grwa (Collected Topics in Logic/Pramana) by Ngawang Tashi
Page No. (1-26)

- bsdus grwa: origin, meaning and classifications
- Introduction to logical arguments and conclusions (Introduction to debate)
- Mode of debating Mutually exclusive or Mutually inclusive arguments
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso
  Page (36-60)
  - Part of Plant and Classification.
  - Common characteristics of Plants and Animals.
  - Animal and Plants
  - Clarifications of terms and concepts

- Dam bca’ (thesis) - Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, Dam bca debating, Assignment

References:

1. Yongzin bsdus grwa. By Phurchok Jampa Gyaltsa
2. Ra bsdus grwa. By Sonam Wangyal
3. Bsdus grwa’ snon ’gro’ sbyor wa lo gsl ’jug ngogs. By Lobsang Kunchok
4. Teacher’s Textbook for teaching science by Method of Reasoning/Logics. By Lobsang Gyatso
SECOND SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science -II
Credit: 1

Unit 2- White and Red color [Khadog dkr dm] Bse bsdus grwa Page No. (27-53)

- Presentation of one’s own position (thesis)
- Refutation of other’s position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (61-76)
  - Living beings
  - Aquatic animals
  - Terrestrial animals and Aquatic animals
  - Living beings and Plants
  - Clarifications of terms and concepts

- Dam bca’ Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, Dam bca debating, Assignment

References:
1. Pramāṇavārttika. By Acharya Dharamakriti
2. Ra bsdus grwa. By Serkhang damchoe Namgyal
3. Teacher’s Textbook for teaching science by Method of Reasoning/Logics. By Lobsang Gyatso
4. Opening the Methods of Reasoning. By Geshe Yeshi Wangchuk
THIRD SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science- III
Credit: 1

Unit 3- Realization of Existence or Nonexistence, pramana and Opposite from being or Opposite of not being something [yod rtogs me rtogs and yin log min log] 
Bse bsdus grwa   Page No (53-79)

- Presentation of one’s own position (thesis)
- Refutation of other’s position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso
Page (77-86)
  - Things around us
  - Things and solid
  - Solid and Gases
  - Clarifications of terms and concepts

- Dam bca’ Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, Dam bca debating, Assignment

References:
1. Pramāṇavārttika. By Acharya Dharamakriti
2. Abhidharmakosa. By Acharya Vasubandhu
3. Riglam 'phrul lde. By Yongzin Phurchok Lobsang Tsultrim
Unit 4- Identifying isolates and Sameness or Difference [ldog p ngo ‘zin dang gcig tha dad]

- Presentation of one’s own position (thesis)
- Refutation of other’s position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso
  - Soil and benefits of it
  - Soil and Fertility
  - Clarifications of terms and concepts

- Dam bca’ Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, Dam bca debating, Assignment

References:
1. Abhidharmakosa. By Acharya Vasubandhu
2. Pramāṇavārttika. By Acharya Dharamakriti
3. Tsama Rigp’ sphyi lon. By Lobsang Choedak
FIFTH SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science - V
Credit: 1

Unit 5- Theory of short presentation of Cause and Effect \( \text{rgyu} \ '\text{brs cung b'i rnam bzhag} \) \( \text{Bse bsdus grwa} \) Page No. (105-131)

- Presentation of one’s own position (thesis)
- Refutation of other’s position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (93-104)
  - Water
  - Pure Water and Water
  - Water and Drinking Water
  - Clarifications of terms and concepts

- Dam bca’ Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, Dam bca debating, Assignment

References:
1. \( \text{Pramāṇavārttika} \). By Acharya Dharamakriti
2. \( \text{Tsam'bsdus tshen} \). By Tsengang Dorjee Wangchuk
3. Compilation of \( \text{bsdus grwa} \). By Chari Kalsang Thegme
SIXTH SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science - VI
Credit: 1

Unit 6- Theory of Perceiver and Object [yul dang yul can gyi rnam bzhag]

- Presentation of one’s own position (thesis)
- Refutation of other’s position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (105-110)
  - Sound
  - Sound and human hearing sound
  - Sound and solid things
  - Clarifications of terms and concepts

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, Dam bca debating, Assignment

References:
1. Bsdus grwa’ rnam bshag rigs lam mig ‘byed. By Rabjamapa Lobsang Sonam
2. Bsdus grwa’ rig lam gnd kun gsl b’i melong. Khenzur Kunchok Tsering
SEVENTH SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science – VII
Credit: 1

Unit 7- General and Specific [sphyi dang bye brg])  Bse bsdus grwa  Page No. (157-183)

- Presentation of one’s own position (thesis)
- Refutation of other’s position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (111-118)
  - Wind
  - Wind and cold
  - Clarifications of terms and concepts

- Dam bca’ Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, Dam bca debating, Assignment

References:
1. Pramāṇavārttika. By Acharya Dharamakriti
2. Thun mong bsdus p’ bsdoms tsi g blosal dg’skyid. By Jamyang Shantipa Lodo Gyaltsen
3. ‘grelwa lung rigs smr wa’ rgyn. By Khenchen Lobsang Zodpa
Unit 8- Theory of Definition and Definiendum  Bse bsdus grwa  Page No. (183-209)

- Presentation of one’s own position (thesis)
- Refutation of other’s position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (119-168)
  - Energy and Work
  - Energy and Contact force
  - Clarifications of terms and concepts
  - Light and shadow
  - Solar System
  - Living things
  - Clarifications of terms and concepts

- Dam bca’ Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, Dam bca debating, Assignment

References:
1. Pramāṇavārttika (3rd chapter). By Acharya Dharamakriti
2. Tsam rig p’i shib ‘jug. By Ngawan Tenzin and Tenpa Tsering
PEDAGOGY
P101: Philosophical Dimensions and Challenges of Indian Education  

Credits: 4

Objectives

The student teacher will be able to:

1. Understand the development of Indian Education in different periods of time.
2. Appreciate the problems of Indian education.
3. Spell out the importance and role of education in the progress of Indian society.
4. Give meaning to the divergent philosophies behind education.

Contents

Unit-I: Concept of Education

(a) Education: Meaning, Nature and Scope of Education.
(b) Functions of Education in the context of Individual, Social and National level.
(c) Agencies of Education: school, community and family.
(d) Four Pillars of learning in the 21st century context.

Unit-II: Philosophical Dimensions of Education

(a) Philosophy and Education: Significance of studying philosophy in understanding educational practices and problems. Relationship between philosophy and education.
(b) Major Philosophical thoughts: Idealism, Naturalism and Pragmatism with their educational implications.
(c) Educational thinkers and their contribution in developing principles of education- Mahatma Gandhi, Tagore, Aurobindo, Vivekanand, J. Krishnamurti and Dalai Lama.

Unit-III: Development of Indian Education System

(a) Vedic system of Education, Buddhist and Medieval system of education.
(b) Major committees and commissions in Pre-Independence period- Wood’s Dispatch, Hunter commission and Sadler commission.
(d) Constitutional commitments for education: Fundamental rights & duties.
Unit-IV: Current Problems in Indian Education

(a) Elementary Education and its major problems: Universalization of Elementary Education, Wastage and Stagnation.

(b) Secondary Education and its major problems: Vocationalization, examination reform and its universalization.

(c) Higher Education and its major problems: Privatization and Autonomy.

(d) Problems of Teacher Education,

(e) Role and Functions of NCTE, NCERT, NIOS, UGC and IGNOU.

Assignment

The pupil-teacher is expected to conduct a study on school- community relationship and submit a report.

Transactional Strategies

Transaction of the course content will be through lectures, discussions, multimedia presentations and interactive sessions.

Evaluation

The course content will be of four (4) credits which are equivalent to 100 marks. Out of this 70% marks will be for summative evaluation (final exam) and 30% marks will be for evaluation which shall be done on the basis of sessional work.

Readings

➢ National Curriculum Framework (2005), New Delhi: NCERT.
➢ National Curriculum Framework for Teacher Education (2009), New Delhi: NCTE.
PERSONALITY DEVELOPMENT-I

- Human Being: Qualities of a good human being. Development of personality as a good human being and attributes of competencies, commitment and confidence as the indicators of good human being.
- Empathetic behavior.
P202: Psychological Dimensions of Education  

Objectives

The student teacher will be able to:-

(a) Understand the meaning and scope of Educational Psychology.
(b) Acquire knowledge and understanding of various stages of human development.
(c) Develop understanding of the process of learning in the context of various theories of learning and motivation.
(d) Understand the concepts of personality, intelligence and creativity.

Contents

Unit I: Educational Psychology and Development of Learner

(a) Educational Psychology: Meaning, nature, methods, scope and importance of Educational Psychology for teachers.
(b) Concept and principles of growth and development, stages of human development.

Unit II: Learning and Motivation

(a) Concept and nature of learning, factors influencing teaching-learning process. Memory and Retention.
(b) Theories of learning: Trial and error, classical conditioning, operant conditioning, theory of insight, constructivism and social learning.
(c) Motivation: Nature, types, some selected content and process theories with special referenced to Abraham Maslow, Alderfer, McClelland and Skinner’s reinforcement theory, techniques of enhancing learner’s motivation.

Unit III: Personality, Intelligence and Creativity

(a) Personality: Meaning, Nature, Trait, Type and Psychodynamic theories; Methods of assessing Personality.
(b) Intelligence: Nature and Theories, Types of Intelligence-IQ, EQ and SQ; Measurement of Intelligence.
(c) Creativity: Meaning, nature and development of creativity among school children.

Unit IV: Psychology of Adjustment

(a) Behaviouristic and Psychoanalytic models.
(b) Characteristics of a well-adjusted person.
(c) Stress in the context of Education: Types of stress; Stress management techniques, Role of teachers.
Practical Work
Each student will be required to administer at least five psychological tests: Intelligence (verbal and non-verbal), creativity, personality, memory and aptitude.

Assignment
Conduct a case study on any child who has problems either in learning or in his/her adjustment to the environment.

Transactional Strategies
Transaction of the course will be through lectures, discussion, multimedia presentations and interactive sessions.

Evaluation
The course content will be of four (4) credits which are equivalent to 100 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be credited on the basis of evaluation in respect of sessional work.

Readings
➢ Baumgardner, & Crothers (2014). Positive Psychology (1e), Pearson Education India.
➢ Burke, L. E. (2012). Child Development (9e), PHI.


PERSONALITY DEVELOPMENT-II

Credit: 1

- How to become a good human being? Human Values, Values as indicated in ancient scriptures.
- Effective Communication
SEMESTER – III

P301: Educational Management

Credits: 3

Objectives

The student-teachers will be able to:-

1. Appreciate the Principles, Meaning, Scope, Importance and advantages of School Management.
2. Get acquainted with the concepts of School discipline, School administration, Management, Supervision and Human Relations.
3. Acquire the needed competencies to achieve excellence in managing a school/classroom.

Contents

Unit I: Concept of School Management

(a) Meaning and Scope of School Management.
(b) Nature and Importance of Management processes.
(c) Fundamental Principles of School Management in the present context.

Unit II: Maintaining a Secondary School for attaining excellence

(a) Planning and Executing: Year-plan of the School activities, Work load, School timings, time-table.
(b) Controlling and Monitoring Duties and Functions of Head master, Supervisor, teacher and non-teaching staff. Forming committees, Co-ordination committee; governing body of the School and its role and functions. Supervision and Inspection-Meaning, type, purpose and procedure.
(c) Financing: Sources of grants, budgeting and auditing procedure, Income generation- Endowment funds, reserve funds and development funds.

Unit III: Management

(a) Concept and Importance of Classroom Management.
(b) Difference between School and Classroom Management, School management and School Organization, School Management and School administration.
(c) Managing and Leading: Concepts, differences between managing and leading processes. Leadership styles in respect of school management, Situational Leadership.
(d) School discipline: Concept and its development.
(e) Human Relations in a school set up.
Unit IV: Achieving Excellence

(a) Criteria of grading a School.
(b) Total Quality Management (TQM): Concept, objectives and importance.
(c) SWOT Analysis: Concept and its Educational Implications.
(d) Resource development- Human, Material and Finance.

Assignment
Locating Strength and Weaknesses of any Educational Institution.

Transactional Strategies
The course content will be transacted through lectures, discussions, tutorials and report preparations.

Evaluation
The course content will be of 3 credits which are equivalent to 75 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be awarded on the basis of sessional work.

Readings

➢ Mukhopadhyay, M. Management of Change in Education, In search of India Model, Jalandhar: NUEPA.


**P302: Educational Measurement and Evaluation**

**Credits:** 4

**Objectives**

The student teacher will be able to:-

1. Grasp the basic concepts in measurement and evaluation.
2. Develop skills and competencies for the use of basic techniques in the field of measurement and evaluation.
3. Acquire skills about test designing.
4. Understand the use of relevant statistical measures and their applications.

**Contents**

**Unit I: Concept and Techniques of Evaluation**

(a) Educational Measurement, Assessment and Evaluation: Concept, Purpose, Tools and Techniques of evaluation: Levels of measurement-nominal, ordinal, interval and ratio. Taxonomy of educational objectives and its relevance for measurement and evaluation.

(b) New concepts of Evaluation – Formative, Summative and Continuous-and-Comprehensive-Evaluation (CCE).

(c) Norm Referenced and Criterion Referenced Testing (NRT and CRT).

**Unit II: Designing of tests for evaluation of learning outcomes**

(a) Principles of test construction and standardization.

(b) Characteristics of a good test- reliability, validity, objectivity and practicability.

**Unit III: Instructional Objectives and their use in test construction**

(a) Instructional Objectives and objective based evaluation.

(b) Classification of test items-essay type and objective type test items and their construction procedures.

**Unit IV: Educational Statistics**

(a) Concept of statistics, Graphical representation of data.

(b) Measures of Central Tendency- Mean, Median and Mode.
(c) Measures of Variability- Quartile deviation, Average Deviation and Standard Deviation.

(d) Percentiles and Percentile Rank.

(e) Coefficient of correlation- Rank difference and Product moment.

(f) Normal distribution of scores: Properties of normal distribution curve and their implications for measurement and interpretation of scores.

(g) Concept of scaling- Z scaling and T scaling.

Assignment
Preparation and administration of an achievement test.

Transactional Strategies
The course content will be implemented mainly through lectures integrated with Information & Communication Technology (ICT). In addition to this, discussion, brainstorming and quiz sessions will be used as the transactional strategies particularly for units- I, II and III.

Evaluation
The course content will be of 4 credits which are equivalent to 100 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be credited on the basis of evaluation of sessional work.

Readings


PERSONALITY DEVELOPMENT-III

Credit: 1

- Education for affective development.
- Emotional Maturity.
P401: Action Research  

Credits: 4

Objectives
The student teachers will be able to:

1. Acquire knowledge about concept of research and application of different types of research.

2. Acquaint themselves with various aspects of action research and its implications for effective educational management.

Contents

Unit I: Concept of Research
(a) Meaning and types of Research - Basic, Applied and Action.
(b) Action Research - Meaning, Concept, Need, Importance and Application.

Unit II: Action Research
(a) Steps in Action Research.
(b) Preparation of Action Research Projects on problems based on real classroom situations.

Unit III: Developing Action Research Designs
(a) The concept of research design in action research.
(b) Components of an action research design.
(c) Strategies for implementation of action research design in schools.

Unit IV: Evaluation of Action Research Projects
(a) Approach & devices to be used.
(b) Feedback.
(c) Improvement of school situations - assessing the effectiveness of the impact of action research project.

Assignment
Study on any one environmental problem. The report on the study must include efforts of the pupil teacher in developing awareness among people about that environmental problem(s).
Transactional Strategies

The course will be transacted through lecture-cum-demonstration sessions with major segment of the course devoted to formulation, implementation and evaluation of action research interventions relevant for a secondary school. The course transaction will also include group-discussions, brainstorming and interactive sessions.

Evaluation

The course content will be of four (4) credits which are equivalent to 100 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be credited on the basis of evaluation of sessional work.

Readings

- Kumar, R. (2012). Research Methodology, SAGE.
Part – A

Theory

1. The main themes under which the contents have to be studied are :-
   (i) Prose and Poetry
   (ii) Grammar
   (iii) Translation: Tibetan to English & English to Tibetan
   (iv) Composition
   (v) Methods of teaching Tibetan
   (vi) Direct and pattern practice method of teaching Tibetan to lower classes as compared with the Translation Method, their relative merits and possibilities of combination.

Contents

Unit – I:

1. Aims of teaching a classical language; their application to Tibetan. Contrast and comparison with the aims of teaching Indian language such as Hindi/Sanskrit and a foreign language specially English. The importance of Tibetan in India. Its cultural, practical, literary and linguistic value.
2. The place of Tibetan in the school curriculum; the stage at which its teaching may be undertaken; its place at different stages.

Unit II:

1. **Reading**: The value of reading, pronunciation, enunciation and recitation, etc.
   (a) **Silent Reading**: Its aims; how to make it effective: how to give the necessary training to boys; how to test comprehension and speed in silent reading. Comparison with silent reading in the mother tongue,
   (b) **Oral Reading**: Its aims, social and other values: Essentials of good oral reading: Common errors in oral reading and how to remove them.
3. **Appreciation**: Aims and development of literary appreciation. Its special place in the teaching of poetry. How to lead the students to appreciate. Alankaras, Chhandas and Rasas, Need for memorization.
4. **Conversation**: Its importance. The importance of repetition, word-combination and drilling. The use of picture, drama and play methods.

**Unit – III:**

1. **Poetry**: Aims and methods of teaching poetry of different kinds. Recitation to inculcate interest in the learning of Tibetan.

2. **Prose**: Aims and methods of teaching prose, old and new.

3. **Grammar and Phonetics**: Special importance of grammar in the teaching of Tibetan: Aims and methods of teaching Grammar. Inductive and Deductive methods of teaching Grammar. The requirements at different stages. The traditional method. The sound system of Tibetan language, a detailed study of their production, their representation, appropriate symbols, the alphabet.

**Unit – IV:**

1. **Translation**: Method and use of teaching translation.

2. **Composition**: Aims and objectives of teaching composition; various forms to suit different stages; oral and written procedure of teaching composition; picture composition, story reproduction, letter writing and original composition.

3. The selection of text books in Tibetan. Aims and objectives requirements of good text books at different stages.


5. Examination in Tibetan:
   - The traditional method, Shastrartha, Modern Methods and New type tests—How far applicable to Tibetan.

6. The Tibetan Teacher: His equipment—his knowledge of Tibetan Language and literature.


**PRACTICAL WORK**

**Compulsory**

(1) Practice in class teaching.

(2) Ten essays on methods chosen by the students in consultation with the lecture counsellor embodying the results of supervised study and classroom experience.

(3) Collection of useful idioms, proverbs and sayings (Subhashitas).

(4) Preparation of Albums for collecting pictures for illustration, etc.
Optional

The pupil teachers should be required to do one of the following:-

1. Preparation of an Anthology of 200 verses (slokas) properly graded for the students of various stages.

2. Collection of 20 Kathas or writing of 15 model compositions suitable to the needs or standards of students at different stages.

Evaluation

The course content will be of 3 credits which are equivalent to 75 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be awarded on the basis of sessional work.

PERSONALITY DEVELOPMENT-IV

Credits: 2

Becoming a good teacher as well as a good human being.

- Communication skills training.
- Simulations – Role playing and various other techniques.
- Experiential learning.
- Teacher – taught relationship.
Objectives
The student teachers will be able to:-
1. Develop a total perspective of the role of technology and information science in modern educational practices.
2. Make various technological applications available for improving instructional practices.
3. Acquire knowledge about different aspects of teaching and communication process.
4. Acquire information about innovation in Educational Technology.
5. Learn skills required for effective instruction.

Contents

Unit I: Concept of Educational Technology and Information Technology
(a) Concept, Nature and Scope of Educational Technology; Difference between Technology in Education and Technology of Education
(b) Approaches of Educational Technology- Hardware, Software and System Approach.
(c) Applications of Educational Technology in improving theory and practices of education.
(d) Concept and significance of Information Technology.
(e) Different types of network: LAN, WAN, E-mail, Internet and World Wide Web.

Unit II: Teaching and Communication Technology
(a) Meaning, principles, levels and phases of teaching.
(b) Concept, process, principles and barriers of communication.
(c) Classroom Communication (Verbal and Non-Verbal).
(d) Systematic observation of classroom interaction: FIAC- encoding and decoding procedures.
Unit III: Models of Teaching & Instructional Strategies

(a) Concept, elements and needs of a teaching model.

(b) Classification of Teaching Models, Glaser’s basic teaching model, Bruner’s concept attainment model.

(c) Instructional Strategies- Group discussion, Brainstorming, Tutorial and Role Playing.

Unit IV: Innovation in Educational Technology and Modification of Teaching Behavior

(a) CAI, Teleconferencing and Language Laboratory.

(b) Microteaching and Simulation.

(c) Programmed learning: psychological basis, principles and types- linear, branching and mathetics.

Assignment

Preparation of a linear or branching type of programming as instructional material in the relevant teaching subject.

Transactional Strategies

The course content will be implemented through lectures, discussions, laboratory sessions, demonstrations and multimedia presentations.

Evaluation

The course content will be of 4 credits which are equivalent to 100 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be awarded on the basis of sessional work.

Readings

➢ Hota (1996). Communications, New Delhi, India: IGNOU.
➢ Pandey, K.P. (2007). Technology of Programmed Instruction, Delhi: Amitash Prakashan,

P502: Teaching Subject 1

The student teacher shall select any two subjects as their 1st teaching subject (In 5th Semester) and 2nd teaching subject (In 6th Semester) from their respective elective subjects opted.

- Method of Teaching Physical Science
- Method of Teaching Mathematics
- Method of Teaching Life Science
- Method of Teaching Social Science
- Method of Teaching History
- Method of Teaching Geography
- Method of Teaching Civics
- Method of Teaching Economics
- Method of Teaching English
- Method of Teaching Hindi
- Method of Teaching Sanskrit
- Method of Teaching Tibetan History
Method of Teaching Physical Science

Maximum Marks: 100
Theory: 70
Internal Assessment: 30
Credits: 04

Objectives
The student-teacher will be able to
➢ familiarize themselves with nature of science and objectives of teaching of Physical science at school level.
➢ understand the importance of physical science in school curriculum.
➢ plan instructions effectively for teaching of physical science.
➢ know and apply various techniques/approaches for teaching the contents of physical science.
➢ evaluate students’ performance effectively with appropriate evaluation techniques.

Contents

Unit-I Critical Review of the School Level Curriculum in physical Science
• A critical review of the school level curriculum in physical science, content analysis in terms of concepts and principles: Their pedagogic implications.
• Aims and Objectives of teaching physical science.
• Physical Science curriculum – its significance at secondary level.
• Formulation of specific objectives in behavioral terms.
• Curriculum and Textbooks – Meaning, nature, principle.

Unit-II Approaches and Methods of Teaching physical Science
• Enquiry and problem solving approach.
• Lecture-cum demonstration method.
• Laboratory method.
• Project method.
• Heuristic method.
• Constructivist approach.
• Qualities of a Good Science Teacher.

Unit-III Planning and Designing the effective Instructions in Physical Science
• Planning for instructional process – need, advantages and strategies.
• Lesson planning – design, approaches & writing the lesson plan/unit plan.
• Preparation and use of teaching aids and computer assisted learning.
• Use and management of science laboratory.

Unit-IV Evaluation in Physical Science
• Evaluation and assessment-concept and importance in physical science.
• Techniques of assessment for theory and practical.
• Construction of achievement test in physical science.
• Monitoring of learners’ progress through CCE.
• Diagnostic tests and remedial measures in physical science.

Assignment

The student teachers will be asked to prepare teaching aids/charts/models pertaining to the topics as given by the respective subject teachers.

Transactional Strategies

The course content will be transacted through practicum, discussion, interactive lectures and extensive use of demonstrations.
**Evaluation**

The course content will be of 100 marks. Out of these 70 marks is for summative evaluation (final exam) and rest 30 marks will be awarded on the basis of sessional work/assignment/unit tests.

**Readings**

- Thurber & Collette, Teaching Science in Today’s School.
Method of Teaching Mathematics

Maximum Marks: 100
Theory: 70
Internal Assessment: 30
Credits: 04

Objectives
The course will enable the student teachers to:
➢ understand the nature of mathematics as a discipline.
➢ use appropriate strategies for teaching of mathematics at school level.
➢ design assessment tools for measuring learning outcomes in maths.
➢ organize remedial teaching for difficult spots in mathematics at school level.

Content

Unit-I Mathematics Syllabus as Prescribed at School Level
- Mathematics syllabus as prescribed at school level and its analysis with the intent of understanding the logical structures & their pedagogic implications.
- Aims and objectives of teaching Mathematics.
- Integration of Mathematics with other subjects.
- Principles of curriculum construction.

Unit-II Instructional Strategies in Teaching Mathematics
- Inductive, deductive approach.
- Analytic and synthetic approach.
- Heuristic and project approach.
- Graded assignments in Mathematics.
- Problem solving.

Unit-III Organization of Teaching Mathematics and related Problems
- Developing objectives of teaching mathematics in behavioral terms.
- Preparation of a lesson plan/unit plan.
- Selecting appropriate instructional strategies and teaching aids related to various topics included in secondary education in the following areas:
  - Teaching of Arithmetic (Commercial Maths), teaching of Algebra (sets, relation, functions and algebraic identities), teaching of Geometry (Congruent and Similar triangles), teaching of Trigonometry (Heights and Distance), teaching of Basic Statistics (Measures of Central Tendency), teaching of Mensuration (Surface areas and volumes of solid figures).
- Mathematics club.

Unit-IV Evaluation in Mathematics
- Concept of measurement and evaluation in Mathematics.
- Evaluation Techniques in Mathematics.
- Summative and Formative Evaluation.
- Comprehensive and continuous evaluation (CCE).
- Construction of tests in Mathematics.

Assignment
The student teachers will prepare teaching aids/ charts/ models pertaining to the following topics or topics: Teaching of Arithmetic (Commercial Maths), teaching of Algebra (sets, relation, functions and algebraic identities), teaching of Geometry (Congruent and Similar triangles), teaching
of Trigonometry (Heights and Distance), teaching of Basic Statistics (Measures of Central Tendency), teaching of Mensuration (Surface areas and volumes of solid figures).

**Transactional Strategies**

The course content will be transacted through specially prepared modular material/text books in math, discussion, demonstrations and interactive sessions.

**Evaluation**

The course content will be of 100 marks. Out of this 70 marks is for summative evaluation (final exam) and rest 30 marks will be awarded on the basis of sessional work/assignment/unit tests.

**Readings**

➢ Dharambir & Agrawal, V.N. The Teaching of Mathematics in India.
➢ Prabhakaran, K.S. Concept attainment model of Mathematics teaching, Discovery Publications.
➢ Shultz. The Teaching of Mathematics.
Objectives
The course will enable the prospective student teachers to:
➢ understand nature and scope of life science.
➢ explain the aims and objectives of teaching life science.
➢ teach through various approaches of teaching-learning life science.
➢ develop competency in teaching secondary level life science.
➢ demonstrate skills as required for practical works in laboratory.
➢ use various teaching strategies in Life Science.

Content

Unit-I Critical Study of the School Level Syllabus prescribed for Life Science
• A critical study of the school level syllabus prescribed for life science in schools:
  Content analysis in terms of concepts.
• Application and significance of life science.
• Life science as an integrated area of study.
• Aims of teaching life science at secondary stage.
• Instructional objectives of teaching life science.
• Formulation of specific objectives in behavioral terms.

Unit-II Planning and Instructional Strategies in Life Science
• Developing a Unit and Lesson plans.
• Demonstration Method.
• Lecture Method.
• Laboratory Method.
• Heuristic Method.
• Problem Solving Method.
• Project Method.
• Use of Audio Visual aids and importance of laboratory.
• Competencies associated with laboratory techniques.

Unit-III Curriculum, Text Books and use of ICT in Life Science
• Place of Life Science in School Curriculum.
• Life Science as a component of Integrated Science at Secondary Level.
• Principles of constructing a Life Science curriculum.
• Textbooks in Life Science, its need and use, evaluation of textbooks in Life Science.
• Computer assisted learning in Life Science.

Unit-IV Evaluation
• Concept of measurement and evaluation in Life Science.
• Evaluation Techniques in Life Science.
• Summative and Formative Evaluation.
• Comprehensive and continuous evaluation (CCE).
• Construction of tests in Life Science.
Assignment

The student teachers will be asked to prepare teaching aids/ charts/ models pertaining to the topics as given by the respective subject teachers.

Transactional Strategies

The course content will be transacted through visits to local places for identification of academic resources, lectures, discussion, laboratory work, extensive use of demonstrations and interactive sessions.

Evaluation

The course content will be of 100 marks. Out of these 70 marks is for summative evaluation (final exam) and rest 30 marks will be awarded on the basis of sessional work/assignment/unit tests.

Readings

➢ NCERT (1969), Improving Instructions in Biology, New Delhi.
Method of Teaching Social Science

Maximum Marks: 100
Theory: 70
Internal Assessment: 30
Credits: 04

Objectives
The course will enable the student teacher to:
➢ understand the nature and scope of social science as a discipline.
➢ explain the aims and objectives of teaching social science.
➢ use various approaches and instructional strategies in teaching social science.
➢ prepare suitable test in social science and organize remedial teaching.
➢ apply appropriate evaluation techniques in social science.

Content

Unit-I Critical Study of the School Level Syllabus for Social Science

- A critical study of the school level syllabus as prescribed for social science: content and concept analysis with pedagogic implications.
- Meaning and nature of Social Science.
- Development and scope of Social Science.
- Approaches to the study of Social Science.
- Aims and objectives of teaching Social Science.
- Writing specific objectives of teaching social science in behavioral terms.

Unit-II Approaches and Methods of Teaching Social Science

- Enquiry and problem solving approach.
- Lecture-cum demonstration method.
- Story telling approach.
- Project method.
- Discovery approach.
- Constructivist approach.

Unit-III Planning and Designing the effective Instructions in Social Science

- Planning for instructional process – need, advantages and strategies.
- Lesson planning –design, approaches & writing the lesson plan and unit plan.
- Preparation and use of teaching aids and computer assisted learning.
- Excursions and field trip.

Unit-IV Evaluation

- Concept of measurement and evaluation in Social Science.
- Evaluation Techniques in Social Science.
- Summative and Formative Evaluation.
- Comprehensive and continuous evaluation (CCE).
- Nature and construction of tests in Social Science.

Assignment

The student teachers will be asked to prepare teaching aids/ charts/ models pertaining to the topics as given by the respective subject teachers or prepare a project on historical/geographical study of a place of local importance.
**Transactional Strategies**

The course content will be transacted through lectures, discussion, field interactions, extensive use of demonstrations and interactive presentations.

**Evaluation**

The course content will be of 100 marks. Out of this 70 marks is for summative evaluation (final exam) and rest 30 marks will be awarded on the basis of sessional work/assignment/unit tests.

**Readings**

➢ Choudhary, K.P. (1975), The effective Teaching of History in India, New Delhi: NCERT.
➢ NCERT, (1998), Guidelines and Syllabi for Secondary Stage (Class IX, X), New Delhi: NCERT.
➢ Ruhela, S.P. & Khan, R.S., Samajik Vigryan Shikshan, Kota Open University, B E-5.
Method of Teaching History

Maximum Marks: 100
Theory: 70
Internal Assessment: 30
Credits: 04

Objectives

To enable the student teachers to:

➢ understand the nature, scope and importance of learning history at secondary level.
➢ formulate the aims and objectives of teaching history at secondary stage.
➢ develop knowledge about the basic principles governing the construction of history curriculum and develop the ability to organize co-curricular activities for promoting history learning.
➢ develop classroom skills needed for applying different methods and approaches of teaching history at the secondary stage.
➢ develop the skill to plan for effective instructional design and use of instructional support materials.

Contents

Unit-I School Level Curriculum in History

• A critical survey of the school level curriculum in history: The content and its relevance, Interdisciplinary perspectives in history as a subject of study.
• Aims and objectives of teaching history at the secondary stage.
• Importance of the study of history with reference to national integration and international understanding.

Unit-II Curriculum Approaches and Methods

• Meaning and definition of curriculum: Principles of designing a school level history curriculum.
• Different approaches to organizing history curriculum.
  (i) Chronological
  (ii) Topical
  (iii) Concentric
• Methods of teaching history: Storytelling, Problem Solving, Project Methods, Socialized recitation and Source Method.

Unit-III Co-curricular Activities and History Teacher

• Types and importance of organizing co-curricular activities.
• Organizing co-curricular activities through history teaching- excursions, dramatization and visit to museum.
• Qualities and functions of history teacher.
Unit-IV Planning and Designing of Instructional Material and Evaluation

- Lesson plan- Designing of lesson plans and unit plans: format and structure.
- Instructional Material-
  (i) Black board, maps, graphs, charts, models, slides.
  (ii) Slide projector, epidiascope, Tape recorder, radio, Television and use of ICT.
- Concept, types and techniques of Evaluation for learning outcomes in history at school level.

Assignment
Historical study of a place of local importance.

Transactional Strategies
The course content will be transacted through lectures, discussion, field trip, extensive use of demonstrations and interactive sessions.

Evaluation
The course content will be of 100 marks. Out of this 70 marks is for summative evaluation (final exam) and rest 30 marks will be awarded on the basis of sessional work/assignment/unit tests.

Readings
➢ Ballard Martin (1970); ‘New Movement in the study of teaching of history’: Western printing service, London.
➢ Choudhary K.P. (1975); ‘Effective teaching of history in India’: NCERT, New Delhi.
Method of Teaching Geography

Maximum Marks: 100
Theory: 70
Internal Assessment: 30
Credits: 04

Objectives
The course will enable the prospective student teachers to:
➤ understand the nature and scope of geography.
➤ explain the aims and objectives of teaching geography.
➤ use various approaches to organizing teaching-learning systems in geography.
➤ develop competencies for teaching secondary level geography.
➤ demonstrate map reading skills and other allied exercises in laboratory.
➤ use teaching strategies for organizing co-curricular activities in Geography.

Contents
Unit-I Critical Review of the School Level Syllabus of Geography
• A critical review of the school level syllabus of geography: Structure and the Concepts emphasized.
• Geography as study of spatial relationship and spatial organization.
• Aims and objectives of teaching geography.
• Writing behavioral objectives for geography teaching.

Unit-II Approaches to Teaching Geography
• Expository approach, Storytelling and Regional Method.
• Discovery approach.
• Project method.
• Individualized instruction.
• Map reading skills.

Unit-III Transactional Strategies
• Preparation of lesson plans.
• Preparation of unit plans.
• Teaching aids, designing a geography laboratory and co-curricular activities, excursion.
• Bulletin board and Geography club.
• Geography exhibition.
• Use of community resources.

Unit-IV Evaluation
• Concept of measurement and evaluation in Geography.
• Summative and Formative Evaluation.
• Comprehensive and continuous evaluation (CCE).
• Developments of test items: essay, short answer type and objective types.
• Diagnostic testing and its use for remedial teaching.
Assignment

The student teachers will be asked to prepare a project on the geographical location and features of Varanasi or other places of geographical importance and submit a report thereon.

Transactional Strategies

The course content will be transacted through lectures, discussion, and extensive use of demonstrations, field trips, excursions and interactive sessions.

Evaluation

The course content will be of 100 marks. Out of this 70 marks is for summative evaluation (final exam) and rest 30 marks will be awarded on the basis of sessional work/assignment/unit tests.

Readings

➢ UNESCO, New Source Book for Teaching of Geography.
Method of Teaching Civics

Maximum Marks: 100
Theory: 70
Internal Assessment: 30
Credits: 04

Objectives

The Student teacher will be able to:

➢ understand the concept, nature and scope of civics.
➢ understand the aims and objectives of teaching civics.
➢ understand the principles of curriculum development & characteristics of a good text book.
➢ apply appropriate methods and techniques of teaching civics.
➢ develop competencies in teaching civics.
➢ use different instructional materials for effective teaching of civics.
➢ acquire knowledge of various evaluation procedures.

Contents

Unit-I Content of Civics at School Level

• A Critical study of the content and its interdisciplinary perspectives at school level.
• Development of the content in a historic perspective.
• Implications of the content structure for effective pedagogy.

Unit-II Objectives, Methodology and Approaches

• Objectives of teachings civics at school level: Formulating objectives in behavioral terms; methodology and approaches for teaching Civics: Direct Vs. Indirect: teacher presentations, monologic, dialogic, discussions, inquiry approach, project approach, seminar & quiz.

Unit-III Planning and Instructional Aids

• Lesson Planning – Formats & structure.
• Unit Planning – Formats & structure.
• Instructional Aids – Meaning, Importance & Precautions. Use of aids in Civics teaching – Black Board, Charts, Model, Pictures, OHP, Radio & TV and ICT.

Unit-IV Assessment of Learning Outcomes

• Concept of Testing, Measurement, Evaluation & Assessment.
• Assessment of Learning Outcomes in Civics – Oral, Written & Performance Tests.
• Various Types of Tests – Objective, Short Answer & Essay type, their characteristic, developments, merits & demerits.
Assignment

Preparing a plan to develop democratic attitude among the prospective teachers.

Transactional Strategies

The course content will be transacted through Lectures, Discussions, Interactive Sessions, Presentations, Tutorials and Brainstorming Sessions.

Evaluation

The course content will be of 100 marks. Out of this 70 marks is for summative evaluation (final exam) and rest 30 marks will be awarded on the basis of sessional work/assignment/unit tests.

Readings

Method of Teaching Economics

Maximum Marks: 100
  Theory: 70
  Internal Assessment: 30
  Credits: 04

Objectives

The student teachers will be able to:

➢ formulate the aims and objectives of teaching economics at the secondary school stage.
➢ develop the ability to evaluate the present curriculum in economics at the secondary level.
➢ develop the ability to organize group activities and projects in the subject.
➢ gain competence in the use of various methods of teaching economics.
➢ acquire necessary skills for the use and preparation of teaching aids and instructional materials in economics.
➢ prepare unit plan, lesson plan and related teaching learning strategies.
➢ review the text book of economics

Contents

Unit-I  School Level Curriculum in Economics
  • A critical analysis of the content form pedagogic perspective: inter-disciplinary basis of the subject of economics at school level.
  • Aims and objectives of teaching Economics at various levels.
  • Instructional objectives: Writing objectives in behavioral terms.

Unit-II  Methodology and Planning for Effective Pedagogy of Economics
  • Methodology and planning for Effective pedagogy of Economics .
  • Teaching techniques- explanation, illustration, question and response technique.
  • Lesson Plan- (i) Concept and importance.
    (ii) Various approaches to lesson planning.

Unit-III Curriculum and Text Book
  • Principles of designing curriculum for teaching Economics: Assessing the Congruence between content and objectives of teaching economics at the school level.
  • Evaluation of text-books in Economics at the school level:
    (i) Criteria of goods text-books.
    (ii) Assignments, Exercises, Glossary and Summary in the text.
    (iii) Qualities and functions of Economics teacher in changing world perspective.
Unit-IV Instructional Material and Evaluation in Economics

- Instructional materials- Black-board, Maps, Graphs, slides & Transparency, Audio-visual aids, Slide Projector, Overhead Projector etc.
- Concept, Purpose and Importance of evaluation in teaching of economics.
- Different type of tests, their merits and limitation (Essay type, short answer and objectives type).

**Assignment**

Review of a text-book at school level.

**Teaching Strategies**

The content will be transacted through lecture cum discussions, tutorials, and brainstorming and demonstration sessions.

**Evaluation**

The course content will be of 100 marks. Out of these 70 marks is for summative evaluation (final exam) and rest 30 marks will be awarded on the basis of sessional work/assignment/unit tests.

**Readings**

- Saxena N. (2007); ‘Economics Teaching’: Rajasthan Hindi Granth Academy, Jaipur.
Method of Teaching English

Objectives

The student teachers will be able to:

➢ acquire the skills of listening, speaking, reading and writing for effective teaching of English at different school stages.
➢ formulate the objectives of teaching English as second language.
➢ use the principles of language teaching at school level.
➢ critically review different approaches and methods of teaching English as a second language.
➢ put to use various techniques of testing and evaluation in English as a second language and conduct remedial teaching whenever considered essential.

Contents

Unit-I English Syllabus prescribed at School Level

(a) A brief review of English syllabus as prescribed at school level and its content analysis with pedagogic implications.
(b) Nature of English language including that of language.
(c) Principles of language learning.
(d) Some specific features of English language.
(e) Aims and objectives of teaching English at junior and senior levels.

Unit-II Foundations of Language Learning and Teaching with reference to English as a Second Language

(a) Principles of language teaching.
(b) English phonology: segmental and supra segmental phonemes in English.
(c) English morphology: Inflectional and Derivational morphemes.
(d) English Syntax; Kernel sentences: Derived sentences: Rules of formation and derivation in English language.
(e) English vocabulary: Content and function words.

Unit-III Approaches, Methods and Techniques of Teaching English as a Second Language

• Some important approaches to the teaching of English: Audio-lingual (structural) and cognitive code approaches, Direct method, Mimicry- memorization method, pattern practice method and bilingual method.
• Four fundamental skills in learning of English: listening, speaking, reading and writing: Procedures for teaching them: Basic practice activities- substitution, replacement, transformation, expansion, reduction, integration and progressive replacement.

• Teaching of prose, poetry, grammar and composition in English language: procedures and devices used in teaching.

• Materials & techniques of instruction to be used in classrooms: the picture file, charts, flash cards or word cards, the pocket chart, the flannel board, games, real objects, the record player, the language laboratory, filmstrips, films, radio, television: programmed instruction.

Unit-IV

• Why, when, how and what of testing in English language learning.

• Testing knowledge of the sound system, grasp of structure and knowledge of vocabulary.

• Developing an attainment test of objective type items in English and estimating its reliability and validity.

• Using tests for organizing remedial instruction.

Assignment

The student teachers will be asked to prepare teaching aids/ charts/power point presentations etc. pertaining to the topics as given by the respective subject teachers

Transactional Strategies

The course- content will be transacted through lectures, discussion, demonstrations, presentations and interactive sessions.

Evaluation

The course content will be of 100 marks. Out of these 70 marks is for summative evaluation (final exam) and rest 30 marks will be awarded on the basis of sessional work assignment/unit tests.

Readings

➢ Bright and McGregor (1975); ‘Teaching English as Second Language’: Longman Group, United Kingdom.
➢ Pandey, K.P. and Bhardwaj Amita (2008); 'Teaching of English as a second language': Vishwavidyalaya Prakashan, Varanasi.

➢ Quirk, Randolph and Greenbaum (1973); ‘A University Grammar of English’: London.

उद्देश्य

1. भाषा-संरचना में हिन्दी भाषा के तत्वों का ज्ञान कराना।
2. श्रवण, भाषण, वाचन एवं लेखन सम्बन्धी भाषाविद कौशलों का ज्ञान कराना।
3. माध्यमिक स्तर के लिए निर्धारित पाठ्यक्रम एवं पाठ्य पुस्तक-विश्लेषण एवं समीक्षा की कुशलता का विकास करना।
4. हिन्दी भाषा-शिक्षण प्रणालियों के उपयोग में प्रवृत्ति लाना।
5. हिन्दी की विभिन्न विधाओं एवं उनके व्यवहारिक शिक्षण की संस्थितियों का ज्ञान कराना।
6. हिन्दी भाषा-शिक्षण में श्रवण-श्रवण उपकरणों के व्यवहारिक उपयोग का ज्ञान कराना।
7. हिन्दी शिक्षण में मूल्यांकन के महत्त्व, मूल्यांकन की संस्थितियों एवं विधियों से परिचित कराना।
8. प्रश्न-पत्र के निर्माण की कुशलता विकसित करना।
9. ‘निदानतामक’ एवं ‘उपचारतामक’ परीक्षण में कुशलता लाना।

इकाई-प्रथम-विद्यालय स्तर पर निर्धारित हिन्दी पाठ्यक्रम

1. विद्यालय स्तर पर निर्धारित हिन्दी विषय के पाठ्यक्रम का समीक्षात्मक विश्लेषण एवं उसका वैक्षणिक निष्ठितार्थ
2. भाषा का दैनिक रूप - दैनिक विचार की हड़ताल से वर्ण-विचार, शब्द-विचार, पर्यायवाची, तत्सम, तद्भव, विक्षण हेतु अपेक्षित युक्तियाँ।
3. भाषा कौशल के विकास को तिमाहित पक्षों के रूप का अंकन एवं शिक्षण (क) श्रवण (ख) उद्घाटन (ग) वर्तनी (घ) वाचन (ढ) अभिव्यक्ति (भ) शिक्षण एवं शिक्षित
4. हिंदी के ‘ध्वनि-विज्ञान’ एवं ‘रूप-विज्ञान’ में व्यवहारिक प्रविष्टि (पांच सत्रों में)
5. भाषाविद विद्यालय प्रक्रिया के विश्लेषण
6. पाठ्यक्रम स्तरीय पाठ्यपुस्तकों का विश्लेषण सिद्धान्त।
7. माध्यमिक स्तर के पाठ्यक्रम एवं पाठ्यपुस्तकों का विश्लेषण एवं उसकी समीक्षा।

इकाई-द्वितीय-पाठ योजनाएं एवं शिक्षण विधियाँ

1. कक्षा अध्यापन के सामान्य सिद्धान्त
2. भाषा शिक्षण समस्याओं का घोषण, विश्लेषण एवं समाधान
3. इकाई, दैनिक रूप से पाठ योजनाएं (माध्यमिक स्तर पर); उद्देश्य प्रक्रिया के सिद्धान्त एवं प्रक्रिया।
4. विश्लेषण विधियाँ
इकाई-तुतीय-हिंदी की विभिन्न विधाओं का शिक्षण एवं दश्य-श्रवण उपकरण

1. विभिन्न विधाओं का शिक्षण एवं उनमें अन्तर।
2. गद्य शिक्षण (ध्वन्य निर्देशक एवं दृष्य-पाठ के रूप में, दुःख-पाठ के रूप में)
3. पद्य शिक्षण ('रस-पाठ' एवं यंग-पाठ के रूप में)
4. एकांकी शिक्षण (वाचिक, अभिव्यक्तिमयत्नक रूप में)
5. कहानी शिक्षण (मौलिक रूप में)
6. व्यक्तिक शिक्षण (अन्तर्दृष्टिक एवं व्यवहारिक शिक्षण रूप में)
7. रचना विभेदन : मौलिक एवं लिखित रचना का कौशल विकास

इकाई-चतुर्थ-हिंदी शिक्षण में दश्य-श्रवण उपकरणों का महत्त्व एवं उपयोग

1. हिंदी शिक्षण में मूल्यांकन एवं नवाचार
   (क) मूल्यांकन का अर्थ, महत्त्व एवं विशेषताएं
   (ख) पाठ्यपुस्तक एवं पाठ्यपरिवार मूल्यांकन
   (ग) प्रश्नों के विभिन्न प्रकार एवं रचना सम्बन्धी संस्कृतियाँ
   (घ) मूल्यांकन हेतू प्रश्न-पत्र का निर्मित
2. 'उपचारात्मक शिक्षा' एवं 'निदानात्मक परीक्षण' : अर्थ, स्वरूप महत्त्व एवं उपयोग
3. भाषा-शिक्षण में नवाचार

सत्रीय कार्य

1. हिंदी भाषा में प्रयुक्त प्रचलित अन्य भाषाओं के शब्दों का सर्वेक्षण तथा प्रतिवेदन प्रस्तुत करना।
2. माध्यमिक स्तर की किसी एक पाठ्यपुस्तक की समीक्षा एवं संस्कृत प्रतिवेदन प्रस्तुत करना।
3. उच्चरण एवं वचन-शब्द अनुसूचियों के निवारण हेतु उपचारात्मक विशेदन की पाठ योजना निर्मित करना।

मूल्यांकन

प्रस्तुत पत्र 100 अंकों का होगा जिसके अन्तर्गत 70 अंक लिखित परीक्षा एवं 30 अंक सत्रीय कार्य हेतु निर्धारित है।

संदर्भ साहित्य

1. डॉ. पांडेय रामचंकल 2006 ‘हिंदी विभेदन’, विनोद पुस्तक मंदिर, काग मुजफ्फर खंगा, आगरा।
2. लाल रमन विहारी 2007 ‘हिंदी विभेदन’, रसोगल प्रकाशन मेंट-4
3. सफाया रघुनाथ 1956 ‘हिंदी विभेदन विधि’, विनोद पुस्तक मंदिर, आगरा। पंजाब किताबघर, जालंधर
4. भाई योगेन्द्रजी 2005 ‘हिंदी भाषा विभेदन’, विनोद प्रकाशन आगरा
5. डॉ. यमी एस.एस. 2008 ‘भाषा विशेदन’, अरुण पत्रिकागार हाउस, दिल्ली गंज, नई दिल्ली-2
6. यमी अमरावती एस. 2006 ‘हिंदी विभेदन’, स्वाति प्रकाशन, जयपुर।
7. यमी एस.ए.ल. 2008 ‘हिंदी विभेदन’ सफेदस्ना वी.एम. यू.जी.सी. नईदिल्ली-2
Method of Teaching Sanskrit

उदेश्य

1. माध्यमिक स्तर के शिक्षकों में संस्कृत भाषा के व्याकरण की जानकरी एवं उनके प्रयोग में दक्षता का विकास करना।
2. ध्वनि विज्ञान एवं संस्कृत भाषा के सह सम्बन्ध को जानने की दक्षता का विकास करना।
3. संस्कृत भाषा के आधारभूत शब्दक्रम का जान देना।
4. संस्कृत शिक्षण के उदेश्यों का निर्धारण करना एवं उनके व्यावहारिक परिवर्तन हेतु प्रयास करना।
5. संस्कृत भाषा के विभिन्न कौशलों के पृथकः पृथकः समन्वयित सिद्धांत का विकास करना।
6. संस्कृत भाषा शिक्षण में त्रिकोण-व्यत्यासांक तथा उच्च सामग्री का सुझाव एवं प्रयोग करना।
7. संस्कृत शिक्षण के मूल्यांकन हेतु प्रश्न-पत्र निर्माण करना एवं कौशलाधारित परीक्षण करना।
8. संस्कृत भाषा की दक्षता में होने वाली अपुर्णात्मकता का कौशलानुसार लिदान एवं उपचारपूर्वक अध्यापन कर सकना।

इकाई-प्रथम-विद्यालय स्तर पर निर्धारित संस्कृत पाठ्यक्रम

1. विद्यालय स्तर पर निर्धारित संस्कृत विषय के पाठ्यक्रम का समीक्षात्मक विषयांकन एवं वैशिक निहितायो।
2. संस्कृत व्याकरण प्रारम्भ, आज्ञात-हलन्त, शब्दरूप, सामान्य परिभाषागत सिद्धांतकार, क्रिया, धातुरूप, कारक, विशिष्टता, प्रकाश, शिल्प, विशेषण, विशेषण, संज्ञा, समस्या, उपसंह, प्रत्यय, वाच्य-प्रयोग।
3. संस्कृत ध्वनि विज्ञान तत्व-स्तर, व्यंजन, वर्णों के उच्चारण स्थान प्रत्यय अनुसार अनुसारिक वस्तुधातु (शब्द एवं वाक्य) आरोपवर्षों, लय तथा हिंदी की ध्वनियों से तुलना एवं अन्तर।
4. संस्कृत भाषा की प्रकृति एवं शिक्षण के सिद्धान्त।
5. संस्कृत शिक्षण के उदेश्य-
   (क) उच्च प्राथमिक स्तर पर
   (ख) माध्यमिक स्तर पर
   (ग) उच्छ माध्यमिक स्तर पर

इकाई-द्वितीय-बािकलं शिक्षण एवं सहस्त्रिक, संस्कृत शिक्षण की विधाएँ एवं शिक्षण विधियों

1. भाषागत कौशल
   (क) श्रवण कौशल
   (ख) भाषण कौशल
   (ग) पठन कौशल
   (घ) लेखन कौशल
2. चारों कौशलों में सह-सम्बन्ध एवं समन्वयात्मक शिक्षण।
3. संस्कृत शिक्षण की विधाएँ एवं शिक्षण विधियों
   (क) व्याकरण शिक्षण
   (ख) गद्य शिक्षण
   (ग) पद्य शिक्षण
   (घ) नाटक शिक्षण
   (ङ) कथा शिक्षण
इकाई-वृतीय-संस्कृत भाषा शिक्षण में दृष्टि-अंग सामग्री एवं मूल्यांकन

1. दृष्टि-अंग का चयन, निर्माण एवं प्रयोग:
श्यामपट्ट, चित्र, चार्ट, शब्द चित्र, तालिका, पात्र, वेबसाइट, टेपरिकेडर, ओ.एच.पी., समाचार पत्र एवं अन्य सामग्रियाँ।

2. मूल्यांकन:
(क) भाषा विश्लेषण में मूल्यांकन का सम्प्रत्यय
(ख) संस्कृत भाषा विश्लेषण का मूल्यांकन
(ग) व्याकरण, अनुवाद एवं भाषा कौशलों का मूल्यांकन
(घ) प्रश्न-पत्र निर्माण

इकाई-चहुद-निदानात्मक एवं उपचारात्मक शिक्षण

(क) शवण सम्बन्धी
(ख) भाषण सम्बन्धी
(ग) पठन सम्बन्धी
(घ) लेखन सम्बन्धी
(ङ) व्याकरण सम्बन्धी
(च) अनुवाद सम्बन्धी

सत्रीय कार्य
1. माध्यमिक स्तरीय एक संस्कृत पाठ्यपुस्तक की समीक्षा
2. उपचारण एवं वर्तमान सम्बन्धी अनुदेशियों के विवेचन हेतु उपचारात्मक शिक्षण की पाठ योजना निर्मित करना।

मूल्यांकन
प्रस्तुत पर 100 अंकों का होगा जिसके अन्तर्गत 70 अंक लिखित परीक्षा एवं 30 अंक सत्रीय कार्य हेतु निर्धारित हैं।

सन्दर्भः-
1. प्रो 2008-09 संस्कृत विभाग, फैक्लेट पात्र, आगरा।
2. वैत्तिक 2001 संस्कृत विभाग, फैक्लेट पात्र, द्वारका मार्ग, नई दिल्ली।
3. सफाया रूपेनी 2007 संस्कृत विभाग, चौमास्का प्रकाशन, वाराणसी।
4. मितल डी संस्कृत 2002 संस्कृत विभाग, साहित्य चन्द्रिका प्रकाशन, राजस्थान, जयपुर।
5. कर्न सिंह 2000 संस्कृत विभाग, फैक्लेट पात्र, डी.सी. बुलाई, कृष्ण हॉटेल, आगरा।
6. नन्दीय न भें संस्कृत विभाग, साहित्य चन्द्रिका प्रकाशन, राजस्थान, जयपुर।
P503: Microteaching - 8 Skills in 15 days of 30 hours duration  
Credits: 4
The core teaching skills will comprise skill in Narration, Questioning, Probing, Set induction, Closure, use of teaching aids/technology, Reinforcement and formulation of Instructional objectives in behavioural terms. Apart from the above, the subject teacher may incorporate additional teaching skills.

P504: Simulations - 5 simulated lessons in Teaching Subjects-I  
Credits: 3

Moral Ethics-I  
Credit: 1

Unit I: Ethics for New Millennium: The Foundation of Ethics, Part I

- Modern Society and Quest for Human Happiness.
- No Magic, No Mystery.
- Dependent Origination and Nature of Reality.
- Redefining the Goal.

Unit II: Ethics for New Millennium: Ethics and the Individual, Part II

- The Ethic of Restraint.
- The Ethic of Virtue.
- The Ethic of Compassion.
- Ethics and Suffering.
- The Need for Discernment.
Method of Teaching Tibetan History

M.M.100 (Theory 70+Internal Assessment 30) Credits: 04

Unit I. མངོན་ཐོས་གཞན་ལྡན་གྱི་གསོལ་བོད་ཀྱི་རྒྱལ་རབས་སོབ་འཁྱིད་བྱེད་ཐབས།

1. ཚླ་མོ་ཆེུས་བོད་ཀྱི་གཞན་ལྡན་གྱི་གསོལ་བོད་ཀྱི་རྒྱལ་རབས་སོབ་འཁྱིད་བྱེད་ངོ་སོད།
2. ཅེས་རབ་པོ་པོའི་ཆི་བང་པོའི་བྱེད་ཐབས། དམ་ཆོས་བོད་དུ་དར་ཚུལ་དང་འབེལ་བའི་བྱེད་ཐབས་སྦ་བཞེད།
3. བོད་ཀྱི་ཡིག་ཆ་ཀྱི་རྐྱེན་དོན་ལོ་རྒྱུས་བསོ་ཚན་གྱི་དགེ་ཚན།

Unit II གཞན་ལྡན་གྱི་ལོ་རྒྱུས་བསོ་ཚན་གྱི་དགེ་ཚན།

1. ནི་ཁྲིམས་འཇོག་ཏེ།
2. སྡིག་བཟོས་ཕྱི་ནག་སྒེལ་མོ།
3. བོད་ཀྱི་ཚེ་འབྲོན་པའི་དགེ་ཚན་གྱི་ལོ་རྒྱུས་བསོ་ཚན་གྱི་དགེ་ཚན།

Unit III གཞན་ལྡན་གྱི་བོད་ཀྱི་ལོ་རྒྱུས་གཅིག་པས་འཕེལ་རྒྱས།

1. རྒྱ་ནག་ཐང་རྒྱལ་རབ་ས་ཀྱི་ལོ་རྒྱུས་ཡིག་ཆ། བཀའ་འབུམ་བཀའ་ཆེམས་ཀ་ཁོལ་མ།
2. སངས་རྒྱས་པོ་ཆེ་ལེགས་བསོད་ནམས་བོད་ཀྱི་ལོ་རྒྱུས་གཅིག་པས་འཕེལ་རྒྱས་དང་དར་རྒྱུད་སོགས་ཀྱི་ལོ་རྒྱུས་ཀྱི་བྱུང་བ་རྣམས་ཇྱི་ལྟར་བྱུང་བའི་དུས་ཚིགས་ཀྱི་གོ་རྱིམ་དང་མཐུན་པར་བསྱིགས་(Chronological)
3. བོད་ཀྱི་སྤྱན་དགུ་བོད་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་གཉིས་་བོད་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་དོན་གྱིས་ནས་གཅིག་པས་འཕེལ་རྒྱས་དང་དར་རྒྱུད་སོགས་ཀྱི་ལོ་རྒྱུས་ཀྱི་བྱུང་བ་རྣམས་ཇྱི་ལྟར་བྱུང་བའི་དུས་ཚིགས་ཀྱི་གོ་རྱིམ་དང་མཐུན་པར་བསྱིགས་(Chronological)

Unit IV གཞན་ལྡན་གྱི་ལོ་རྒྱུས་གཅིག་པས་འཕེལ་རྒྱས། (Teaching Instrumental Materials /Tools)

1. སྤྱན་དགུ་བོད་ཀྱི་ལོ་རྒྱུས་གཅིག་པར་ལོ་རྒྱུས་གཉིས་་བོད་ཀྱི་ལོ་རྒྱུས་གཅིག་པས་འཕེལ་རྒྱས་དང་དར་རྒྱུད་སོགས་ཀྱི་ལོ་རྒྱུས་ཀྱི་བྱུང་བ་རྣམས་ཇྱི་ལྟར་བྱུང་བའི་དུས་ཚིགས་ཀྱི་གོ་རྱིམ་དང་མཐུན་པར་བསྱིགས་(Chronological)

Power Point Presentation ཉིན་པོ་བྱུང་བའི་ཆི་མོ་ཞེ་བུའི་ཐོབ་བརོད་ལྟ་བྱས་བསྐུ་སུད་དཔེ་བཏབ་པོ་
SEMESTER – VI

P601: Environmental Education
Credits: 3

Objectives
The student-teachers will be able to:-
1. Understand the problems of environment and its use.
2. Acquire various skills in training the students about environmental education.

Contents

Unit-I: Information about Environmental Education
(a) Concept of Environmental Education and Need of Environmental Education.
(b) Objectives of Environmental Education at Secondary School Level.
(c) Methodologies of Environmental Education.
(d) Curriculum Development in Environmental Education.

Unit-II: Global Environmental Issues
(a) Components of Environment.
(b) Concept of healthy environment & efforts made in this direction.
(c) Global Environment issues:
   i. Conservation of environment: government commitment in national and international fields.
   ii. Depletion of ozone layer.
   iii. Global warming (greenhouse effect).

Unit-III: Pollution
Environmental Pollution: Various types of pollution and strategies for addressing them.

Unit-IV: Role of Schools and teachers in improving the quality of environment
(a) What can schools do?
(b) What can teachers do?
(c) What are the various agencies with which schools can collaborate?
(d) Environmental management at micro and macro level.

Assignment
Study on any one environmental problem. The report on the study must include efforts of the pupil teacher in developing awareness among people about the concerned environmental problem(s).
Transactional Strategies

The course will be transacted through lecture-cum-demonstration sessions with major segment of the course devoted to formulation, implementation and evaluation of action research interventions relevant for a secondary school. The course transaction will also include group-discussions, brainstorming and interactive sessions.

Evaluation

The course content will be of three (3) credits which are equivalent to 75 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be credited on the basis of evaluation of sessional work.

Readings

P602: TEACHING SUBJECT 2  
Credits: 3

The student teacher has to select Teaching Subject 2 from their respective group (Group Science Subjects/ Group Humanities and Social Science Subjects) mentioned in fifth (5th) semester, other than subject opted as Teaching Subject I

P603: Simulations- 5 simulated lessons in Teaching Subjects-II  
Credits: 3

Moral Ethics-2  
Credit: 1

Unit I: Ethics for New Millennium: Ethics and Society, Part III

- Universal Responsibility.
- Levels of Commitment.
- Ethics in Society.
- Peace and Disarmament.
- The Role of Religion in Modern Society.
- An Appeal.

Unit II: Beyond Religion: A New Vision of Secular Ethics, Part I

- Rethinking Secularism.
- Our Common Humanity.
- The Quest for Happiness.
- Compassion, the Foundation of Well-Being.
SEMESTER – VII

Pedagogy Related: 22 Credits

P701: Practice Teaching (School attachment programme)  Credits: 10
P702: Two Criticism Lessons (Process Related)  Credits: 2
P703: Two Evaluation Lessons (Final)  Credits: 2
P704: Scouting Guiding and Community Work  Credits: 2
P705: Designing of educational assessment tool  Credits: 3
P706: Action Research project based on classroom context  Credits: 3
Objective

The student teachers will be able to:

1. Develop an understanding and awareness of human rights, duties and co-existence of all living beings.
2. Prepare teachers to believe that alternative and less destructive measures tend to eradicate the social evils.
3. To help them to understand the methodology of behavioral modification through training in non-violence.
4. To enable the student teacher to identify and understand the role of peace education vis-a-vis the aim of transforming the prevalent society in a peaceful state.
5. To acquaint the student teachers with the various perspectives of environmental ethics and help them to reframe their life style for a harmonious relation with nature.

Contents

Unit 1: Human Rights: Issues and Perspectives

(a) History of the idea of Human Rights.
(b) Political, Civil, Economic, Social and Cultural Rights.
(c) Indian perspective of Rights and Duties.
(d) Problem of Violation of Human Rights: some emerging issues.

Unit 2: Non-violence

(a) Conceptual development.
(b) Vedic, Jain, Buddhist & Gandhian Tradition.
(c) Non-violence in Practice-Respect for all living beings, cruelty against animals, Animal Rights and Non-violence
(d) Non-violent Resistant methods and few examples of victory without violence.

Unit 3: Training in Non-violence

(a) Conceptual development and necessity.
(b) Change in Heart: Training of the Mind, Change in attitude: Training in open mindedness.
(c) Change in life style: Training in life style modification and structural change: Training for change in the system.
(d) Conflict & conflict Management.
Unit 4: Peace Education

(a) Concept of Peace and Peace Education.
(b) Development of Peace Education.
(c) Peace Education and Disarmament Education for a new world order.
(d) Legitimacy and limitation of Peace Education.

Assignment
Preparing a Training programme and conducting a Training of Mind/Training in open mindedness / training in life style/ Training for change in the system.

Transactional Strategies
The course content will be transacted through interactive sessions, lectures, tutorials and demonstrations.

Evaluation
The course content will be of 3 credits which are equivalent to 75 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be awarded on the basis of sessional work.

Readings

Objectives

The student teachers will be able to:-
1. Acquaint themselves with the need and characteristics of special children.
2. Gain the knowledge about identification and prevention of special children.
3. Understand various problems of special children.
4. Know about various educational remediations to be provided for special children.

Contents

Unit-I:

(a) Concept, Nature, types and objectives of Special Education.
(b) Education in Intellectual Disability: Concept, Characteristics, Teaching Strategies, Remedial Programme and Prevention of conditions leading to Intellectual Disability.
(c) Role of various regulatory bodies in special education with particular reference to RCI.

Unit-II:

(a) Education of the Visually Disabled: Concept, Characteristics, prevention and educational programmes for visually disabled.
(b) Education of the Hearing Disabled: Concept, Characteristics, prevention and educational programmes for Hearing disabled.
(c) Education of the Orthopedically Disabled: Concept, Types, Characteristics and Educational Programmes for Orthopedically disabled.

Unit-III:

(a) Education of the Gifted and creative Children: Concept, Characteristics and Educational Programmes.
(b) Creativity and Identification Process.

Unit-IV:

(a) Learning Disability in Children: Concept, Characteristics, Identification and Educational Programmes, Learning disorders.
(b) Education for Juvenile Delinquents: Concept and Characteristics, Conduct disorders, Educational Programmes for Rehabilitation.

Assignment

Preparing a lesson plan using role play/street play Model and implementing the same in the class of special children.
Transactional strategies

The course content will be transacted through lectures, discussions, interactive sessions and multimedia presentations.

Evaluation

The course content will be of 3 credits which are equivalent to 75 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be awarded on the basis of sessional work.

Readings


P803: Elementary Education

Objectives

The student teachers will be able to:-

1. Understand the role of Elementary and Non-Formal Education in India.
2. Develop proper understanding of various components of NPE-1986 and review of NPE-1992 related to Elementary Education.
3. Understand the role of local bodies, state government and non-government organizations.
4. Know about various programmes related to Elementary Education.
5. Identify suitable methods of teaching for Non-Formal Education.

6. Understand the place of Non-Formal Education in the teacher training curriculum.

Contents:

Unit-I:


Unit-II:

(a) Role of Panchayats, local bodies, state governments and non-governmental organizations in Elementary Education: Special qualities of an Elementary school teacher. Need for orientation and refresher courses for elementary school teacher. Role of basic training centres and DIETs in providing training to Elementary school teacher.

(b) Programmes related to Elementary Education - MLL, ECCE, DPEP, EGS & AIE, SSA.

Unit-III:

(a) Introduction to Non-formal Education: meaning, nature, scope and importance, difference between Non-Formal, Formal and Informal Education. Agencies of Non-Formal Education.

(b) Functions of Non-Formal Education with special reference to all round development of rural people. Psychological and sociological bases of Non-Formal Education.

Unit-IV:

(a) Curriculum for Elementary and Non-Formal Education.

(b) Modern methods of teaching in Elementary and Non-Formal Education.

(c) The place of Non-formal Education in the Teacher Training Curriculum. Organization of Non-Formal Education.

Assignment

Visit to an elementary school and preparation of status report about various facilities provided in the school.

Transactional Strategies

The course content will be transacted through lectures, interactive sessions, group discussions and field trips.

Evaluation

The course content will be of 4 credits which are equivalent to 100 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be awarded on the basis of sessional work.
Readings


P804: Educational and Vocational Guidance

Credits: 3

Objectives

The student teachers will be able to:-
1. Understand the Importance of Guidance in school.
2. Identify the difficult areas in learning of various school subjects.
3. Understand the types of guidance.
4. Acquaint themselves with various services in Guidance.
5. Realize the importance of counseling services in school programmes and career orientations.

Contents

Unit I:

(a) Meaning, nature, principles and needs of guidance.

(b) Objectives and functions of guidance services at Primary, Secondary and Higher education levels.
Unit II:
(a) Types of Guidance:- Educational, Vocational and Personal.
(b) Concept of informatory, preparatory, placement and follow-up services.

Unit III:
Counselling: meaning, types, methods and techniques for children with specific learning disabilities.

Unit IV:
(a) Anecdotal and cumulative records.
(b) Role of guidance services in the measurement of intelligence and personality tests.
(c) Role of guidance in school management.

Assignment
Preparing a special guidance programme for secondary students to meet out the challenges in the present day scenario.

Transactional Strategies
The course content will be implemented through lectures, discussions, interactive sessions and multimedia presentations.

Evaluation
The course content will be of 3 credits which are equivalent to 75 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be awarded on the basis of sessional work.

Readings
P805: Value Education  

Credits: 3

Objectives

The student teachers will be able to:-
1. Understand the nature, meaning, need and sources of values.
2. Get acquainted with various bases of values.
3. Get familiar with main categories of human values.
4. Gain the knowledge of various ways and means of inculcating values among students.
5. Acquire the ability of achieving the objectives of value education at School level.

Contents

Unit-I:

(a) Meaning, nature and need of values.

(b) Meaning, nature, objectives, importance and scope of value education. Approaches to value education.

Unit-II:

Theoretical bases-


iii. Psychological Basis of value development- Cognitive development approach by Lawrence Kohlberg- pre conventional, conventional and post conventional.

Unit-III:

Eight Categories of Human Values-

i. Social Values- friendship, love, brotherhood.
ii. Aesthetic Values - beauty.
iii. Intellectual Values - knowledge, attainment of truth.
iv. Ethical Values - truthfulness, Justice, benevolence, self-control.
v. Religious Values - worship, devotion, commitment.
vi. Health Values - Sound, Mental and Physical health, efficiency and productivity.
vii. Recreation Values - Leisure activities that enrich the life of an individual.
viii. Economic Values - instrumental in other values.

Unit-IV:

(a) Ten values to be inculcated through education: Dignity of Labour, National Integration, Patriotism, Sensitivity, Gender Equality, Courtesy, Secularism, Tidiness and Scientific temper

(b) Learning Value through various activities: Student self-government, celebration of festivals of different religions and communities, tree plantation, organizing campaigns on sanitation, nutrition etc. Participation in community development activities, service to needy, carrying out relief activities.

Assignment

1. Study of essays and articles on value concerns, autobiographies and biographies, parables, episodes from real life. Listening speeches, poems and songs. Discussion, debates and competitions for value clarification.

2. Dealing with value dilemmas: Enactment, role play, simulation, jurisprudential Model, street plays.

3. Preparing a lesson plan using role play /simulation/ jurisprudential/ street play model and implementing it.

4. Visit to community affected by a calamity and writing a report regarding relief programme based on group work.

Transactional Strategies

The course content will be transacted through interactive sessions, lectures, tutorials, demonstrations and group work.

Evaluation

The course content will be of 4 credits which are equivalent to 100 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be awarded on the basis of sessional work.

Readings

➢ Rama, J. M. Human Rights and Value Education’, New Delhi: NCTE.

Moral Ethics-III

Credit: 1

Unit I: Beyond Religion: A New Vision of Secular Ethics, Part II

- Compassion and the Quest of Justice.
- The Role of Discernment.
- Ethics in our Shared World.

Unit II: Beyond Religion: Educating the Heart through Training the Mind, Part III

- Ethical Mindfulness in Everyday Life.
- Dealing with Destructive Emotions.
- Cultivating Key Inner Values.
- Meditation as mental Cultivation.

Moral Ethics-IV

Credit: 1

Unit I: A Guide to the Bodhisattva’s Way of Life

- Conscientiousness.
- Guarding Alertness.

Unit II: A Guide to the Bodhisattva’s Way of Life

- Patience.
Syllabus
For B.Sc. B.Ed.
Science Subjects
(Electives)
PHYSICS
SEMESTER – I

BPH-101: Mechanics and Relativity

Credits: 2

**Mechanics:**
Inertial and non-inertial frames of reference, Effect of centrifugal and Coriolis forces due to earth’s rotation, Center of mass (C.M), Lab and C.M frame of reference, motion of CM of system of particles subject to external forces, elastic, and inelastic collisions in one and two dimensions, Scattering angle in, the laboratory frame of reference, Impact parameter, Scattering cross section, Conservation of linear and angular momentum.

**Relativity:**
Postulates of special theory of relativity, Derivation of Lorentz transformation and physical significance of Lorentz invariance, Length contraction and time dilation, Concept of simultaneity, Relativistic velocity transformation relations, mass energy relation, Concept of zero rest mass of photon, Relativistic relation between energy and momentum.

BPH-102: Mechanical Properties of Matter

Credits: 2

Modulus of rigidity, Poisson’s ratio, relation connecting different elastic-constants, twisting couple of a cylinder (solid and hallow), Statistical method (Barton’s method), Dynamical method (Maxwell’s needle) for determining the modulus of rigidity, Bending moment, Cantilever (neglecting mass), Young modulus by bending of beam, Viscosity, Poiseulle’s equation of liquid flow through a narrow tube, Damped harmonic oscillations, Compound pendulum, Ballistic galvanometer.

Practical

Credits-2

1. Determination of Stefan’s constant.
2. PN junction diode and Zener diode characteristics.
3. Determination of Young’s modulus, modulus of rigidity and Poisson’s ratio of material of a wire using Searle’s method.
4. Determination of absolute capacity of a condenser.
5. Determination of Young’s modulus of material of a metallic bar by bending of beam Method.
7. Determination of acceleration due to gravity using compound pendulum.
8. Determination of focal length of combination of lenses and nodal distance using nodal slide assembly.


Readings

➢ Gupta, S.L., & Kumar, V. Practical Physics, Pragati Prakashan.
➢ Mathur, D.S. Elements of Properties of Matter, S.Chand.
➢ Mathur, D.S. Mechanics, S.Chand.
➢ Verma, A.S., Modern Engineering Physics, Publisher: S.Chand. Arora, C.L., B.Sc Practical Physics, S.Chand.
SEMESTER – II

BPH-201: Thermal Physics –I

Kinetic Theory:
Maxwell’s speed distribution, Mean free path, Elementary treatment of transport phenomena, Viscous flow and Thermal conduction in gases.

Real gases, Andrew’s curves, Equation of state, Virial coefficients, Van der Waals equation, Critical constants.

Thermodynamics:
Reversible and irreversible processes, Examples of thermal, mechanical and chemical irreversibility, Carnot’s cycle and Carnot’s theorem. Second law of thermodynamics, Thermodynamic scale of temperature.

Concept of entropy, Entropy change in reversible and irreversible processes. Entropy and disorder, Principle of increase of entropy, Entropy and unavailable energy, Entropy of ideal gases, Entropy as a thermodynamic variable, S-T diagram

Thermodynamic functions, Internal energy, Enthalpy, Helmholtz function and Gibb’s free energy, Maxwell’s thermodynamical equations and their applications, TdS equations, Energy and heat capacity equations

BPH-202: Thermal Physics-II


Criterion of equilibrium of a system, Isolated system, System in contact with constant temperature reservoir. System in contact with constant temperature and pressure reservoir, Phase transition, Coexistence of phases, Triple point.


Radiation:
The blackbody spectrum, Wien’s displacement law, Rayleigh-Jean’s law, Planck’s quantum theory of radiation.
1. Determination of internal resistance of micro ammeter and conversion of micro ammeter into voltmeter, milliammeter and Ohmmeter.
2. Determination of modulus of rigidity using Bortron’s apparatus.
3. Construction of two-input ‘OR’ and ‘AND’ gates using diode logic and preparation of their truth tables.
5. To study variation of magnetic field along the axis of Helmholtz Galvanometer and to determine reduction factor.
6. Determination of resistance per unit length and an unknown resistance using C. F. Bridge.
7. Determination of dispersive power of material of a prism.
8. Determination of temperature coefficient of resistance of material of a given coil.

* In Semester-I, half of the students will do the experiments of Group-I and the other half will do the experiments of Group-II. In Semester II, the students will exchange their groups. Addition and deletion in the list of experiments may be made from time to time by the department.

Readings

➢ Agarwal, B.S., Thermal Physics, Publisher: Kedar Nath Ram Nath.
➢ Arora, C.L., B.Sc Practical Physics, S.Chand.
➢ Dey, K.K., & Dutta, B.N. Practical Physics, Kalayani Publishers.
➢ Gupta, S.L. & Kumar, V. Practical Physics, Pragati Prakashan.
➢ Reif, F. Fundamentals of Statistical and Thermal Physics. Levant.
SEMESTER –III

**BPH-301: Optics-I**

**Credits: 2**

**Interference:**


**Diffraction:**

Fresnel’s diffraction, Zone plate, diffraction due to straight edge. Fraunhoffer diffraction due to single and double slits, plane transmission grating and its resolving power.

**BPH-302: Optics-II**

**Credits: 2**

**Polarization:**

Polarized light and its mathematical representation, Production of polarized light by reflection, refraction and scattering. Polarization by double refraction and Huygen’s theory, Nicol prism, Retardation plates, Production and analysis of circularly and elliptically polarized light. Optical activity and Fresnel’s theory, Biquartz polarimeter.

**Practical**

**Credits: 2**

1. Determination of wavelength of sodium yellow line by Fresnal’s Biprism.
2. Determination of specific rotation of cane sugar by polarimeter.
3. Determination of wavelength of mercury lines by diffraction grating.
4. Determination of minimum resolution power of a telescope to distinguish two close objects at a large distance.
5. Determination of self inductance of a coil by Anderson’s bridge.
6. To draw characteristic curves of a triode valve.
7. To determine the velocity of ultrasonic waves
8. To determine the wavelength of Balmer line of hydrogen atom
Readings

- Arora, C.L., B.Sc Practical Physics, Publisher: S.Chand
- Dey, K.K., and Dutta, B.N., Practical Physics, Publisher: Kalayani Publishers
- Fowels, G. R. Introduction to Modern Optics: Publisher: Dover Pubns; 2 edizione (5 aprile 2009).
- Ghatak, Ajay, Optics (4e & 5e), TMgrw H.
- Gupta, S.L. & and Kumar, V. Practical Physics, Publisher: Pragati Prakashan
SEMESTER IV

BPH-401: Electromagnetic Theory  
Credits: 2

Vector Calculus:
Gradient, divergence and curl operators; Introduction to Gauss’s divergence and Stoke’s theorem.

Electromagnetism:
Laws of Electromagnetism using vector calculus; electrostatics and magnetostatics in matter, concepts of electric and magnetic polarizations, bound charges and currents; electrodynamics and displacement current, Maxwell’s equations in integral and differential forms; Concepts of vector and scalar potentials, and gauge transformations, Poynting vector, energy and momentum conservation.

BPH-402: Basic Electronics  
Credits: 2

EM wave propagation:
EM wave equations and their solutions; Polarization; Propagation of plane EM waves in free space, dielectrics (absorption coefficient) and conductors (skin depth and plasma frequency); Laws of reflection, transmission at normal and oblique incidence in linear media and conducting media (Fresnel’s equations and Brewster’s angle); Elementary ideas of wave guides (TE, TM modes and cut-off frequency) and coaxial transmission line.

Physics of Semiconductors:
P-N junction diode, depletion width and potential barrier, junction capacitance, I-V characteristics, Rectifier, ripple factors, filter circuits, efficiency and percentage regulation, LED, photodiode. 
Transistor circuits, Input, Output characteristics and CB and CE modes, Early effect, ~ and β parameters; DC load line, operating point, biasing and bias-stabilization circuits: Transistor as an amplifier (CE mode) and frequency response.

Practical  
Credits: 2

1. Determination of wavelength of sodium yellow line by Newton’s rings.
2. To determine the Plank’s constants by Wein’s radiation formula using an LDR.
3. To determine diameter/thickness of a thin wire by diffraction method.
4. Measurement of energy band gap of Si using a p-n junction diode.
5. Determination of mutual inductance of a pair of coils.
6. Phase shift between the current and the applied voltage in (a) C.R., (b) L.R. (c) L.C.R. circuits using a CRO and an oscillator.
7. To draw the input and output characteristics of a p-n-p transistor.
8. Resolving power of prism

* In Semester-III, half of the students will do the experiments of Group-I and the other half will do the experiments of Group-II. In Semester IV, the students will exchange their groups. Addition and deletion in the list of experiments may be made from time to time by the department.

Readings

- Arora, C. L. B.Sc Practical Physics, S.Chand.
- Dey, K. K., & Dutta, B. N. Practical Physics, Kalayani Publishers.
- Griffiths, D. J. Introduction to Electrodynamics (3e), Phi Learning.
- Gupta, S. C. Electronics Engineering (2e), UDH.
- Gupta, S. L., & Kumar, V. Practical Physics, Pragati Prakashan.
- Gupta, S. L., Kumar, V., & Sharma, S.P. Electrodynamics, Pragati.
- Gupta, S.L., & Kumar, V. Handbook of Electronics, Pragati.
- Mahajan, A. S., & Rangwala, A. A. Electricity and Magnetism, TMgrawH.
- Mahajan, S., & Choudhary, S.R. Electricity Magnetism and Electro Dynamics, TMgrawH.
SEMESTER-V

BPH-501: Mathematical Physics  Credits: 2

Curvilinear Coordinates:
Orthogonal curvilinear coordinates; concept of a metric, spherical and cylindrical coordinates and their unit vectors.

Tensor Analysis:
Introduction to tensors, Cartesian, covariant and contravariant tensors; contractions and direct-products, Examples: pseudo, dual, isotropic, symmetric and anti-symmetric tensors.

Matrices:
Hermitian, orthogonal and unitary matrices, inverse of a matrix, similarity transformations, Eigenvalue problems and diagonalization of matrices (Examples: non-degenerate and degenerate cases).

Differential Equations:
Second order homogeneous differential equations and their series solution (example: Bessel equation), linear independence of two solutions (Wronskian), Integral and power series methods for second solution.

Special Functions:
Bessel, Legendre (spherical harmonics), Hermite and Laguerre: generating functions and recurrence relations, orthonormality conditions, Dirac delta function,

Fourier Analysis:
Fourier theorem, Fourier analysis of square wave, saw-tooth wave, plucked strings, half wave/full wave rectifier wave forms

BPH-502: Classical Mechanics  Credits: 2

System of particles, Constraints, Generalized coordinates, D'Alembert's principle and Lagrange's equation, Velocity dependent potential of electro-magnetic field.


Legendre transformations and Hamilton's equations of motion, Hamiltonian for a charge particle in Electro-magnetic field, Cyclic coordinates and conservation laws, Poisson Brackets, Jacobi Identity, Canonical transformation.
Hamilton-Jacobi theory, Action-Angle variables, related problems.

Two body central force problem, reduction to the equivalent one body problem, Differential equation for the orbit and integrable power law potentials, Condition for stable circular orbit, Kepler problems.

Practical

Credits: 2

1. Magnetic susceptibility of nickel ion.
3. Determination of Cauchy’s constant.
4. Prism Spectrograph.
5. Wavelength of laser and thickness of wire.

Readings

- Arora, C. L., B.Sc Practical Physics, S.Chand.
- Chattopadhyay, P. K. Mathematical Physics, New Age International.
- Das, T. & Kumar, S. Mathematical Methods in Classical and Quantum Physics, Universities Press.
- Dey, K. K., & Dutta, B.N., Practical Physics, Kalayani Publishers.
- Goldstein, H., Poole, C., & Safko, J. Classical Mechanics (3e), Pearson.
- Gupta, S. L., & Kumar, V. Practical Physics, Pragati Prakashan.
- Gupta, S. L., Kumar, V., & Singh, S. P. Classical Mechanics, Pragati.
- Harper, C. Introduction to Mathematical Physics, Phi Learning.
- Prakash, S. Mathematical Physics with classical mechanics, Sultan Chand & Sons.
SEMESTER VI

BPH-601: Quantum Mechanics

Credits: 2

Limits of Classical Physics:
Black body radiation (without derivation), Photoelectric effect, Compton Effect.

Wave Packets and Uncertainty Relation:
de Broglie hypothesis, Wave-particle duality, Davisson-Germer experiment, Wave packets, Group velocity and phase velocity, Uncertainty principle, Complimentarity.

Wave Mechanics:
Schrödinger equation, Physical interpretation of wave function, Probability current density and conservation of probability, Free particle wave function, Schroedinger equation in the presence of a potential, Linear operators, Hermitian operators, Observables, Eigenvalues and Eigenfunctions, Expectation values, Ehrenfest's theorem, Stationary states, Superposition principle, Commutation relations, Commuting observables and compatibility.

Application of Schrödinger Wave Equation:
Particle in one dimensional Box, Square well, Rectangular potential barrier and tunnelling, Linear harmonic oscillator, Spherically symmetric potential, Angular momentum operators and their eigenfunctions, Concept of spin, Hydrogen atom.

BPH-602: Electronic Devices and Circuits

Credits: 2

Electronic Devices:
Field effect transistors, I-V Characteristics of JFET and MOSFET, FET biasing, FET as an amplifier, Silicon controlled rectifier, I-V Characteristics, phase controlled rectifier, Unijunction transistor, I-V Characteristics, relaxation oscillator, Operational amplifier (block diagram), characteristics parameters, inverting and noninverting amplifier, Cathode ray oscilloscope, working of CRT, deflection sensitivity, time base and waveform display.

Analog Circuits:
Hybrid parameter model of transistor, analysis of transistor amplifier (with and without RS and RL) using h- parameters, simplified hybrid model, brief idea about hybrid π model.

Single stage amplifier in CE, CB and CC modes, RC coupled CE amplifier and its frequency response, tuned voltage amplifier, Power amplifier classification, distortion and efficiency, push pull amplifier, Feedback in amplifiers, positive and
negative feedback, effect of negative feedback on the characteristics of different types of amplifiers, voltage and current series feedback circuits.

Barkhausen criterion of oscillations, tuned collector oscillator, Hartley / Colpitt oscillator, phase shift oscillator and multivibrators.

Need and types of modulation, amplitude modulation, analysis of A.M. wave, modulator and demodulator circuits.

Digital Circuits:

Boolean algebra, logic gates, NAND and NOR gates as universal gates. Simplification of Boolean expressions using K- maps. Half and full adders and subtractors.

Practical

1. Experiment on logic gates- Verification of laws of Boolean algebra.
2. Transient response of LCR circuit and determination of quality factor.
3. Experiment of negative feedback amplifier.
4. Power supply and filter characteristics.
5. Design of Zener regulated power supply.
6. Experiment on Fourier analysis.

Credits: 2

Readings

➢ Arora, C.L. B.Sc Practical Physics, S.Chand.
➢ Chaddha, G.S. Quantum Mechanics, New Age International.
➢ Chattopadhyay, D., & Rakshit, C.P. Electronics Fundamentals and Applications (11e), New Age International Publication.
➢ Dey, K. K., & Dutta, B.N. Practical Physics, Kalayani Publishers.
➢ Gupta, S.C. An Introduction to Electronics Engineering (2e), Udh.
➢ Gupta, S.L, & Kumar, V. Practical Physics, Publisher: Pragati Prakashan.
➢ Millman, J., Halkias, C.C., & Jit, S. Millmans Electronics Devices & Circuits (3e), Mcgraw Hill.
➢ Prakash, S. Quantum Mechanics, S.Chand.
➢ Rajput, B.S. Advanced Quantum Mechanics, Pragati Prakashan.
➢ Schiff, L. I., & Bandhyopadhyay, J. Quantum Mechanics (4e), Mcgraw Hill.
Innovative teaching module

Credits: 2

Introduction of Basic concepts of Physics to BSc. B.Ed. Students to make their mastery over these concepts. It may help students when they do external teaching practice in different schools.

Motion: Describing Motion (Uniform Motion and Non-uniform motion), Measuring the rate of Motion (Speed with Direction), Rate of change of Velocity, Graphical Representation of motion (Distance – Time graphs, velocity –time graphs), Uniform circular motion.

Force, Friction, Laws of motion and Pressure: Force – a push or pull, Forces are due to an interaction, exploring forces, a force can change the state of motion, force can change the shape of an object, balanced and unbalanced forces, force of friction, first law of motion, Inertia and mass, Second law of motion and, third law of motion, conservation of momentum. Conservation laws, Pressure, Atmospheric pressure.

Gravitation: universal law of gravitation, importance of the universal law of gravitation, Free fall (to calculate the value of g, motion of objects under the influence of gravitational force of the earth), Mass, weight, weight of an object on the moon, thrust, buoyancy, why objects float or sink when placed on the surface of water, Archimedes’ principle.

Work and Energy: Work Scientific conception of work, work done by a constant force), Energy (forms of energy, kinetic energy, potential energy, potential energy of an object at a height, law of conservation of energy), Rate of doing work, commercial unit of energy, sources of energy, what is a good source of energy, conventional sources of energy (fossil fuels, thermal power plant, hydro power plant), improvements in the technology for using conventional sources of energy, alternative or non-conventional sources of energy (solar energy, tidal energy, wave energy, Geothermal energy, nuclear energy).

Electricity and its Effect: Electric current and circuit, Electric potential and potential difference, ohm’s law, factors on which the resistance of a conductor depends, Magnetic field and field lines, magnetic field due to a current through a circular loop, electric power, electromagnetic induction, electric generator.

Some natural phenomena: lightning, charging by rubbing, types of charges and their interaction, transfer of charge, the story of lighting, lighting safety, earthquakes.

Light: What makes thing visible, Reflection of light, Laws of reflection, regular and diffused reflection, reflected light can be reflected again, multiple images, sunlight-white or coloured, Refraction of light, refractive index, power of a lens.

Sound: Production of sound, (sound is produced by a vibrating body, sound produced by humans), propagation of sound (sound waves needs a medium to travel, sound waves are longitudinal waves, characterstics of sound in different media), reflection of sound (Echo, reverberation, uses of multiple reflection of sound), range of hearing, application of ultrasound (SONAR).

Star and the solar system: The moon, the stars, constellations, the solar system, some other members of the solar system.
**BPH-801: Statistical Mechanics**

**Random Walk Problem:** Probability distribution, calculation of mean and dispersion (as a measure of fluctuation), and simple numerical problems.

**Basics of Statistical Mechanics:** State of a system (Microscopic and Macroscopic); Phase space, density of states and Liouville’s theorem; Postulates of statistical mechanics; Relation between statistical and thermodynamic parameters.

**Classical Statistical Mechanics:** Brief introduction to Ensemble theory (Micro-canonical, Canonical and Grand-canonical), applications to classical ideal gas and simple numerical problems; Gibbs paradox; In brief: Statistical equivalence of three ensembles.

**Quantum Statistical Mechanics:** Introduction to Bose-Einstein and Fermi-Dirac statistics; Maxwell-Boltzmann statistics as a classical limit; Comparison of the three statistics; Fermi and Bose gases.

**BPH-802: Solid State Physics**

**Structure and Symmetry:** Elements of external symmetry of crystals, space lattice, Bravais lattices, Miller indices for direction and planes, Common crystal structures: NaCl, CsCl, ZnS and Diamond, Close packed structures, Quasicrystals.

Brief introduction to: - Bonding in solids, Lennard Jones potential, concept of cohesive energy, covalent, van der Waals, ionic and metallic bonding.

Diffraction of x-rays, Laue equations and Braggs law, reciprocal lattice, Brillouin Zones and Brief introduction of: (Ewald construction, atomic scattering and structure factors).

**Lattice Vibrations:** Vibrational modes of continuous medium, Debye's theory of specific heat, Brief Introduction of: (Vibrations of one dimensional monoatomic and diatomic chain, Phonons, Density of states).

**Electronic Properties:** Free electron gas, Electrons in periodic potential, Kronig Penny model, Bloch theorem, energy bands, metals, insulators and semiconductors, Motion of electron in electric and magnetic fields, Hall Effect, Fermi surface.

**Magnetic Properties:** Dia-, Para-and Ferromagnetism, origin of magnetism, Brief Introduction of: (Langevin's theory of paramagnetism, Weiss Molecular theory, Ferromagnetic ordering, spin waves, magnons, ferromagnetic domains).

**BPH-803: Atomic Physics and Lasers**


Significance of four quantum numbers and concept of atomic orbitals. One valence electron atom: Orbital magnetic dipole moment, Orbital, spin and total angular momenta, Larmor precession, Vector model of atom, Electronic configuration and

Two valence electron atoms: LS and JJ coupling schemes and resulting spectra. Idea of normal and inverted doublet.

**Lasers and Non-Linear Optics:** Einstein coefficients, Threshold condition for LASER action, Rate equation for three level laser system, Characteristics of laser radiation. He-Ne and Nd-YAG Laser.

Significance of non-linear polarization of lasers and some applications.

**BPH – 804: Topics in Modern Physics and Nano Science**

**Credits: 3**

**Theory of Relativity:** Gravitational red-shift, Doppler effect in relativity, Four dimensional space and concept of four-vector, Transformation properties of four-momentum and four-force, Vector and scalar potentials and Gauge transformation, Four-potential and four-current, Transformation relations for E and B, Invariance of Maxwell’s equations.

**Astrophysics and Cosmology:**

**Nano Materials:**

**Practical for Semester- VIII (A)**

1. Determination of Planck’s constant.
2. Grating spectrograph.
3. GM Counter.
4. B-H curve and hysteresis loss.
5. Experiment on fiber optics.

**Practical for Semester- VIII (B)**

1. Positive feedback- Hartley and phase shift oscillator.
2. Amplitude modulation and demodulation characteristics.
3. Characteristics of FET and MOSFET and their application as amplifier.
4. Wave shaping circuits.
5. Characteristics of UJT and its application as relaxation oscillator.
Readings

➢ Baruah, D.G. Laser and Non-Linear Optics, Pragati Prakashan.
➢ Dey, K.K., & Dutta, B.N. Practical Physics, Kalayani Publishers.
➢ Ghoshal, S.N. Atomic Physic (Modern Physics), S.Chand.
➢ Gupta, S.L., & Kumar, V. Practical Physics, Pragati Prakashan.
➢ Gupta, S.L., & Kumar, V. Statistical Mechanics, Pragati Prakashan.
➢ Herzberg, G. Atomic Spectra and Atomic Structure, Dover.
➢ Huang, K. Statistical Mechanics (2e), Wiley Student Edition.
➢ Jeremy Bernstein, Fishbane, P.M., & Geriorowicz, S. G. Modern Physics, Pearson.
➢ Kittel, C. Introduction to Solid State Physics (8e), Wiley Student Edtion.
➢ Kumar, R. Atomic and Molecular Spectra and Laser, K.N.R.N.
➢ Prakash, S. Statistical Mechanics, K.N.R.N.
➢ Resnick, R. Introduction To Special Relativity, Wiley.
➢ Ross, S. M. Introduction to Probability Models (11e), Academic Presss.
➢ Upadhyay, J.C., & Sinha, H.P. Relativity and Statistical Physics, Ram Prasad.
➢ White, H. E. Atomic Spectra, Mcgraw Hill.Arora, C.L. B.Sc Practical Physics, S.Chand.
SEMESTER - I

BCH-101: Structure and Bonding

Credits: 2

1. **Atomic Structure**: Schrodinger wave equation; H atom; Radial and angular wave functions: quantum numbers and concept of orbitals; S later orbitals.
2. **Chemical Bonding**: VB and MO approach of H2 molecule; MO treatment of homonuclear and heteronuclear (CO & NO) diatomic molecules; Concept of HOMO and LUMO. VSEPR theory; Structure of simple molecules and ions of main group elements.
3. **Ionic Solids**: Close packing, Radius ratio rule and crystal coordination number. Examples of MX and MX2 type ionic solids (NaCl and TiO2).
4. **Metallic Bonding**: theories of bonding in metals; Free electron, VB and Band theories.
5. **Weak Interactions**: Hydrogen bonding and van der Waal’s interactions.

BCH-102: Organic Chemistry

Credits: 2

1. **Concepts**: Atomic orbitals, hybridization, orbital representation of methane, ethane, ethyne and benzene. Polarity of bonds: Inductive, resonance and steric effects, hyperconjugation, and their influence on acidity and basicity of organic compounds.
2. **Hydrocarbons**
   - Alkanes: Chlorination of methane
   - Alkenes: Addition reactions (Electrophilic and Free radical), Hydration, hydroxylation, hydroboration, epoxidation and ozonolysis
   - Alkynes: Reduction, Electrophilic addition, acidity and metal acetylides. Conjugated and isolated Dienes: 1,2- versus 1,4-addition. Diels - Alder reaction.
3. **Alkyl Halides**
   - Nucleophilic substitution: SN1, SN2 mechanisms
   - Eliminations reactions: E1 and E 2 mechanisms, Elimination versus substitution reactions; energy profile diagrams-transition states (general considerations)
   - Grignard reagents: Preparation and synthetic applications.
4. **Alcohols**: Comparative study of substitution, dehydration, oxidation, and esterification of primary, secondary and tertiary alcohols.
6. **Active methylene compounds**: Preparation and synthetic applications of ethyl acetoacetate and diethyl malonate, Tautomerism.
Practical

1. Qualitative Inorganic Analysis.
2. Qualitative Inorganic Mixture Analysis: Not containing more than four ions and
one interfering anion.
3. Qualitative Organic Analysis: Identification of simple organic compounds (derivatives
not included).

Readings

Oxford: Oxford Univ. Press.
(3e) New York: John Wiley & Sons.
Ld.
Hall.
➢ Morrison, R.T., & Boyd, R. N. (1992), Organic Chemistry (6e). New Delhi: Prentice-
Hall of India (P) Ltd.
SEMESTER - II

BCH-201: Inorganic Chemistry-I

Credits: 2

1. **Periodic trends and properties:** Size, Ionization Energy, Electron Affinity, Electronegativity, Lattice and Hydration Energies, Use of redox potential and reaction feasibility.

2. **Chemistry of s and p-block elements:** Alkali and alkaline earth metals: Hydrides and Complexation tendencies. Structural features of hydrides, halides, oxides and oxyacids.

3. **Chemistry of d-block elements:** Salient features, characteristic properties of 3d-elements with reference to oxidation states, colour, magnetic behaviour, and complex formation tendency.

BCH-202: Physical Chemistry-I

Credits: 2

1. **Gaseous State:** Kinetic theory of gases, ideal gas laws based on kinetic theory. Collision in a gas- mean free path, collision diameter, collision number. Behaviour of real gases - the van der Waal’s equation. Critical phenomena - critical constants of a gas and their determination, the van der Waals equation and critical state, Principle of corresponding states.

2. **Liquid State:** Surface tension of liquids - capillary action, experimental determination of surface tension, temperature effect on surface tension. Viscosity of liquids, experimental determination of viscosity coefficient, its variation with temperature.

3. **Thermodynamics:** First Law of thermodynamics and internal energy, state and state functions, sign convention for heat and work, nature of work, path dependence of heat and work. Enthalpy, heat changes at constant volume and constant pressure, heat capacities (CV, CP) and their relationship for ideal gases. Thermodynamic quantities (w, q, ΔU, ΔH) for isothermal and adiabatic reversible expansion of ideal gases and their comparison. Change in internal energy (ΔU) and enthalpy (ΔH) of chemical reactions, relation between ΔU and ΔH, variation of heat of reaction with temperature (Kirchhoff’s equation).

5. **Nuclear Chemistry:**

- Nucleus and its classification, nuclear forces, nuclear binding energy, stability of nucleus.
- Radioactivity: Radioactive elements, general characteristics of radioactive decay, decay kinetics (decay constant, half life, mean life period), units of radioactivity.

### Practical  

**Credits: 2**

Quantitative Analysis (Physical and Volumetric)

1. Determination of water equivalent of a calorimeter (cooling curve).
2. Heat of neutralization (strong acid-strong base).
3. Heat of dissociation of weak acid.
4. Heat of solution (NH₄NO₃, CaCl₂).
5. Basicity of an acid by thermochemical method.

Note: Experiments may be added/deleted subject to availability of time and facilities.

### Readings

SEMESTER - III

BCH-301: Organic Chemistry-II  Credits: 2

1. **Aromaticity:** Aromaticity and Huckel rule - A general concept. Molecular orbital picture of benzene.

2. **Aromatic Electrophilic Substitution:** Mechanism of nitration, halogenation, sulphonation, and Friedel-Crafts reactions (alkylation and acylation). Effects of substituents on orientation and reactivity.

3. **Aryl Halogen Compounds:** Chlorobenzene, electrophilic and nucleophilic aromatic substitutions; side chain chlorination of toluene, DDT and BHC.

4. **Chemistry of Carbonyl compounds:** Preparations and reactions: addition and condensation reactions; Cannizzaro, Perkin, aldol, benzoin, haloform, oxidation and reduction reactions. Important reactions of acids, HVZ reaction. Relative reactivity of acid chlorides, acid anhydrides, amides and esters. Comparative acidity of carboxylic and sulphonic acids.


6. **Nitrogen Containing compounds:** Nitrobenzene and reduction products. Comparative basicity of aliphatic and aromatic amines.

7. **Diazonium Salts:** Preparation and synthetic applications.

BCH-302: Physical Chemistry-II  Credits: 2

1. **Thermodynamics:** Second Law of Thermodynamics, Carnot cycle, entropy, entropy changes in reversible and irreversible processes and entropy of the universe, physical concept of entropy, entropy changes of an ideal gas in different processes, entropy of an ideal gas, entropy changes in mixture of gases. Joule-Thomson effect, Joule-Thomson coefficient of real (van der Waal) gases, inversion temperature. Free energy and its concept, Gibbs and Helmholtz free energies and their relationship, variation of free energy with temperature and pressure. Free energy and equilibrium constant. Maxwell’s relations, Gibbs-Helmholtz equations, its application for the determination of AG, AH, AS of a reversible cell reaction. Criteria for reversible and irreversible processes based on entropy and free energy. Partial molal quantities, chemical potential, the Gibbs-Duhem equation, determination of partial molal quantities, variation of chemical potential with temperature and pressure, chemical potential in case of a system of ideal gases.

2. **Phase Equilibria:** Thermodynamics of phase transition-Clapeyron-Clausius equation and its applications. Phase, Phase rule, phase component, degree of freedom, thermodynamic derivation of phase rule, phase diagrams of one-component system (water), two component systems (phenol-water, lead-silver). The distribution law, applications to cases of dissociation and association of solutes in one of the phases, solvent extraction, equilibrium constant from distribution coefficient (KI + I2 = KI3).

4. **Chemical Kinetics**: Order and molecularity of chemical reactions, pseudo order. Kinetic law for second order reactions, determination of the rate constant and order of reaction from kinetic data. Effect of temperature on rate of reaction: collision theory of rates of bimolecular reactions and its comparison with Arrhenius equation.

5. **Complex reactions**: Reversible (first order in both directions), concurrent, consecutive reactions. Animalcular gas reactions (Lindmann theory), steady-state approximations, theory of absolute reaction rate and its thermodynamic formulation.

**Practical**

Quantitative Analysis (Physical and Volumetric)

2. Effect of impurity on Critical Solution Temperature.
3. Distribution of solute in two immiscible solvents (without association).
4. Distribution of solute in two immiscible solvents (with association in one solvent).
5. Determination of pH of a given buffer.
6. Equilibrium constant of methyl acetate hydrolysis reaction.

Note: Experiments may be added/deleted subject to availability of time and facilities.

**Readings**

SEMMESTER - IV

BCH-401: Inorganic Chemistry-II

Credits: 2


2. **Non-aqueous solvents**: Physical properties of a solvent for functioning as an effective reaction medium, types of solvents and their general characteristics. Liquid NH₃ as a non-aqueous solvent.

3. **Coordination compounds**: Nomenclature, Werner’s theory. Isomerism. Sidgwick’s EAN concept and Valence Bond Theory. Stereochemistry of coordination compounds with coordination no. 4, 5 and 6.

4. **Magnetic Properties of Transition Metal Complexes**: Types of magnetic behavior, methods of determining magnetic susceptibility, L-S and J-J coupling, orbital contribution to magnetic moments. Correlation of magnetic moment data and stereochemistry of Co(II) and Ni(II) complexes; anomalous magnetic moments.

BCH-402: Selected Topics in Chemistry

Credits: 2

1. **Energy devices**: Batteries; Fuel cells, Solar cells, Biomass as renewable energy resources.

2. **Corrosion**: Causes of metallic corrosion, types of corrosion, measurements of corrosion by weight loss method, prevention (electrochemical and inhibitor).

3. **Green Chemistry**: Principles and concept of green chemistry, atom economic and non-economic reactions, reducing toxicity, a few examples of environment friendly reactions and reaction media.

4. **Photoisomerization**: Rotation about C-C and C=C bonds, Structure of Rhodospin, Mechanism of vision.

5. **Bioenergetics**: Gibbs and Helmholtz energies with special emphasis on biological applications: study of energy transformations in living systems (bioenergetics): standard state in biochemistry, ATP-the currency of energy, Glycolysis, limitation of applicability of thermodynamics in biology.
Practical

Quantitative Analysis (Physical and Volumetric)
1. Coagulation of a solution.
2. Determination of Surface Tension of liquids.
3. Determination of viscosity coefficients of liquids.
4. Order of reaction of I$_2$ / Acetone / H$^+$. 
5. Iodimetric titration.

Note: Experiments may be added/ deleted subject to availability of time and facilities.

Readings

➢ Agarwal, R.C. Recent Aspects in Inorganic Chemistry, Kitab Mahal.
BCH-501: Analytical Chemistry-I

1. **Statistical Evaluation:** Determinant and indeterminant errors, Normal error curve, Accuracy and Precision, Relative and standard deviation, Methods for minimizing errors, Criteria for rejection of observation, Significant figures and computation rules, Error propagation.

2. **Precipitation:** Desirable properties of gravimetric precipitates, Formation of gravimetric precipitates, Conditions for quantitative precipitations, Contamination in precipitates, Method for removal of impurities in precipitates, Steps involved in quantitative precipitation, Organic precipitants (oxine, dithizone, á-nitroso-(naphthol, cupferon, dimethyl glyoxime) in chemical analysis.

3. **Analytical Reagents:** Theoretical and practical aspects of the use of EDTA, cerate, iodate, bromate, chloramine-T, Karl Fischer and periodate reagents in chemical analysis.

BCH-502: Inorganic Chemistry-III

1. **Theories of Metal-Ligand bonding:** Limitations of valence bond theory; Crystal-field theory and crystal-field splitting in octahedral, tetrahedral and square planar complexes. Jahn-Teller Distortion. Factors affecting the crystal-field splitting.

2. **Thermodynamic and Kinetic aspects of Metal Complexes:** A brief outline of thermodynamic and kinetic stabilities of metal complexes and factors affecting the stability. Substitution reactions of square-planar complexes – Trans effect

3. **Chemistry of Second and Third Transition Series:** A general comparative treatment of 4d and 5d elements with their 3d analogues in respect of ionic radii, oxidation states, magnetic behaviour and electronic spectral properties

4. **Organometallic Chemistry:** Definition, nomenclature and classification of organometallic compounds. Preparation, properties, bonding and applications of alkyl and aryls of Li, Al, Hg, Sn, Ti. A brief account of metal-ethylenic complexes and homogeneous hydrogenation
Practical

Preparations (Organic and Inorganic)

1. Preparation of Organic Compounds:
   (i) m-dinitrobenzene, (ii) Acetanilide, (iii) Bromoacetanilide, (iv) Oxidation of primary alcohols-Benzoic acid from benzylacohol, (v) azo dye

2. Preparation of Inorganic Compounds:
   (i) Potassium trioxalato chromate (III); (ii) CoHg(SCN)₄; (iii) Cu(I) thiourea complex (iv) Bis (2, 4-pentanedionate) zinc hydrate; (v) Double salts (Chrome alum/ Mohr’s salt)

Readings

1. **Alicyclic Compounds**: Cycloalkanes, general synthesis, Bayer’s strain Theory. Cyclohexanechair and boat conformations, axial and equatorial bonds, conformation of mono substituted cyclohexanes.

2. **Poly nuclear Hydrocarbons**: Alternant and non-alternant hydrocarbons. Chemistry of naphthalene.

3. **Reactive intermediates and related Rearrangement reactions**: Generation, stability and reactivity of Free radicals (Anti Markovnikov's, Birch Reduction, Bouveault-Blanc reduction, oxidation of phenol by metal ions); Carbocations (Pinacol-Pinacolone, Wagner-Meerwein Rearrangement, Baeyer-Villiger oxidation, Hydroperoxide reaction and Beckmann.) and Carbanions (Robinson Anulation and Michael Addition); Carbenes and Nitrenes (Robinson Anulation and Michael Addition); Ylides: Sulphur ylides, phosphorous ylides, Michaelis-Arbuzov phosphonate synthesis, Witting reactions, Mitsunobu reaction.

4. **Isotope Effect in a Reaction**: Isotopic substitution in a molecule, primary and secondary kinetic isotope effects, solvent isotopic effect and their importance in mechanistic studies.

5. **Stereochemistry**: Concept of Chirality; symmetry element, symmetry operations, Enantiomers, diastereomers, racemates, racemisation, resolution, Pro-chirality, pro- stereoisomerism with suitable examples of one and two chiral centers. Regioselective, chemoselective and stereoselective reactions. Asymmetric induction, Cram’s Rule: Addition of nucleophile to carbonyl function; Aldol condensation (achiral-achiral). Wilkinson’s hydrogenation.

6. **Photochemistry**: Principles of photochemistry, photochemical reactions of carbonyl compounds and olefins.

7. **Heterocyclic Compounds**: Synthesis and chemistry of furan, pyrrole, pyridine, Indole and Quinoline.

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**BCH-602: Physical Chemistry-III**  
**Credits: 2**

1. **Solid State**: Crystal lattices, space lattice, unit cell, crystal systems, law of rational indices, Miller indices, crystals and x-rays (the Braggs equation). Crystal structure of NaCl, graphite, and diamond. Types of crystal (molecular, covalent, metallic, ionic). Imperfection in crystals: point defect-Schottky and Frankel defects.

and high quantum efficiency. Kinetics of photochemical reaction (H₂+Br₂=HBr), photostationary state, Chemical actinometers (uranyl oxalate)


4. **Electrochemistry:** Theory of strong electrolytes: - Qualitative idea of Debye-Huckel theory of ion-ion interactions, Debye-Huckel limiting law for activity coefficient of ions in electrolyte solution (derivation not required), its modification for concentrated solutions. Debye-Huckel-Onsager (D-H-O) theory of electrolytic conductance: qualitative idea of electrophoretic and relaxation effects, D-H-O equation for conductance of electrolyte solutions, effect of high frequency and high field on conductance.

5. **Nuclear and Radiation Chemistry:** Nuclear reactions: Bethe notation, types of nuclear reactions (n, p, α, d and γ), conservation of quantities (mass-energy and linear momentum) in nuclear reactions, reaction cross-section, compound nucleus theory and nuclear reactions. Nuclear fission: the process, fragments, mass distribution, and fission energy. Nuclear reactor: the natural uranium reactor, classification of reactors, breeder reactor. Nuclear fusion and stellar energy. Radiation chemistry: Elementary ideas of radiation chemistry, radiolysis of water and aqueous solutions, unit of radiation chemical yield (G-value), radiation dosimetry (Fricke’s dosimeter), units of radiation energy (Rad, Gray, Rontgen, RBE, Rcm, Sievert).

**Practical**

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Inorganic & Physical Chemistry Practical

1. Viscosity-composition curve for a binary liquid mixture.

*Note:* Experiments may be added/deleted subject to availability of time and facilities.
Readings

SEMESTER – VII

Innovative teaching module  Credits: 2

a) Basics of atomic structure and periodic table.
b) Environmental issues in the national context and remedial measures.
   (Arsenic, Mercury, Copper, Cadmium and Methylisocynate (MIC) poisonings).

SEMESTER – VIII

BCH-801: Analytical Chemistry-II  Credits: 3

1. Solvent Extraction: Distribution law, Single extraction, Multiple extraction, Craig concept of counter-current distribution, Important solvent systems: chelate extraction, synergic extraction, extraction by solvation, ion-pair extraction.
2. Chromatography: Classification of chromatographic methods, General principle and application of adsorption, partition, ion exchange, thin layer, and paper chromatography.
4. Spectrophotometry: Beer's law and it's application, Nomenclature and units, General instrumentations for spectrophotometry, Spectrophotometric determinations of one Component (iron, chromium, manganese, nickel, titanium and phosphorus) and two components (overlapping and non overlapping) systems, Spectrophotometric determination of dissociation constants of indicator, Photometric errors and RINGBOM-AYRES plots.

BCH-802: Inorganic Chemistry –IV  Credits: 3

1. Electronic Spectra of Transition Metal Complexes: Types of electronic transitions, selection rule for dd transitions, spectroscopic ground states. Explanation of electronic spectra on the basis of Orgel energy level diagrams for d1, d4, d6 and d9 states.
2. Chemistry of f-block Elements:
   Actinides: Comparative study of actinide elements with respect to electronic configuration, atomic and ionic radii, oxidation states and complex formation; occurrence and principles of separation. General features and chemistry of actinides, principles of separation of Np, Pu and Am from U. Trans-Uranium elements.
3. **Bioinorganic Chemistry:** Essential and trace element in biological process, oxygen transport with reference to haemoglobin; synthetic models of O2 carriers., Biological role of alkali metals ions. Vitamin B-12.

4. **Environmental Pollution:** Terminology used in environmental chemistry, Atmospheric pollution, Source of air pollution, Global warming, Ozone-hole, Auto exhaust emissions and it's prevention, Air quality parameters, Acid rains, Industrial and domestic effluents, Treatment plants, Flouresis, Arsenic, Mercury and Methylisocynate (MIC) poisonings, Current environmental issues in the national context and remedial measures.

**BCH-803: Organic Chemistry-V**

**Credits: 3**


4. **Dyes:** synthesis of malachite green, fluorescein. Synthesis and structure of Indigotin.

5. **Peptide Chemistry:** Amino acids-preparative methods, physical properties, dipolar nature, chemical reactions and configuration. **Peptides:** peptide linkage, peptide synthesis and structure of poly peptides. **Proteins:** General characteristics and secondary structure.


7. **Carbohydrates:** Characteristic reactions of aldoses and ketoses. Glucose-structure (Open and Cyclic), Fructose (only reactions), Mutarotations, Sucrose, starch and cellulose (Structureal aspects only).


**Practical**

**Practical 1: Analytical & Inorganic Chemistry Practical**

1. Beer’s Law - Determination of concentration of solution by colorimetry.
2. Chromatographic separation of metal ions.
3. Complexometric titrations: Zn$^{2+}$, Mg$^{2+}$, Ca$^{2+}$, Fe$^{2+}$ with EDTA; Hardness of water.

**Practical 2: Organic & Physical Chemistry Practical**

1. Systematic identification of organic compounds (monofunctional and bi-functional) and preparation of their derivatives.
2. Surface tension-composition curve for a binary liquid mixture.
3. Determination of indicator constant - colorimetry.
4. Determination of pH of a given solution using glass electrode.

*Note*: Experiments may be added/deleted subject to availability of time and facilities.

**Readings**


Agarwal R.C. Recent Aspects in Inorganic Chemistry, Kitab Mahal.


ZOOLEGY
ZOB-101: Systematics and Animal Diversity

Credits: 2

1. Systematics

1.1. Definition of taxonomy and relationship with systematics

1.2. Zoological nomenclature

1.2.1. Binominal

1.2.2. Trinominal

1.3. Kinds of Zoological classification

1.3.1. Components of classification

1.3.2. Linnaean hierarchy

2. Animal Diversity

2.1. Criteria for classification of multicellular animals

2.1.1. Symmetry

2.1.2. Early development: spiral and radial cleavage. Protostomes and Deuterostomes


2.1.4. Homology and analogy

2.2. Non–Chordates: General characters and classification of the following up to classes with example showing distinctive /adaptive features.

2.2.1. Protozoans

2.2.2. Poriferans

2.2.3. Cnidarians

2.2.4. Ctenophorans

2.2.5. Platyhelminthes

2.2.6. Nematodes

2.2.7. Annelids

2.2.8. Arthropods

2.2.9. Echinoderms.

2.3. Hemichordates: General characters and classification.

2.4. Chordates: General characters and classification of the following up to sub-classes with examples

2.4.1. Protochordates: Urochordates, Cephalochordates

2.4.2. Cyclostomes

2.4.3. Fishes

2.4.4. Amphibians
2.4.5. Reptiles
2.4.6. Birds
2.4.7. Mammals

ZOB-102: Animal Form and Function  

Credits: 2

1. Nutrition & Digestion
   1.1. Intracellular and extracellular digestion: food vacuole and gastrovascular cavity
   1.2. Feeding mechanisms: suspension, deposit (herbivorous) and raptorial (carnivorous)

2. Gas exchange and internal transport
   2.1. Structure and function of gills
   2.2. Structure and functions of trachea, book lungs and vertebrate lungs
   2.3. Respiratory pigments and transport of gases
   2.4. Types of circulatory systems
   2.5. Pattern of circulation in non-chordates and chordates

3. Types of excretory organs in non-chordates and chordates
   3.1. Open tubular: metanephridia
   3.2. Closed saccular: Protonephridia, Malpighian tubules and kidney

4. Nervous system
   4.1. Patterns of nervous system in non-chordates
   4.2. Organization of nervous system in mammal (Rabbit or Human): central and autonomous nervous system

5. Reproduction
   5.1. Types of asexual reproduction: fission, regeneration and parthenogenesis
   5.2. Sexual reproduction: primary and accessory sex organs
   5.3. Parental care in amphibians

Practical  

Credits: 2

Laboratory Exercises

Systematics and Animal Diversity & Animal Form and Function

Part A: Systematics and Animal Diversity

1. Identification of certain locally available fishes on the basis of their morphological characters.
2. Zoological names of some common animals.
3. Cold anesthesia in fish.
6. Fixation of fresh water Protozoans.
7. Study of transverse sections/chart of the following: Sycon (as an example of Parazoato show its structure, spicules and canal system), Hydra (as an example of diploblastic animal), Fasciola (as an example of triploblastic acelomate animal), Ascaris (as an example of triploblastic pseudocoelomate animal), Hirudinaria (as an example oftriploblastic schizocoelomate animal), Frog (as an example of triploblastic enterocoelomate animal) – by charts.
8. Study of salient features and classification up to classes of the following non-chordates with special emphasis on their adaptive characters through specimens & slides.

**Porifera:** Euplectella, Leucosolenia, Sycon

Coelenterata: Physalia, Corallium, Sea anemone, Ctenophora: Hormiphora, Platychelminthes and Aschelminthes: Taenia, Ascaris (male and female), Annelida: Nereis (including heteronereid stage), Hirudinaria, Bonellia, Mollusca and Arthropoda

Chiton, Mytilus, Octopus, Peripatus, Limulus, Eupagurus, Sacculina, Echinodermata: Asterias, Echinus, Holothuria, Ophiothrix, Antedon.

9. Salient features and classification up to Orders of the following with special emphasis on their adaptive characters through specimens.

Protochordates: Balanoglossus, Herdmania, Amphioxus

Lower vertebrates (Pisces and Amphibians) Lamprey, Trygon, Chimaera, Lung Fish, Uraeotyphlus, Ambystoma, Alytes, Hyla, Higher vertebrates: (Reptilia, Aves and Mammalia)

Chameleon, Tortoise, poisonous and non-poisonous snakes, Duck, Kiwi, Duck-billed Platypus.

**Part B: Animal Form and Function**

1. General

1.1 To study the following permanent slides.

**Protozoa:** Amoeba, Paramecium, Entamoeba histolytica, Euglena, Plasmodium, Trypanosoma, Vorticella, Giardia

Porifera: Sycon (T.S and L.S), Gemmules and spicules

Coelenterata: To study the slide of obelia colony, Platychelminthes T.S of fasciola

Nematelminthes T.S of male and female Ascaris

1.2 Permanent Mounting of following material: Spicules, Hydra, Obelia, Taenia and Parapodium

Of Nereis
2. Animal nutrition
2.1. Study and mounting of cephalic appendages of Palaeomon
2.2. Dissection of Digestive system of Paleomon.
2.3 Dissection of Periplaneta Americana to explore the Alimentary canal.
2.4 Dissection of Earthworm to explore Digestive system.

3. Nervous system, and receptors
3.1. Dissection of Nervous system of Cockroach and Earthworm.
3.2. Mounting of Statocyst of Palaeomon

4. Reproduction
4.1. Permanent preparation of gemmules of sponges
4.2. Study of the following through permanent slides/museum specimens: Conjugation in Paramecium, Miracidium Of Fasciola Hepatica, Sporocyst of Fasciola, Redia, Cercaria and Metacercaria larvae of Fasciola hepatica, Trochophore larva, Nauplius and Zoea larvae, Bipinnaria, Auricularia and Pluteus larvae, Tornaria, Ammocoetes and Tadpole (frog); Axolotl

Readings
➢ Chand, S. A Manual of Practical Zoology Invertebrates
➢ Mader. (2007). Biology (9e), W.C. Brown
➢ Purves et al. (2004). Life-the Science of Biology, (7e), Sinauer.
1. The Cell
1.1. Introduction to cell theory
1.2. Comparison of a generalized pro- and eukaryotic cell
1.3. Methods in Cell Biology: Elementary idea of microscopy and cell fractionation

2. Organization of cell
2.1. Extranuclear
2.1.1. Elementary knowledge of structure and function of plasma membrane
2.1.2. Introduction to endomembrane system (endoplasmic reticulum, Golgi complex, lysosome), peroxisome
2.1.3. Structure and functions of mitochondria

2.2. Nuclear
2.2.1. Nuclear envelope, nucleolus and biogenesis of ribosome
2.2.2. Interphase chromatin and its compaction into metaphase chromosome
2.2.3. Introduction to polytene and lamp brush chromosomes

3. Cell reproduction
3.1. Basic features of cell cycle
3.2. Mitosis, mitotic spindle and chromosome movement
3.3. Process and phases of meiosis and its significance
4. Elementary idea of cell transformation and cancer
5. Introduction to the cellular basis of immunity

ZOB-202: Biochemistry

1. General
1.1. Chemistry of living system: its scope and importance, chemical bonds and energy
1.2. Biomolecules: configuration and conformation
1.3. Properties of water as biological solvent
1.4. Introduction to metabolism

2. Amino acids
2.1. Structure and classification
2.2. Properties of peptide bond
3. Proteins
3.1 Functions and diversity
3.2 Structural organization and conformation

4. Enzymes
4.1. General properties
4.2. Major classes of enzymes
4.3. Mechanism of enzyme action (binding to substrate, lowering of energy of activation, $K_m$ and $V_{max}$)

5. Carbohydrates
5.1. Classification and nomenclature
5.2. Structure and conformation of monosaccharide
5.3. Reducing and non-reducing sugars
5.4. Oligosaccharides (disaccharides) and polysaccharides

6. Lipids
6.1. Biological significance and classification
6.2. Fatty acids
6.3. Formation of lipid bi-layer

7. Nucleic acids
7.1. Bases, nucleosides and nucleotides
7.2. DNA structure: DNA double helix (Watson and Crick model)
7.3. DNA and RNA as genetic material
7.4. DNA replication
7.4.1. Semi-conservative replication
7.4.2. Basic mechanism of replication (Prokaryotes)
7.5. Types of RNA

Practical

Part- A: Cell Biology
1. Drawing of ultra structure of cell and different organelles (from photographs provided)
2. Familiarization with the student’s light microscope and stereo binocular microscope
3. Basic concept of stains and staining techniques.
4. Application of centrifuge – separation of sperm from other testicular cells by low speed centrifugation
5. Diversity of eukaryotic cells – methylene blue staining of buccal epithelium, Leishman staining of mammalian blood cells
6. Permeability of plasma membrane – effect of isotonic, hypotonic and hypertonic solutions on mammalian RBC
7. Staining of mitochondria with Janus green in buccal epithelium
8. Study of various stages of mitosis and meiosis from permanent stained slides.
10. Study of permanent stained slide of giant chromosome and Barr body.

Part- B: Biochemistry
1. Preparation of models of amino acids and dipeptides
2. Ninhydrin test for α-amino acids
3. To demonstrate catalase activity and its inactivation by heat
4. Benedict’s test for reducing sugars
5. Iodine test for starch
7. Determination of acid value of oil
8. Preparation of models of nitrogenous bases, nucleosides and nucleotides

Readings

- Cooper & Hausman. The Cell.
SEMESTER – III

ZOB-301: Comparative Physiology and Developmental Biology  Credits: 2

1. Respiration
   1.1. Types of respiration (cutaneous, branchial, tracheal and pulmonary)
   1.2. Respiratory pigments

2. Circulation
   2.1. Composition of blood
   2.2. Functions of blood

3. Nutrition and Digestion
   3.1. Mechanical and chemical digestion
   3.2. Basic concept of absorption

4. Excretion: Mode of excretion of nitrogenous wastes: ammonotelism, ureotelism, uricotelism and guanotelism

5. Movements.
   5.1. Ameboid, ciliary, flagellar and muscular.
   5.2. Basic concept of contractile proteins

6. Neuronal transmission
   6.1. Structure and type of neurons
   6.2. Membrane potential and nature of nerve impulse

7. Environmental adaptations
   7.1. Basic concept of thermal adaptation in poikilotherms and homeotherms
   7.2. Osmoregulation in marine, fresh water and terrestrial animals

8. Developmental Biology
   8.1. Historical perspective, aim and scope of developmental biology
   8.2. Gametogenesis
      8.2.1. Spermatogenesis
      8.2.2. Oogenesis
   8.3. Events in external and internal fertilization
   8.4. Types of cleavage and fate map
   8.5. Gastrulation in frog and chick up to the formation of three germ layers
   8.6. Primary organizer in frog
   8.7. Extra embryonic membranes in chick
   8.8. Concept of regeneration
1. **Introduction to Endocrinology**
   1.1. Definition and classification of hormones
   1.2. Endocrine, paracrine and autocrine modes of hormone delivery
   1.3. Feedback mechanisms

2. **Structure and functions of endocrine glands in mammals**
   2.1. Pituitary
   2.2. Thyroid
   2.3. Parathyroid
   2.4. Adrenal
   2.5. Endocrine pancreas
   2.6. Testis
   2.7. Ovary

3. **Endocrine glands in insects**
   3.1. The Pars Intercesalialis-corpus cardiacum-corpus allatum complex
   3.2. Prothoracic gland

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**Practical for Semester III**

**Comparative Physiology, Developmental Biology and Endocrinology.**

**Part-A : Comparative Physiology.**

1. Preparation of haemin crystals.
2. To study the effect of acid and alkali on the blood.
3. To Determine the clotting time of the blood.
4. Observation of slide of striated and non-striated muscles.
5. To demonstrate activity of salivary amylase and effect of acid and heat on its activity
6. Semi-quantitative test for detection of glucose by Benedict’s method
7. Determination of presence of protein in a sample
8. Determination of a lipid in a sample.
9. To demonstrate knee-jerk reflex.
10. To demonstrate existence of blind spot of eye.

**Part-B: Developmental Biology and Endocrinology.**

1. Study of different types of eggs
2. Study of eggs and tadpoles of frog from collected/preserved material
3. Study of frog development through models

4. Frog- Study of whole embryo of the stages-blastula, gastrula, neurula, tail bud stage, tadpole, external and internal gill stages.

5. Examination of slides of testis/ovary of mammals.


7. Handling, sexing, numbering and maintenance of rat

8. General survey of endocrine glands in Rat.

9. Study of histological slides of the following endocrine glands in rat: Pituitary, thyroid, adrenal, endocrine pancreas, testis and ovary

10. Demonstration of Endocrine Glands in cockroach.

Readings

1. Concept of organic evolution
2. Evidence of Organic evolution from
   2.1. Comparative anatomy
   2.2. Comparative embryology
   2.3. Palaeontology
   2.4. Biochemistry and Genetics
   2.5. Zoogeography
3. Theories of organic evolution
   3.1. Lamarckism
   3.2. Darwinism
   3.3. Development and concept of synthetic theory
   3.4. Natural selection in action (industrial melanism, antibiotic and DDT resistance)
4. Evolution of man
5. Concepts and patterns of behaviour
6. Instinct and learning
   6.1. Innate behaviour
   6.2. Learned behaviour and types of learning
7. Genetic basis of behaviour
8. Control of behaviour
   8.1. Neural control
   8.2. Hormonal control
9. Social organization
   9.1. Communication
   9.2. Living in groups
   9.3. Evolution of sociality: eusocial organisation
10. Biological rhythms
1. **Elements of heredity and variation**

1.1. Mendel and his experiments

1.2. Principles of segregation and independent assortment and their chromosomal basis

1.3. Test cross

1.4. Application of laws of probability to Mendelian inheritance

2. **Extension of Mendelism**

2.1. Dominance relationships (complete dominance, incomplete dominance and co-dominance)

2.2. Multiple allelism

2.3. Lethal alleles

2.4. Pleiotropy

2.5. Epistasis

2.6. Penetrence and expressivity

2.7. Polygenic inheritance

3. **Cytoplasmic and infective inheritance**

4. **Linkage**

4.1. Linkage and crossing over

4.2. Cytological demonstration of crossing over in *Drosophila*

5. **Sex chromosomes and sex-linkage**

5.1. Sex chromosome systems: XX/XO, XX/XY, ZZ/ZW and haploid/diploid types

5.2. Sex Linked inheritance: Haemophilia and colour blindness in man.

6. **Basic concept of Mutation**: Chromosomal Mutation, Deletion, Duplication, Inversion Translocation Aneuploidy and polyploidy.

7. **Human Genetics**

7.1. Human Karyotype and banding.

7.2. Genetic disorders

7.2.1 Chromosomal aneuploidy (Down, Turner and Klinefelter syndromes)

7.2.2 Chromosome translocation (chronic myeloid leukemia) and deletion (“cry of cat” syndrome)

7.2.3 Gene mutation (cystic fibrosis)

7.3. Genetic counseling

8. **Introduction to applications of genetic engineering**

8.1. Molecular diagnosis of genetic disorders and gene therapy

8.2. Crop and livestock improvement
Part-A: Genetics
1. Application of probability in the law of segregation with coin tossing
2. Frequency of the following genetic traits in human: widow’s peak, attached ear lobe, dimple in chin, , colour blindness, PTC tasting
3. Study of mode of inheritance of the following traits by pedigree charts – attached ear lobe, widow’s peak.
4. To study the genetic exercises based upon Dominance and Recessive relationship, Incomplete dominance and law of Independent assortment.
5. To study the genetic exercises based upon Interaction of genes, Multiple alleles and sex linked inheritance.
6. Familiarization with techniques of handling Drosophila, identifying males and females; observing wild type and mutant (white eye, wing less) flies.
7. Demonstration of sex-linked inheritance in Drosophila making a cross between white eye and wild type flies (criss-cross inheritance).
8. Preparation of temporary mount of stained onion root tip by squash method to study stages of mitosis.
10. Study of permanent stained slides of giant chromosomes and Barr body

Part- B: Evolution and Animal Behaviour.
1. Adaptive modifications in feet of birds and mouth parts of insects (from slides)
2. Embryological evidence of evolution (through charts) Phylogeny of horse and study of Darwin finches.
3. Analogy and homology (wings of birds and insects, forelimbs of bat and rabbit)
4. Serial homology in appendages of Palaemon.
5. Habituation in earthworms/mosquito larvae.
7. Locomotory behaviour of dipteran Larvae (Housefly/blowfly/fruitfly):
   7.1 Locomotion on different types of substrata (writing paper, plastic sheet and sand paper
   7.2 Effects of light intensity and light quality on the rate of locomotion.
8. Study of individual and social behavioural patterns of a troop of monkey
9. Social organization and Dominance in Rhesus and Langurs.
10. Study of interspecific association between cattle and egrets
11. Visit to a Natural history museum or fossil park and submission of visit report.

Readings

➢ Brooker.(1999). Genetics, Addison-Wesley.
➢ Gardner et al. Principles of Genetics (8e), John Willey and sons.
Z0B-501: Functional Anatomy and
Economic Importance of Non-Chordates

1. Protozoa
1.1. Study of *Euglena* and *Monocystis* (locomotion, nutrition and reproduction)
1.2. Parasitic protozoans of man: *Entamoeba*, *Trypanosoma* (diagnostic characters, mode of infection and diseases caused)

2. Porifera
2.1. Study of *Leucosolenia* and *Sycon* (structure, skeleton and canal system)
2.2. Sponge culture and its importance in industry and commerce

3. Cnidaria
3.1. Study of *Obelia* and *Aurelia* (structure and reproduction)
3.2. Coral reefs and coral in commerce and industry

4. Platyhelminthes
4.1. *Fasciola* and *Taenia*: structure, reproduction, life-cycle and parasitic adaptations

5. Nematelminthes
5.1. *Ascaris*: structure, reproduction and life-cycle
5.2. Nematode parasites of man: *Ascaris*, *Ancylostoma* and *Wuchereria*: diagnostic characters, mode of infection and diseases caused.

6. Annelida
6.1. *Nereis*: structure with special reference to reproduction
6.2. Earthworms and soil improvement

7. Arthropoda
7.1. *Palaeomon*: structure with special reference to reproduction
7.2. Zoological importance of *Limulus*

8. Mollusca
8.2. Torsion and detorsion in gastropods
8.3. Utility of mollusks in food and ornaments.
8.4. Pearl culture
9. Echinodermata
9.1. Asterias: structure with special reference to water vascular system
9.2. Larval forms of Echinoderms and their significance

ZOB-502: Functional Anatomy and
Economic Importance of Chordates

1. Origin of vertebrates
2. Integument and its derivatives
   2.1. Structure of integument
   2.2. Scales, feathers, hair, beaks, nails hoofs, horns, glands
3. Skeletal system
   3.1 Axial skeleton of human: Hyoid bone, Vertebral column and Thorax
4. Digestive system
   4.1. Stomach, its modifications in relation to feeding habits
      4.1.1. Length and surface area
      4.1.2. Internal folds
   4.2. Oesophagus
   4.3. Stomach its modification in ruminant mammals
   4.4. Dentition
   4.5. Dental formula in mammals
5. Respiratory system
   5.1. Aquatic respiration
   5.2. Aerial respiration
6. Circulatory system
   6.1. Aortic arches
   6.2. Lymphatic system
7. Nervous system
   7.1. Evolution of cerebral hemispheres and cerebellum
   7.2. Chemoreceptors
8. Urinogenital system
   8.1 Excretory system
      8.1.1 Types and evolution of kidney tubules
      8.1.2 Urinary duct and bladder
   8.2. Reproductive system
      8.2.1 General plan of gonads (mammals)
      8.2.2 Accessory reproductive organs (mammals)
9. Economic importance

9.1. Fish industry and economy.
9.1.1 Fish preservation
9.1.2 Fish by-products
9.2. Amphibians as biological control agent
9.3. Snake venom, its uses and antivenin production

Practical

Part-A : Functional anatomy and economic importance of non-chordates.

1. Protozoa
1.1. Survey of pond water for study of free living Protozoans
1.2. Culturing of Paramecium and Euglena and observation of their locomotion

2. Porifera
2.1. Study of canal systems (asconoid, syconoid, leuconoid) from prepared slides and models
2.2 Mounting of spicules
2.3. Study of the following museum specimens: Leucosolenia, Sycon, Euplectella, Hyalonema,
Spongilla, Cliona, Euspongia,

3. Cnidaria
3.1. Study of the following through prepared slides: T.S. of Hydra through ovary and testis,
Scyphistoma and Ephyra.
3.2. Study of the following museum specimens: Physalia, Porpita, Vellala, Aurelia, Tubipora,
Corallium, Gorgonia, Pennatula, Metridium, Fungia, Millepora.
3.3. Study of coral and coral reefs from chart and specimen
3.4 Permanent stained preparation Obelia and Hydra.

4. Ctenophora
4.1. Study of the following museum specimens: Hormiphora, Pleurobranchia, Beroe

5. Platyhelminthes
5.1. Study of the following from slides/specimen: Dugesia, Polystoma, Schistosoma,
Echinococcus,
Fasciola, Taenia, Miracidium, sporocyst, redia, cercaria, metacercaria, Hexacanth bladder worm

6. Nemathelminthes
6.1. Study of the following from slide specimen: Ascaris (male and female) T.S. of Ascaris,
Wuchereria, Ancylostoma and Enterobius.
7. Annelida
7.1. Leech and Earthworm.
7.1.1 External features
7.1.2 Dissections: Digestive, urinogenital and nervous systems
7.1.3 Mounting of jaws and salivary glands
7.2. Nereis: Permanent stained preparation of parapodium
7.3. Study of the following museum specimens/slides: Nereis, Aphrodite, Arenicola, Sabella, Acanthobdella, Branchellion, Bonellia
7.4. Trochophore Larva, T.S. of Leech through crop sac

8. Arthropoda
8.1. Scorpion
8.1.1 External features
8.1.2. Dissections: Digestive and nervous system (cockroach and scorpion)
8.1.3. Permanent preparation of book – lungs
8.2. Study of the following museum specimens/slides: Daphnia, Cypris, Cyclops (male and female), Lepas, Balanus, Cancer, Julus, Scolopendra, Peripatus, Limulus Lepisma, Cricket, beetle, grasshopper, termite, Apis, wasp, butterfly, moth.
8.3. Study of the following larval forms from slides: Nauplius, Zoea and Megalopa.
8.4. Study of life cycle of silk worm from chart and model/specimen
8.5. Study of prawn culture from chart/model.

9. Mollusca
9.1. Unio
9.1.1 Dissection of nervous system
9.1.2 Stained preparation of gill lamella
9.2. Study of the following museum specimens: Chiton, Cyprea, Patella, Aplysia, Doris, Vaginula, Achatina, Dentalium, Mytilus, Pecten, Teredo, Solen, Sepia, Loligo, Octopus.
9.3. Study of pearl formation and its culture from chart/model

10. Echinodermata
10.1 Study of the following museum specimen: Star fish, brittle star, sea urchin, sea cucumber, sea lily
10.2 Study of the following larval form from slides: Bipinnaria, Brachiolaria, Auricularia, Ophiopluteus and Echinopluteus.
Part-B: Functional anatomy and economic importance of Chordates.

1. Lower chordates (specimen):

Branchiostoma, Balanoglossus, Herdmania. Slides: Section of Branchiostoma with Pharynx and Intestine, Amphioxus section through Pharyngeal, intestinal and caudal region


3. Amphibians (specimen) Salamander, Triton, Necturus, Rana tigrina, toad, Bufo, Hyla, Rachophorus. Axotol larva

4. Reptilia (specimen): Testudo, Draco and Chamaeleon

5. Aves (specimen) Vulture, koel, owl, woodpecker, ostrich, parrot, pigeon, crow.


7. Osteology

a) To study the disarticulated skeleton of Rabbit and frog.

b) To study the human bones through disarticulated human skeleton.

9. Visit to fish culture farm or Aquarium/Zoological Park and submission of field report.

Readings

➢ Barnes.(2001). The invertebrate (3e), Blackwell.
➢ Nelson.(1967). Invertebrate Structure and Function, Barrington..
➢ Romer & Parsons.(1986). The vertebrate Body (6e), Saunders.
ZOB-601: Biochemistry

1. Proteins
   1.1. Amino acids: Ionization, titration curve, pK and pI
   1.2. Reactions involving α amino group (Sanger and Edman’s reactions)
   1.3. Primary structure and general properties of amino acids.

2. Enzymes
   2.1. Kinetics (determination of Km and Vmax using Michaelis-Menten and Lineweaver-Burk plots)
   2.2. Concept of regulation of enzyme activity (inhibition, allosterism and effects of temperature and pH)
   2.3. Introduction to ribozymes and abzymes

3. Carbohydrates
   3.1. Structural polysaccharides
   3.1.1. Homopolymers (cellulose and chitin)
   3.1.2. Heteropolymers (peptidoglycans and glycosaminoglycans)
   3.2. Carbohydrate metabolism.
   3.2.1. Glycolysis
   3.2.2. Krebs cycle
   3.2.3. Electron transport chain and ATP synthesis

4. Lipids:
   4.1. Structural and functional significance of triglycerides, phospholipids, cholesterol and prostaglandins

5. Nucleic acids
   5.1. Conformation of DNA (A, B and Z)
   5.2. Mechanism of DNA replication
   5.3. RNA
   5.4. Mechanism of transcription and Processing of hnRNA
   5.5. Mechanism of translation
6. Genetic engineering
6.1. Tools: Restriction enzymes, vectors
6.2. Construction of recombinant DNA

ZOB-602: Mammalian Physiology

Credits: 2

1. Respiration
   1.1. Mechanism and regulation of breathing
   1.2. Transport of oxygen and carbon dioxide
   1.3. Respiratory quotient

2. Circulation
   2.1. Buffer system in blood
   2.2 Blood groups
   2.3. Cardiac cycle and its regulation
   2.4. Haemostasis

3. Nutrition and Digestion
   3.1. Balanced diet
   3.2. Digestion and absorption of carbohydrates, proteins and fats

4. Excretion
   4.1. Nephron
   4.2. Urine formation
   4.3. Hormonal control of renal function

5. Nervous System
   5.1. Myelinated and non-myelinated nerve fibres
   5.2. Resting and action potential
   5.3. Initiation and conduction of nerve impulse
   5.4 Types of synapses and chemical transmission

6. Muscles
   6.1. Types and functional diversity
   6.2. Ultrastructure of skeletal muscle
   6.3. Muscle proteins
       6.4. Chemistry of muscle contraction
   6.5. Elementary knowledge of muscle twitch, tetanus and fatigue, isotonic and isometric contractions
Part-A : Biochemistry
1. Determination of pK and pI values of glycine
2. Identification of amino acids in the mixture using Paper chromatography
3. Estimation of protein by Biuret method
4. To test the urine for urea, Proteins, ketones and sugar.
5. Qualitative analysis (colour test) for detection of carbohydrate, lipids and proteins.
6. Isolation of Milk protein
7. To study the effect of inhibitors on salivary amylase.

Part-B : Mammalian Physiology
1. To observe the coagulation of blood.
2. Counting of red blood corpuscles
3. Counting of white blood corpuscles
4. To Determine the Blood Group and Rh factor of man.
5. Determination of haemoglobin content in human blood.
6. Measurement of blood pressure using sphygmomanometer
7. Determination of oxygen consumption (cockroach)
8. To study the permanent histological slides of spinal cord, duodenum, liver, lung, kidney, bone, cartilage, testis, ovary, artery, vein, stomach, intestine, spleen.
9. To demonstrate the process of osmosis.
10. Physiology lab attachment programme.

Readings

I. Reproductive health:
Infertility in male and females: causes, diagnosis and management, assisted reproductive technology: sex selection, sperm bank, frozen embryo, in vitro fertilization, EFT, ZIFT, GIFT, PROST, modern contraceptive technology.

2. Non infectious diseases:
Causes, types, symptoms, complication diagnosis and prevention of Diabetes (Type I and Type II) Hypertension (Primary & secondary)

3. Infectious diseases
Causes types symptoms, diagnosis and prevention of Tuberculosis and hepatitis

4. Tumours
Types (benign/malignant) detection and metastasis
Medical imaging: X-ray of bone fracture, MRI and CT scan (using photograph)

5. Wild Life
Concept and importance of wild life as a resource, concept of habitat, niche biodiversity and bioindicators
Endocrinology
1. Classification of chemical messengers
   1.1. Hormones
   1.2. Neurohormones and neurotransmitters
   1.3. Pheromones
2. General mechanism of hormone action
3. Hypothalamo-hypophysial system
   3.1. Structure of the hypothalamo-hypophysial system
   3.2. Neurohypophysial hormones – oxytocin and vasopressin
   3.3. Hormones of the adenohypophysis
   3.4. Hypothalamic control of adenohypophysis
4. Biological actions and regulation of secretion of hormones of following glands
   4.1. Thyroid
   4.2. Adrenal
   4.3. Endocrine pancreas
   4.4. Testis
   4.5. Ovary
5. Gastrointestinal hormones (gastrin, CCK, secretin and motilin)
6. Hormonal dysfunctions and diseases
   6.1. Dwarfism and acromegaly
   6.2. Goiter
   6.3. Addison’s disease
   6.4. Diabetes mellitus
Developmental Biology
7. Mechanism of fertilization
8. Growth and differentiation: Measurement of growth, growth controlling, promoting and arresting factors, differentiation of germ layers (development of CNS and eyes), skin, notochord, somites, coelom and digestive tube (upto rudiments only)
9. Cleavage, gastrulation and fate map
   9.1. Comparison of cleavage in frog and chick
   9.2. Comparison of fate map of sea frog and chick
   9.3. Comparison of gastrulation in frog and chick
10. Mechanism of metamorphosis in frog
11. Development and functions of placenta in mammals
12. Embryonic stem cells

ZOB-802: Immunology & Microbiology

Immunology and Microbiology.
1. Introduction to immunity
2. Cells and organs of immune system
   2.1. Types of immune cells: lymphoid and myeloid
   2.2. Primary and secondary lymphoid organs and lymphatic system
3. Humoral immunity
   3.1. Antigen
   3.2. Immunoglobulins: types, structure and function
   3.4. Complement system
4. Cell mediated immunity
   4.1. Structural organization of MHC complex
   4.2. Antigen processing and presentation
   4.3. Functions of T-cells
5. Introduction to immunological disorders
6. Introduction of Microbiology
7. Microbial diversity
   7.1. Viruses
   7.2. Archaea
   7.3. Bacteria
   7.4. Eukaryotic microorganisms
8. Techniques in microbiology
   8.1. Culture and growth of microorganisms
   8.2. Classification of bacteria based on staining of microbes
9. Host-parasite relationship
   9.1. Beneficial and harmful interactions of microbes with human
   9.2. Virulence factors and toxins
10. Applied microbiology
    10.1. Useful microbial products: antibiotics, amino acids, bioinsecticides and biopolymers
    10.2. Biodegradation

Credits: 3
1. Environmental Biology General concepts
   1.1. Introduction to environmental biology
   1.2. Major ecosystems of the world
   1.3. Energy flow in ecosystem Productivity, food chain and food web
2. Populations and communities
   2.1 Population characteristics: density, natality, mortality and growth curve
   2.2. Nature, structure and attributes of biological communities
3. Pollution
   3.1 Sources and impact of environmental pollutants – air, water and soil Global environmental changes – greenhouse gases and their effects
4. Natural resources
   4.1. Soil, water, mineral resources and their conservation
   4.2. Biodiversity – benefits, hotspots, threats and conservation
   4.3. Human impact on natural resources
5. Biotechniques: Principles and uses of analytical instruments
   5.1. pH meter
   5.2. UV-visible spectrophotometer
   5.3. Centrifuges (clinical, high-speed and ultra-centrifuge)
6. Microtomy and Microscopy
   6.1. Tissue preparation
   6.1.1. Fixation
   6.1.2. Block preparation
   6.1.3. Microtomy (paraffin and frozen tissue sectioning)
   6.2. Types of Microscopes
   6.2.1. Bright field
   6.2.2. Dark-field
   6.2.3. Phase contrast
   6.2.4. Fluorescence
   6.2.5. Scanning and transmission electron microscopes
7. Cell and tissue culture techniques
   7.1. Culture media
   7.2. Sterilization: room, media and glasswares
   7.3. Types of animal cell culture.
7.4. Cell viability testing
7.5. Cryopreservation

8. Separation techniques
8.1. Chromatography
8.2. Electrophoresis

ZOB-804: Cell Biology, Genetics and Evolution  

1. Membrane transport
1.1. Principles of membrane transport, Channel proteins, carrier proteins
1.2. Passive and active transport

2. Intracellular transport and protein sorting
2.1. Signal peptides and protein targeting
2.2. Entry and passage of proteins through endoplasmic reticulum
2.3. Processing and sorting of proteins in Golgi Apparatus
2.4. Endosomes and lysosomes

3. Mitochondria and energy transfer
3.1. Mitochondria: origin, structure and functions
3.2. Electron transport and oxidative phosphorylation

4. Cell-cell communication:
4.2. Cell adhesion and extracellular matrix.
4.3. General principles of cell signalling.

5. Cell proliferation
5.1. Events in different phases of cell cycle.
5.2. Genetic regulation of cell proliferation
5.3. Cell transformation and malignancy
5.4. Genetic basis of tumourigenesis

6. Gene mapping
6.1. Point test cross in Drosophila
6.2. Tetrad analysis in Neurospora
6.3. Elementary knowledge of modes of recombination in bacteria

7. Mutation and mutagenesis
7.1. Molecular basis of mutation
7.2. Spontaneous and induced mutations
7.3. DNA Damage and repair
8. Genetic determination of sex
   8.1. *Drosophila*
   8.2. Human

9. Introduction to quantitative inheritance

10. Human genetic disorders
   10.1. Metabolic (Phenylketonuria)
   10.2. Triplet repeat expansion (Huntington)
   10.3. Multifactorial (Diabetes mellitus)

11. Transgenic animals: strategies and applications

12. Evolution through ages
   12.1. Fossils and dating of fossils
   12.2. Geological column
   12.3. Evolution of horse

13. Process of evolution
   13.1. Genetic variations in population
   13.2. Hardy-Weinberg Equilibrium
   13.3. Evolutionary forces
   13.4. Isolating mechanisms
   13.5. Speciation: Allopatric and sympatric
   13.6. Adaptive colouration and mimicry

**Practical**

**Part-A : Endocrinology and Developmental Biology & Cell Biology, Genetics and Evolution.**
1. Survey of endocrine glands and accessory sex organ.
2. Surgical Techniques
   2.1 Ovariectomy
   2.2. Orchidectomy
   2.3. Adrenalectomy
3. Study of effects of orchidectomy/ovariectomy and replacement therapy on the seminal vesicle/uterus
4. Study of histological slides of the following:
   4.1. Pituitary
   4.2. Thyroid
   4.3. Endocrine pancreas
4.4. Adrenal
4.5. Testis
4.6. Ovary
4.7. Uterus
4.8. Seminal vesicle

5. Frog embryology
  5.1 Collection of spawn and identification of stages
  5.2 Study of developmental stages

6. Demonstration of early developmental stages of a freshwater snail

7. Study of whole mounts of chick embryos of 4 hours of incubation, 16 hours, 18 hours, 24 hours, 28 hours, 33 hours, 36 hours, 43 hours, 55 hours, 72 hours, 96 hours, six days chick embryo (W.M) Twelve day chick embryo, Eighteen day chick embryo and Twenty one day chick embryo

8. Study of development of chick embryo from permanent slides of sections through following regions
  8.1 T.S of 24 hours chick embryo through the head region and mid body region.
  8.2 T.S of the 28 hours chick embryo through the pericardial region.
  8.3 T.S of the 33 hours chick embryo through mid brain region.
  8.4 T.S of 48 hours chick embryo through brain and optic vesicles.
  8.5 T.S of 48 hours chick embryo through Auditory vesicles.
  8.6 T.S of 48 hours chick embryo through heart.
  8.7 T.S of 72 hours chick embryo through brain and eye.
  8.8 T.S of 72 hours chick embryo through pharynx.
  8.9 T.S of 72 hours chick embryo through Auditory vesicles.


10. Visit to poultry farm or animal breeding Centre and submission of the visit Report.

11. Identification of study of cancer cells from slides and photomicrograph

12. Study of stages of mitosis and meiosis from permanent slides

13. Simulation of principles of segregation and independent assortment using coloured beads.


15. Mono and dihybrid crosses in Drosophila.


17. Study of pattern of inheritance in human population of the traits Rolling of tongue and interlocking, and of the sex-influenced trait long vs short second finger in relation to the fourth finger (apply Hardy-Weinberg law).
18. To study the sex linked inheritance
   a) Colour blindness b) Haemophilia.
19. Genotype analysis in the pedigree chart of the Victorian family affected with haemophilia
20. Preparation of flow charts to depict steps involved in the following:
   20.1. Production of transgenic mouse for a chosen gene
   20.2. Gene therapy for a chosen human disease
21. Genotypic analysis of blood groups in human population to estimate allele frequencies by Hardy–Weinberg equation
22. Study of human karyotypes Normal and abnormal.

**Part-B: Immunology, & Microbiology and Environmental Biology & Biotechniques**

1. Demonstration of lymphoid organs.
2. Histological study of spleen, thymus and lymph nodes through slides/Photographs.
3. ABO Blood group determination.
4. Preparation of culture media, sterilization
5. Culturing methods (bacterial plating, making stab, slant and growing liquid culture)
6. Gram staining
7. Methylene blue reductase staining
8. To estimate the dissolved oxygen (D.O.) content of given water sample by Winkler Method.
9. Estimation of grasshopper population density by capture-recapture method
10. Estimation of percent frequency, abundance and dominance of producers and consumers in grassland by quadrat sampling method
11. Determination of carbonate and nitrate in soil samples
12. Determination of free CO2 in different samples of pond water
13. To record the atmospheric temperature, Relative humidity and atmospheric pressure.
14. To study the physical characteristics (texture, colour and temperature) of the soil.
15. To estimate the alkalinity of given sample of water.
16. To study the chemical characteristics (like pH, moisture, carbonate content & nitrate content of soil.
17. Qualitative study of plankton in the sample of fresh water.
18. Visit to local/out station national park/zoo logical park to study the management and estimation of wild animals and submission of project/field report.
19. To measure the total hardness of given sample of water and to estimate the pH of water sample by pH meter.
20. Preparation of a buffer and determination of pH using pH meter
21. Demonstration of functioning of spectrophotometer
22. Demonstration of use of bright field, phase contrast, dark field, fluorescence, confocal and electron microscopes
23. Tissue fixation, paraffin block preparation, sectioning and stained slide preparation

Readings

- Balinsky.(1981). An Introduction to Embryology, CBS.
- Gilbert.(2006). Developmental Biology (8e), Sinauer.
- Hadley.(2000). Endocrinology (5e), Prentice Hall.
- Lewin.(2008). Genes IX.
- Roitt & Delvis: Roitt’s Essential Immunology (6e), Blackwell.
- Russell.(2002). Genetics, Benjamin Cummings.
- Turner & Bagnara: General Endocrinology (6e), Saunders.
SEMESTER – I

BOB101: Cryptogams-I

Credits: 2

General classification of Cryptogams; study of structure, reproduction and life history of the following representative forms included in various groups.
1. Main characteristics of Chlorophyceae, Xanthophyceae, Phaeophyceae, Rhodophyceae and Cyanophyceae.
3. Xanthophyceae: Vaucheria.
5. Rhodophyceae: Polysiphonia.
7. General characteristics of Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina and Deuteromycotina.

BOB102: Cryptogams-II

Credits: 2

1. Zygomycotina: Rhizopus.
5. General characteristics of Hepaticopsida, Anthocerotopsida and Bryopsida.

Practical

Credits: 2

Lab. work based on Course BOB101 and BOB 102

Readings

SEMESTER – II

BOB201: Microbiology & Plant Pathology  
Credits: 2

1. History and scope of Microbiology.
2. Position of microorganisms in the living world; morphological, metabolic and molecular criteria for the classification of bacteria (scheme not required).
3. Structure of a bacterial cell: capsule and slime, flagella, cell wall, cell membrane, chromosome, plasmid and endospore.
4. Structure of bacteriophages belonging to 'T' series.
5. Lysogenic and lytic cycles.
6. A brief account of genetic recombination in bacteria (transformation, conjugation and transduction).
7. Role of microorganisms in cycling of carbon and nitrogen.
8. Microorganisms and the production of alcoholic beverages, antibiotics and single cell protein.
9. General symptoms of viral, bacterial and fungal diseases of plants.
10. The study of the following plant diseases: Tobacco mosaic, citrus canker, late blight of potato, powdery mildew of pea, loose smut of wheat, covered smut of barley and wilt of pigeon pea.

BOB202: Cytology and Genetics  
Credits: 2

1. Ultrastructure of plant cell: Nucleus, cytoskeleton.
3. Basic tenets of Cytogenetics: Terminologies: Cytology, genetics, cytogenetics, cell and cell theory, germplasm theory, genotype-phenotype concept.
5. Interaction of genes: intragenic and intergenic interactions, Incomplete dominance, Lethal Genes, Complementary Genes, Supplementary Genes, Inhibitory Genes, Duplicate Genes, Epistatic Genes.
6. Linkage and crossing over: Interrelationships and importance, crossing over and meiosis, cytological basis of crossing over, crossing over and linkage maps, linkage groups, interference.
7. Sex determination: Bases of sex determination, chromosome theory of sex determination, sex determination in plants.

Practical  
Credits: 2

Lab. work based on Course BOB201 and BOB202
Readings

SEMESTER – III

BOB301: Phanerogams-I

1. Gymnosperms:
   - Classification (Sporate).
   - Morphology, anatomy, reproduction and economic importance of: Cycas, Pinus, Ephedra.

2. Angiosperms:
   Taxonomy
   - Bentham and Hooker's system of classification: Principles, outline, merits and demerits.
   - Distinguishing characteristics of the following families and their economic importance: Ranunculaceae, Papaveraceae, Rosaceae, Myrtaceae, Apiaceae, Cucurbitaceae, Rubiaceae, Asclepiadaceae, Apocynaceae, Acanthaceae, Solanaceae, Lamiaceae, Amaranthaceae, Poaceae.
   - Brief account of Plant collection and herbarium techniques and important herbaria of world.

BOB-302 Phanerogams II

1. Anatomy of stems and roots with special reference to plants showing anomalies:
   Stem: Nyctanthes, Bignonia, Strychnos, Boerhaavia, Laptadenia, Dracaena, and root: Vanda.

2. Embryology - General Account
   - Microsporangium and Microsporogenesis.
   - Megasporangium and Megasporogenesis.
   - Male gametophyte.
   - Female gametophyte (monosporic, bisporic and tetrasporic embryosac).
   - Double fertilization.
   - Endosperm (Different modes of development, functions of endosperm).
   - Embryogeny: (Classification, development of any typical dicot and monocot embryo).

Practical

Lab. work based on Course BOB301 and BOB302

Credits: 2
Readings

SEMESTER – IV

BOB401: Ecology  
Credits: 2

1. Introduction to ecology.
2. Environment: Abiotic and biotic environment; plant adaptations in response to water, temperature and light.
4. Community ecology: Community characteristics; frequency, density, cover.
5. IVI: life forms and biological spectrum.
6. Ecosystem ecology: Ecosystem structure (abiotic and biotic components, food chain, food web, ecological pyramids); ecosystem function (energy flow, biogeochemical cycles of carbon and phosphorus).
7. Ecological succession: Types and pattern.
8. Biogeographical regions of India.

BOB402: Plant Physiology & Biochemistry  
Credits: 2

9. Enzymes: Classification, nomenclature, mechanism of action (binding to substrate, lowering of activation energy), factors controlling enzyme activity.

Practical  
Credits: 2

Lab. work based on Course BOB401 and BOB402
Readings

SEMESTER – V

BOB501: Cryptogams – III Credits: 2

1. Classification (Fritsch's system) of algae and general characteristics of major classes.
2. Pigmentation and storage products.
3. Thallus organization and evolutionary tendencies.
5. Economic importance of algae.
7. Structure, reproduction and life cycle of representative classes of fungi.
8. Types of fungal spores and mode of their liberation.

BOB502: Cryptogams – IV Credits: 2

1. Economic importance of fungi.
2. General features and classification of Bryophyta (Smith's system).
3. Life histories of bryophytes with reference to Cyathodium, Pellia, Notothylus, Sphagnum and Polytrichum.
5. General features and contemporary system of classification of Pteridophyta.
7. Evolutionary tendencies in sporangia.
8. Life histories of Psilotum, Isoetes, Adiantum, Ophioglossum, Marselia.

Practical Credits: 2
Lab. work based on Course BOB401 and 402

Readings

SEMESTER – VI

BOB601: Phanerogams III \hspace{1cm} Credits: 2

1. Classification of Gymnosperms and general account of morphology and reproduction of the following: Cycadales (Zamia), Ginkgoales (Ginkgo), Coniferales (Biota) and Gnetales (Gnetum).
2. General account of Williamsonia and Pentaxylon.
4. Distribution of living Gymnosperms in India.
5. Economic importance of Gymnosperm.

BOB602: Phanerogams IV \hspace{1cm} Credits: 2

1. Classification of Angiosperms (Takhtajan) and general account of numerical and chemotaxonomy.
2. Distinguishing characters of the following families and their economic importance: Annonaceae, Rutaceae, Meliaceae, Asteraceae, Convolvulaceae, Scrophulariaceae, Verbenaceae, Polygonaceae, Euphorbiaceae, Moraceae, Zingiberaceae, Liliaceae, Cyperaceae.
3. Embryology: General account of polyembryony, apomixis and experimental embryology with reference to another, embryoculture.

Practical \hspace{1cm} Credits: 2

Lab work based on BOB 601 and BOB602

Readings

SEMESTER – VII

BOB701: Environmental Toxicology  
Credits: 2

1. Water Pollution: Sources, impact of pollution on aquatic ecosystems, eutrophication of water bodies.
2. Air Pollution: Sources, impact of air pollution on plants; acid rain, causes and effects.
3. Soil Pollution: Sources, impact on plants and ecosystems.
5. Ecotoxicology: Concept of toxicity; role of ecological factors in modifying toxicity, biomagnifications.

SEMESTER – VIII

BOB801: Plant Ecology  
Credits: 3

1. Population: Patterns and concepts, population growth, mechanisms of population differentiation.
2. Community: Community characteristics and their analyses, species diversity, niche.
3. Ecosystem: Concept, components and organization; primary productivity and its measurement Energy flow Nutrient cycling within ecosystems: C, N and P.
5. Environmental Pollution
   • Water Pollution: Sources and kinds, impact on aquatic ecosystem, eutrophication of water bodies.
   • Air Pollution: Sources and kinds, impact on plants, acid rain, causes and effects.
   • Soil Pollution: Sources and kinds, impact on plants and ecosystem.
6. Ecotoxicology: Concept of toxicity and its ecological implications, important toxicants, dose-response relationship, role of ecological factors in modifying toxicity, biomagnifications.

BOB802: Plant Metabolism, Biochemistry and Biotechnology  
Credits: 3

1. Sulphur and phosphorus metabolism: Activation and assimilation of sulphur, energy-rich phosphorus compounds, ATP synthesis.
2. Nitrogen metabolism
   • Biological nitrogen fixation: The enzyme nitrogenase, substrate for nitrogenase and mechanism.
• Nitrate metabolism: uptake and reduction into Ammonia, Ammonia assimilation.
4. Protein structure and synthesis: Basic aspects of protein conformation, protein synthesis transcription (mRNA processing), translation (activation of amino acids, initiation, elongation, termination & release of peptides), post-translational modification of proteins.
5. Enzymes: mechanisms of enzyme action, coenzymes, allosteric enzyme, isozymes
8. Biotechnological tools and techniques: Cloning vectors (pBR322, pUC8), recombinant DNA techniques, transgenic plant production.

BOB803: Cytogenetics and Evolution Process  

2. Chromosome structural aberrations: Deletion, duplication, inversion, translocation, origin, cytological and genetical consequences, permanent translocation, heterozygosity.
3. Genomic Variations
   • Aneuploidy: monosomes, trisomics, nullisomics.
   • Polyploidy: autopolyploidy, allopolyploidy, segmental allopolyploidy, autoallopolyploidy.
   • Sources and consequences of chromosomal anomalies.
5. Mapping of genes on chromosomes: Physical and Genetic maps, deletion mapping, linkage analysis, somatic cell fusion, in situ hybridization.
6. Multiple alleles and multiple factors: multiple allelism, ABO and Rh blood groups in man, eye colour in Drosophila, self sterility in plants, quantitative inheritance, kernel colour in wheat, skin colour in human beings, enhancer and suppressor genes.
8. Mutation and mutagens: Types of mutation, molecular basis of mutation, physical and chemical mutagens and mechanism of their action.
BOB804: Microbiology & Plant Pathology  

Credits: 3

Section A: Microbiology
1. Introduction and scope of Microbiology.
2. General account of: Methanococcus, Halobacterium, Agrobacterium, Mycoplasma and Thermoplasma.
3. Growth of microorganisms in batch culture.

Section B: Plant Pathology
1. History and scope of plant pathology.
2. Modes of infection and physiology of parasitism.
4. Transmission and spread of plant diseases.
5. Methods of plant disease control.
6. Causal organism, symptoms, disease cycle and control measures of the following plant diseases: Green ear disease of bajra, downy mildew of crucifers, powdery mildew of sheesham, smut of bajra, wilt of tomato, bacterial blight of rice, mosaic of sugarcane and little leaf of brinjal.

Practical  

Credits: 4

Lab Work based on Course BOB801, BOB802, BOB803 and BOB804

Readings

➢ Grewal, R.C. Plant Physiology, New Delhi: Campus Brokes International.
➢ Jain, V.K. Fundamentals of Plant Physiology, New Delhi: S. Chand & Company Ltd.
➢ Pandey, B.P. Economic Botany Vol – I / II, New Delhi: Chand & Company Ltd.
➢ Rastogi, V.A. Text Book of Genetics, Meerut: Kedarnath Ramnath.
➢ Shukla, R.S. & Chandel, P.S. Plant Ecology, S. Chand & Company LTD.
➢ Sundararajan, S. Physiology of Transport In Plants, New Delhi: Anmol Publications, Pvt. LTD.
➢ Verma, V. Text Book Of Plant Physiology, Delhi: Emkay Publications.
➢ Winchester, A.M. Genetics, Oxford and IBH, Publishing Co.
SEMESTER - I

MTB-101: Matrix Algebra  

MTB-102: Calculus  
Differential Calculus: Successive differentiation and Leibnitz theorem. Limit (\(\varepsilon-\delta\) definition), Continuity, Discontinuity, properties of continuous functions. Differentiability, Chain rule of differentiation, Mean value theorems, Taylor’s and Maclaurin theorems. Application of differential calculus in curve sketching.

MTB-103: Integral Calculus:  
Definite Integral as the limit of sum

Readings

SEMESTER – II

MTB-201: Statics & Dynamics  Credits: 2
Statics: Analytic condition of equilibrium for coplanar forces. Equation of the resultant force. Virtual work.
Motion with respect to linearly moving and rotating plane. Coriolis force and centrifugal force.

MTB-202: Algebra  Credits: 2
Algebra: Definition of a group with examples and simple properties, Subgroups, Generation of groups, Cyclic groups, Coset decomposition, Lagrange’s theorem and its consequences. Homomorphism and Isomorphism. Permutation groups and Cayley’s theorem. Normal subgroups, Quotient group, Fundamental theorem of Homomorphism. The Isomorphism theorems for groups.

MTB-203: Multivariable Calculus  Credits: 2
Functions of Two Variables: Limit, Continuity, Differentiability. Partial differentiation, Change of variables, Euler’s, Taylor’s theorem. Maxima and minima. Double and triple integrals, Beta and Gamma functions.
Vector Calculus: Gradient, Divergence and Curl. Greens, Stokes and Gauss Theorems with applications.

Readings

➢ Mallik, S.C. Mathematical Analysis, New Delhi: Wiley Eastern Ltd.
➢ Verma, R.S. A Text Book on Statics, Allahabad: Pothishala Pvt. Ltd.
SEMESTER - III

MTB-301: Differential Equations  

MTB-302: Tensor & Geometry  
Contravariant and Covariant vectors, Transformation formulae, Symmetric and Skew symmetric properties, Contraction of tensors, Quotient law. Polar equation of a conic, Sphere, Cone, Cylinder, Paraboloids, Central Conicoids.

MTB-303: Partial Differential Equation  

Readings

- Prasad, G. Integral Calculus, Allahabad: Pothishala Private Ltd.
SEMESTER – IV

MTB-401: Mathematical Methods  Credits: 2

MTB-402: Abstract Algebra  Credits: 2

MTB-403: Programming in C  Credits: 2

Readings
➢ Balguruswamy, E. Programming in ANSI C, New Delhi: T McGr Hill.
➢ Deo, Lakshmikantha, V., & V. Raghavendra. Text Book of Ordinary Differential Equations, T McGr Hill.
➢ Gupta, A.S. Text Book on Calculus of Variation, Prentice Hall of India.
➢ Kumar, N. An Elementary Course on Variational Problems in Calculus, New Delhi: Narosa Publications.
SEMESTER - V

MTB-501: Analysis-I  
Credits: 2
Riemann Integral, Integrability of continuous and monotonic functions,  
Fundamental theorems of integral calculus, Mean Value theorems of integral calculus.  
Improper integrals and their convergence. Comparison test, Abel’s and  
Dirichlet’s test, Integral as a function of a parameter and its applications.  
Sequences, Theorems on limits of sequences, Monotone convergence theorem,  
Cauchy’s convergence criterion. Infinite series, series of non-negative terms.  
Comparison test, Ratio test, Rabbe’s, logarithmic, De Morgan and Bertrand’s tests. Alternating series, Leibnitz’s theorem.

MTB-502: Differential Geometry  
Credits: 2
Theory of space curves: Space curves, Planer curves, Serret-Frenet formulae.  
Osculating circles and spheres. Existence of space curves and evolutes and involutes.  
Theory of surfaces: Parametric curves on surfaces. Direction coefficients. First  

MTB-503: Discrete Mathematics  
Credits: 2
Lattices and Boolean algebra: Logic: propositional and predicate. Lattices as  
partially ordered sets and as algebraic systems. Duality, Lattices and Boolean Algebra. Boolean functions and expressions. Application of Boolean algebra to  
switching circuits (using AND, OR and NOT gates)  
Graphs and Planar Graphs: Graph, Multigraph, Weighted Graphs, Directed  

Readings
➢ Deo, N. Graph Theory with Applications to Computer Science, PHI.
➢ Narayan, S. A Course of Mathematical Analysis, New Delhi: S.Chand& Co.
SEMESTER – VI

MTB-601: Analysis-II 


Metric spaces: Introduction. Neighbourhood, limit points, interior points, open and closed set, closure and interior, boundary points. Subspace of a metric space, Completeness. Cantor’s intersection theorem. Construction of real numbers as the completion of the incomplete metric space of rationals. 


MTB-602: Business Mathematics


MTB-603: Special Theory of Relativity


Readings

➢ Daykin, C. D., Pentikäinen, T., & Pesonen, M. Practical Risk Theory for Actuaries, Chapman & Hall.
➢ Hull, J. C. Options, Futures, and Other Derivatives, PHI.

SEMESTER - VII

MTB-701: Introduction to Teaching in school Mathematics Credit: 2
1) Sets, Venn diagram, Basic algebra, Statistics, Bar graph, Line graph, Frequency Polygon, Histogram & Ogive.
SEMESTER – VIII

MTB-801: Number Theory  Credits: 3


MTB-802: Operations Research  Credits: 3


MTB-803: Probability  Credits: 3

Notion of probability: Random experiment, sample space, axiom of probability, elementary properties of probability, equally likely outcome problems. Random Variables: Concept, cumulative distribution function, discrete and continuous random variables, expectations, mean, variance, moment generating function. Discrete random variables: Bernoulli random variable, binomial random variable, geometric random variable, Poisson random variable. Continuous random variables: Uniform random variable, exponential random variable, Gamma random variable, normal random variable. Conditional probability and conditional expectations, Baye’s theorem, Independence, computing expectation by conditioning; some applications - a list model, a random graph, Polya’s Urn model.

MTB-804(a) Combinatorial Mathematics  Credits: 3


(b) Computational Mathematics Lab

Introduction to Basic ideas of Mathematics lab. Familiarity with popular Softwares for numerical computations. Real life problems requiring numerical algorithms for linear and non-linear algebraic equation Matrix computation and its Application DFT Model
MTB-805: Project

Project-I: Mathematics Lab

Credits: 2

Application of Mathematical Software for plotting of functions, data analysis and curve fitting, 2D graphics and 3D graphics

Project-II:

Credits: 2

Some innovation in form of the written project, in Mathematics/application of Mathematics, based on the knowledge gained during the undergraduate course of studies in view of the developments in Mathematics.

Readings

➢ MATHEMATICA - Stephen Wolfram, Cambridge.
STATISTICS
SEMESTER – I

STB – 101: Statistical Methods
Credits: 2

1. Types of data: Discrete and continuous data, Frequency and non-frequency data, Different types of scales, Primary data (designing a questionnaire and schedule), Secondary data (major sources including some government publication).
2. Construction of tables (with one or more factors), diagrammatic and graphical representation of grouped data, frequency and cumulative frequency distribution and their applications, histogram, frequency polygon, ogives, stem and leaf charts, box plot.
3. Concept of central tendency and its measures, partition values, dispersion and relative dispersion, moments, Sheppard’s correction for moments (without derivation), skewness, kurtosis and their measures.

STB – 102: Probability
Credits: 2

1. Random experiment: Trial, sample point, sample space, definitions of equally likely, mutually exclusive and exhaustive events, definition of probability, classical and relative frequency approach to probability, axiomatic approach to probability and its properties, merits and demerits of these approaches, total and compound probability, conditional probability theorems, independence of events, Bayes theorem and its applications.
2. Random Variable: Concept of discrete random variable, probability mass function and distribution function, joint probability mass function of several discrete random variables, marginal and conditional probability mass functions.
3. Continuous random variable: Probability density function, distribution function, joint density function of two continuous variables, marginal and conditional probability density functions.

Readings:

Practical

PRACTICALS BASED ON COURSE No. STB – 101 & 102

Basic ideas of functioning of Windows and data entry in MS Excel will be given to the students. Students will be required to do practical, listed below (based on the contents of the theory paper STB – 101), using MS Excel:

1. Presentation of data by frequency tables, diagrams and graphs.
2. Measures of central tendency, partition values,
4. Moments, measures of skewness and kurtosis.
5. Evaluation of probability: using addition and multiplication theorems, conditional probabilities and Bayes theorem.
SEMESTER – II

STB–201: Descriptive Statistics  
Credits: 2
1. Bivariate data: Scatter diagram, product moment correlation coefficient and its properties, coefficient of determination, correlation ratio, interclass correlation, concept of error in regression, principle of least square, fitting of linear regression and related results, rank correlation.
2. Partial and multiple correlation in three variables, their measures and related results.
3. Theory of attributes: Independence and Association of attributes, various measures of association for two way and three way classified data.

STB–202: Distribution Theory  
Credits: 2
1. Expectation of random variable and its properties, conditional expectation, moment in terms of expectation, moment generating function of a random variable, their properties and uses, probability generating function, Tchebycheff's inequality and its applications, convergence in probability and in distribution.
2. Discrete and continuous probability distributions and their properties including degenerate distribution.

Readings

Practical

PRACTICALS BASED ON COURSE No. STB – 201 & 202  
Credits: 2
Elementary ideas of binary number system, hardware and software components of computer system, and DOS operating system will be given to the students.

The students will be required to do the practicals, listed below (based on the contents of the theory paper STB – 201), using MS Excel:
1. Product moment correlation coefficient, correlation ratio, interclass correlation coefficient.
2. Fitting of curves by least square method.
3. Regression of two variables.
4. Rank correlation.
5. Partial and Multiple correlations and regressions.
6. Fitting of discrete and continuous distributions.
SEMESTER – III

STB–301: Statistical Inference I
Credits: 2

1. Concept of random sample from a distribution, statistic and its sampling distribution, standard error of an estimate, standard errors of sample mean and proportion, sampling distribution of sum of Binomial, Poisson random variables and mean of normal distribution, requirement of a good estimator with examples.
2. Simple, composite null and alternative hypotheses, critical region, types of error, level of significance, p-values, size and power of a test, chi-square, t and f distributions and their properties (without proof), testing of equality of two means and two variances of two normal distributions, testing for the significance of sample correlation coefficient and testing the equality of means and variances of bivariate normal distributions.

STB–302: Sample Surveys and Design of Experiments Credits: 2

1. Concept of population and sample, need for sampling, complete enumeration versus sampling, Basic concepts in sampling, sampling and Non-sampling errors, Acquaintance with the working (questionnaires, sampling design, methods followed in field investigation, principal findings, etc.) of NSSO and other agencies under taking sample surveys.
2. Simple random sampling with and without replacement, estimation of population mean, population proportions and their standard errors. Stratified random sampling, proportional and optimum allocation, comparison with simple random sampling for fixed sample size.
3. Ratio, product and regression methods of estimation, estimation of population mean, evaluation of bias and variance to the first order of approximation, comparison with simple random sampling.
4. Systematic sampling (when population size (N) is an integer multiple of sampling size (n)). Estimation of population mean and standard error of this estimate, comparison with simple random sampling. Elementary idea of cluster sampling.
5. Analysis of variance for one way and two way classifications, need for design of experiments, basic principle of experimental design: randomization, replication and local control, complete analysis and layout of completely randomized design, randomized block design and Latin square design.
Factorial experiments and their advantages, main and interaction effects in 2x2 and 2x3 factorial experiments.

Readings


**Practical**

**PRACTICALS BASED ON COURSE No. 301 & 302**  
Credits: 2

Programming with FORTRAN: The students will be given basic introduction of FORTRAN, such as:

FORTRAN Character Codes, Constants, Variables, names, arithmetic, logic and relational operators, expression, Arithmetic, relational and logical expression, Rules for writing arithmetic expressions, commands for using FORTRAN compiler.

Writing FORTRAN programs for simple mathematical expressions such as, factorial of a positive integer, summation of simple finite series, & solution of some mathematical expressions.
SEMESTER – IV

**STB–401: Applied Statistics**

1. Demographic Methods: Sources of demographic data, census, registration, ad hoc surveys, hospital records, demographic profiles of the Indian census.
4. Index Numbers: Price relatives and quantity or volume relatives, Link and chain relatives composition of index numbers; Laspeyre's, Paasche's, Marshal Edgeworth’s and Fisher’s index numbers; chain base index number, tests for index number, cost of living index number.
5. Time Series Analysis: Economic time series, different components, illustration, additive and multiplicative models, determination of trend, seasonal and cyclical fluctuations.

**STB–402: Statistical Inference And Decision Theory**

1. Parametric model, parameter, random sample and its likelihood, statistics and its sampling distribution.
2. Point estimation : properties of estimators, mean square and minimum mean square error estimator, unbiasedness and minimum variance unbiased estimator, Cramer-Rao lower bound, amount of information, consistency of estimators and sufficient conditions for consistency, relative efficiency of an estimator, asymptotic efficiency, sufficiency, factorization theorem (without proof), concept of complete sufficient statistics, Rao-Blackwell theorem.
3. Methods of estimation : moments, maximum likelihood, minimum chi-square, least square with examples, BAN and CAN estimators, point estimates of measures of location, dispersion, regression, correlation and other useful parameters.
4. Concepts of confidence interval and confidence coefficient, confidence intervals for the parameters of univariate normal, two independent normal distributions and exponential distributions.
5. Statistical hypotheses, critical region, size and power of a test, most powerful test, randomized and non-randomized test, Neyman Pearson lemma and its applications, uniformly most powerful unbiased test, power likelihood ratio test and its applications, functions of UMP with simple illustration.
6. Elements of decision problems: Loss function, risk function, estimation and testing viewed as decision problems. Bayes rule.

**Readings**

Practical

Practicals Based On Course Nos. STB – 401 AND STB – 402 Credit: 2

1. CDR, STDR, CBR, Age specific death rates, life tables, GRR, NRR, Logistic curve and related practicals.
2. Laspeyre's, Passche's, Fisher's index numbers.
3. Problems related to trend, seasonal and cyclical fluctuations.
5. Practicals on moment, maximum likelihood, Minimum chi-square, least squares methods of estimation.
6. Testing of hypothesis for mean, variance, correlations, etc.
SEMESTER – V

STB - 501: Programming with C

1. History and features of C language, components of C language, structure of a C program. Data type: Basic data types, enumerated data types, derived data types. Variable declaration, local, global, parametric variables, assignment of variables, numeric, character, real and string constants, arithmetic relation and logical operators, assignment operators, increment and decrement operators, conditional operators, Bitwise operators, type modifiers and expressions, writing and interpreting expressions, using expressions in statements. basic input / output.

2. Control Construct. I Control statements, conditional statements, if else, nesting of if else, else if ladder, switch statements. Loops in C: for, while, do while loops

3. Control Constructs II
    Break, continue, exit (), go to and label declarations.

4. One dimensional two dimensional and multidimensional arrays.

5. Storage classes: Automatic variables, External variables, Static variables, Scope and lifetime of declarations.

6. Functions, classification of functions, functions definition and declaration, assessing a function, return statement, parameter passing in functions, rewise on in Functions. Pointers (concept only).

7. Structure: Definition and declaration; structure (initialization) comparison of structure variable array of structures : array within structures, structures within structures, passing structures to functions, unions accessing a union member, union of structure, initialization of a union variable, uses of union. Introduction to linked list, linear linked list, insertion of a node in list, removal of a node from list.

8. Files in C. Defining and opening a file, input – output operation con a file, creating a file, reading a file.

STB – 502: Operations Research

1. Definitions and scope of operation research, different types of models in operations research – their construction and general method of solution. Elements of linear programming problem (LPP): Canonical and standard forms, formulation of LPP, graphical method to solve two variable LPP, solution of LPP using simplex procedure, use of artificial variables in LPP, generation of extreme point solutions, principle of duality in LPP, statement and proof of duality theorem, simple problems based on duality theorem.


3. Inventory Control: Definitions of various costs involved in inventory control. Deterministic Economic Lot Size problems with and without shortages.

4. Theory of games: Two person zero-sum games, pure and mixed strategies, saddle point, maximiniminimax principle of rectangular games, games without saddle point, dominance and modified dominance principles, graphical solution of 2xN and Mx2 games, reduction of game problems to a L.P.P.
Readings

➢ Gottfried, B. S. Theory and problems of Programming with CTMH.
➢ Kanetkar, Y.P. Working with C, BPB Publication.
➢ Schildt, H. C The Complete Reference(3e), TMH.

Practical

PRACTICALS BASED ON COURSE Nos. STB – 501 AND STB – 502 Credits: 2
SEMESTER – VI

STB–601: Numerical Methods Credtis: 2

1. Finite differences of different orders, Ā, E and D operators, factorial representation of a polynomial, separation of symbols, sub-division of intervals, differences of zero.
2. Concept of interpolation and extrapolation: Newton Gregory's forward and backward interpolation formulae for equal intervals, divided differences and their properties, Newton's formula for divided difference, Lagranges formula for unequal intervals, central difference formula due to Gauss, Stirling, Bessel, Laplace and Everett, concept of error terms in interpolation formula.
3. Inverse interpolation: Different methods of inverse interpolation.
6. Summation of series: Series whose general term (i) is the first difference of a function (ii) is in geometric progression.

STB–602: Elements Of Stochastic Processes Credtis: 2

2. Markov chains: Definition and examples of Markov chain, transition probability matrix, classification of states, recurrence, simple problems, basic limit theorem of Markov Chain (statement only): stationary probability distribution, applications.
4. Branching process: Definition and examples of discrete time branching process, probability generating function, mean and variance, probability of extinction problems.

Readings

➢ Freeman, H. Finite Differences for Actuarial Students, Cambridge: Cambridge University Press.
➢ Kunz, K.S. Numerical Analysis, McGraw Hill.
➢ Saxena, H.C. Calculus of finite Differences.
➢ Scarborough, J.B. Numerical Mathematical Analysis, Oxford University, Press and Oxford Book Co.

Practical

PRACTICALS BASED ON COURSE Nos. STB – 601 AND STB – 602 Credits: 2

SEMESTER- VII

INNOVATIVE TEACHING MODULE IN STATISTICS RELEVANT TO SCHOOL TEACHING Credits: 2
SEMESTER – VIII

STB–801: Demand Analysis, 
Credits: 3

Analysis of Income Distribution 
and Queuing Theory

1. Theory and analysis of consumer’s demand, law of demand, price elasticity of 
demand, estimation of demand curves, forms of demand functions, Engel’s curve, 
income elasticity of demand.
2. Analysis of income and allied distributions: Pareto distribution, graphical test, fitting 
of Pareto law, illustration, lognormal distribution and properties, Lorenz curve, Gini’s 
coefficient.
3. Elements of queuing theory, characteristics of queues, Poisson process, distribution of 
inter-arrival time, definition of steady state condition, ( M/M/1 ) : ( ~ / FIFO ) and ( 
M/M/1) : ( N/ FIFO models, birth and death process, ( M/M/K ) : ( ~ / FIFO ) and ( 
M/M/K) : ( N / FIFO ) models.
4. Finite and infinite length models with associated distribution of queue length and 
waiting time, steady – state solutions of ( M/Ek / 1 ) and ( Ek / 1 ) queues, machine 
interface problem.

STB-802: Reliability
Credits: 3

1. Life testing and reliability theory: Basic concepts of life testing experiments, 
reliability, hazard function and their relationship.
2. Elementary notion of censored data, type I and type II censoring schemes, Poisson 
process.
3. Parametric distributions: Weibull, gamma, lognormal, exponential as life time 
distributions, point and interval estimation procedures for the above distributions.
4. Testing reliability hypothesis for exponential and Weibull distributions.
5. System reliability concepts: Parallel system, series system and k out of n system.
6. Elementary idea of reliability models for non – maintained systems.

STB-803: Distribution Theory
Credits: 3

1. Brief review of basic distribution theory, joint, marginal conditional p.m.f.’s and 
p.d.f’s, standard discrete and continuous distributions, bivariate normal, bivariate 
exponential, multivariate normal and multinomial distributions, functions of random 
variables and their distributions using Jacobian of transformation and other tools.
2. Compound, truncated and mixture distributions, conditional expectation, multiple and 
partial correlations, linear and multiple regressions. Markov, Holder, Jensen, 
Liapunov inequalities. Sampling distributions, non-central chi-square, t and F 
distributions and their properties. Distributions of quadratic forms under normality 
and related distribution theory. Order statistics, their distributions and properties, joint 
and marginal distributions of order statistics, extreme values and their asymptotic 
distributions (statement only) with applications. Approximating distributions Delta 
method and its applications, approximating distributions of sample moments, 
transformations of statistics.
1. Extension of Cramer-Rao inequality for multi-parameter case, Bhattacharya bounds, information in data about the parameters as variation in likelihood function.

2. Ideas of sufficient and minimal complete-sufficient statistics, sufficiency when the range of ariate depends on parameter, minimum variance unbiased estimators, Rao-Blackwell and Lehman-Scheffe theorems, examples based on some standard distributions.

Readings

➢ Asthana, B.N.,& Srivastava, S.S. Applied Statistics in India.
➢ Gnedenko, Bylyayer & Solovyer : Mathematical Methods of Reliability Theory.
Practical

PRACTICALS BASED ON COURSE Nos. SBT – 801 AND STB – 802 

Credits: 2

Practical Work: Project

The project work shall be spread over the whole semester. A project be undertaken by a group of students. However, the project report shall be submitted by each member of the group separately. A project report shall clearly state the problem addressed, the methodology adopted, the assumptions and the hypotheses formulated, any previous reference to the study undertaken, statistical analyses performed and the broad conclusion drawn.
Syllabus
for B.A. B.Ed.
Humanities &
Social Sciences
Subjects
(Electives)
HISTORY
HISTORY OF INDIA UPTO 1000 A.D. (PART-I)

Geographical Features
- Its impact on Indian History.
- Sources of Indian History:
  - Archeological source and their significance, Coins and Inscription
  - Literary sources: religious and secular
  - Foreign Accounts.

Early Man in India
- Paleolithic, Mesolithic, Neolithic and Chalcolithic Ages.
- Indus Civilization
  - Extend of the Civilization
  - Town Planning
  - Agriculture
  - Technology and Crafts
  - Trade and Commerce
  - Religion
  - Script
  - Decline of the Indus Culture.

The Aryans
- Theories of Migration:
- Vedic Political Institutions.
- Social and Economic Conditions.
- Vedic Religion, Varna and Caste system.

Second Urbanization
- Sixteen Mahajanapadas: Rise of Magadh Empire.
- Religious Upheavel:
  - Rise and Development of Jainism and Buddhism
  - Hinayana and Mahayana Philosophy
  - Decline of Buddhism.
- Macedonian and Iranian Invasions: Their Impact.

Mauryan Empire:
- The Mauryan rise to power.
- Political and administrative organization, society and economy.
- Ashoka’s Dhamma.
- Decline of empire.
- Arthashastra and Indica.
HISTORY OF INDIA UPTO 1000 A.D. (PART-II)

Rise of Minor Kingdoms
- Kushanas:
  - Kanishka: Chronology and achievements
  - Gandhara and Mathura Arts.
- Sakas.

Gupta Empire
- SamudraGupta and ChandraGupta II.
- Administrative and Cultural Achievements.
- Fahein.
- Decline of Gupta Empire.

Vardhan Dynasty
- Political Conditions of Northern India in 6th century A.D.
- Harsha Campaigns and Political relations.
- Administrations, Religion.
- Yuan Chewang.

Important powers in the South
- Satavahanas.
- Vakatakas.
- Chalukyas.
- Rashtrakutas.
- Pallavas: their contribution to culture.
- The Cholas: polity, administrative and culture.

Rajput Polity
- Society and culture.
- Arab Conquest of Sindh.

Paper III

Project and Assignment

Readings

➢ Altekar. State and Government in Ancient India (also in Hindi).
➢ Childe. G. Man makes History.
➢ Devahuti. Harsha.
➢ Edward, Mc, NallPurns. Western Civilizations.
➢ Davies, H.A. An outline History of the World.
➢ Hayes & Moon. World History.
➢ Jian, K.C. Pre and Proto History of India.
➢ Kosambi, D. D. An Introduction to the study of History (also in Hindi)
➢ Magenis and Appeal. A history of the world.
➢ Majumdar. Vedic Age.
➢ Majumdar Data & Raychaudhari. An advanced History of India (also in Hindi).
➢ Majumdar, Datta Gupta, Kalkekar. Vakataka Age.
➢ Nilkanth, Shastri. History of South India.
➢ Raychaudhari, H.C. Political History of Ancient India (also in Hindi).
➢ Sankalin. Pre and Prote History of India.
➢ Sharma, R.S. Material background of Ancient India.
➢ Sharma, R.S. Political Institution of Ancient India.
➢ Shrimali, K.M. Vakataka –Guptas.
➢ Thapar, Romila. History of Ancient India Vol. 118, Asoka and the Decline of the Mauryas.
➢ Weesh. World History.
SEMESTER-II

PAPER I  

HISTORY OF ANCIENT CIVILIZATION (PART-I)

Egyptian Civilization  
- Pre-dynastic period polity.  
- The Pharaoh.  
- Contribution.

Mesopotamian Civilization  
- Polity.  
- Summerian.  
- Old Babylonian contributions.  
- Changes under Assyria.  
- Chaldean Renaissance.  
- Mesopotamian legacy.

Chinese Civilization  
- Polity (upto Han Dynasty).  
- Society, Trade and Commerce.  

Civilization of Ancient Persia  
- Rise of Cyrus.  
- Darius the Great.  
- Decline of Persian Empire.  
- Persian Culture.  
- Zoroastrianism- its fusion with Mithraism and Manicheism.  
- Hebrews Religion and Culture.  
- Rise of Christianity and its impact in the world.

PAPER II  

HISTORY OF ANCIENT CIVILIZATION (PART-II)

Greek Civilization  
- Athens and Sparta.  
- Hellenic thoughts and culture: Philosophy, science, literature, Greek Art.  
- Aristotle and Plato.  
- Greek society, economy and religion.  
- Alexander the Great.

Roman Civilization  
- Early Settlements – their government overthrew of Monarchy.
• Early republic political changes.
• Struggle between Patricians and Plebeians.
• Carthegean wars.
• Pompey and Julius Ceaour.
• Cultural life: society, economy, philosophy, art and religion.
• The Principate-Augustus.
• Roman Law.
• Late Empire: Diocletian, Cultural stagnation, Decay and Decline.

Byzantine Empire:

• Polity, Despotic Government.
• Religion, Society.
• Intellectual achievements.
• Justinian Codes.
• Byzantine Art.

Sassanid Empire

Paper III

Project and Assignment

Credits: 2

Readings

➢ Childe, Gordon- Man makes History.
➢ Edward, Mc, NallPurns- Western Civilizations.
➢ Hayes & Moon- World History.
➢ Magenis and Appeal- A history of the world.
➢ Weesh- World History.
SEMESTER-III

PAPER I

HISTORY OF MEDIEVAL INDIA (Part –I)

Turkish Conquest of Northern India
- Political and social conditions of India at the time of Turkish Invasion.
- Factors responsible for the success of the Turks.
- Establishment of Delhi Sultanate in the 13th century.
- Qutbuddin Aibak.
- Iltutmish – His military and administrative achievements, composition of nobility.
- Balban Theory of Kingship and organization of Govt.

Indian under the Khaljis and the Tughluqs
- Khalji revolution.
- Mongol Invasions during the regime of Allauddin Khilji.
- Agrarian Measures and Market Control Policy of Allauddin Khilji.
- Muhammad Tughlag’s ambitious projects.
- Firoz Tughlug’s humanitarian measures and Tughlug’s role in the downfall of the Sultanate.
- Administration of the Delhi Sultanate- Central Govt, Iqta system and the army.

Vijaynagar and Bahamani Empire
- Salient features of political administration.
- Economic and social history.
- Rise of feudatories and disintegration.

Religious Thought of 14th and 15th century: Non-Muslim and Sufi.

PAPER II

HISTORY OF MEDIEVAL INDIA (PART II)

Mughal Empire
- India on the eve of Babur’s Invasion
  - Factors which led to Babur’s success.
- Humayun’s Problems.
- Sher Shah and his administration.
- Religious Policy of Akbar and Aurangzeb.
- Deccan Policy of the Mughals.
- North-west Frontier policy of the Mughals.
- Factors that led to the downfall of the Mughal Empire.
- Economic and Political Institutions of Mughal India
  - The Mughal Administration: Central and Provincial Administration
  - Land revenue system
  - Mansab and Jagir system.
The rise of the Marathas
- Factors responsible for the rise of Shivaji.
- Administrative system of Shivaji.
- Marathas under Peshwas.

The Sikhs
- Their rise.
- Sikhs under Banda Bahadur.

Readings
- Ali, Athar: Mughal Nobility under Aurangzeb.
- Habib & Nizanim: Comprehensive History of India Vol.V.
- Habib, Irfan: Agrarian system of Mughal India.
- Noreland, W.H. Agrarian system of Mughal India.
- Prasad, Ishwari: Medieval India.
- Sarkar, J.N: Shivaji and his times.
- Sewall: Forgotten Empire.
- Smith, V.A: Akbar the great Mughal.
- Tripathi, R.P. Rise and fall of Mughal Empire.
- Tripathi, R.S: Some aspects of Muslim administration.
PAPER I  
Credits: 2

HISTORY OF MODERN WORLD (PART I)

Age of Mercantilism:
- Breakdown of the feudal order.
- Characteristic features of Feudalism.
- The discoveries and Growth of world commerce.
- Renaissance, Reformation, Calvinism and Lutherism.
- Counter Reformation.
- Rise of nation states.
- Struggle between Charles I and the Parliament.
- English Revolution of 1688.

The Industrial Revolution in Britain
- Agricultural Revolution and the Enclosure Movement.
- Mechanical invention and source of power.
- The factory system.
- Growth of Industrial capital.

The American Revolution
- Its Causes and Significance.

The French Revolution
- Causes of the French Revolution.
- The new political and social ideas.
- Political and economic consequences.
- Age of Reaction Matternich.

National Liberalism and Socialism during the 19th century
- German and Italian Unification.
- Marxian Socialism.

PAPER II  
Credits: 2

HISTORY OF MODERN WORLD   (PART II)

Imperialism and the World War I
- New Imperialism.
- Cause of World War I.

Colonialism in the 19th Century
- The Opium War and the Development of the Treaty Port.
- The Partition of Africa.

The Russian Revolution 1917
- Causes of the Russian Revolution.
- Civil War.
- The Communist International Building of Socialism in USSR.
Anti-Imperialist Movement
- Freedom and Reform in Emergence of Modern Turkey under Kamal Attaturk.

Inter-War Collective Security and its Failure
- Nazism and Fascism in Germany and Italy.
- Origin and impact of World War II.
- The U.N.O.

PAPER III

Credits: 2

Project and Assignment

Readings
- Andreas, Dorpalen: Europe in the 28th C.
- Anowles, L.C: The Industrial and Commercial Revolution in Great Britain during the 19th Century.
- Burns: Western civilization.
- Coleman, D.C: Revision in Mercantilism.
- Cowan, C.D: The Economic Development of China and Japan.
- Fieldhause, D.K: Colonialism Empires since the 18th C.
- Gershoy: French Revolution and Napolean.
- Hayes: Political and Cultural History of Europe Vol. I & II.
- Hayzen, C.D: Modern European History since 1789.
- Lacin, IV. Imperialism the highest stage of capitalism.
- Lefebvre, G: French Revolution.
- Lefebvre, G: The coming of the French Revolution.
- Panikar, R.M: Asia and the Western dominance.
PAPER I

HISTORY OF MODERN INDIA (PART I)

Advents of Europeans in India
• Anglo French Rivalry in South India (Carnatic wars).
• Establishment of British Supremacy in Bengal: Battle of Plassey and Buxar.

Anglo Mysore, Anglo Maratha and Anglo Sikh relation.
Subsidiary alliance.
Doctrine of lapse.
The Land Settlements.
• Permanent, Ryotwari and Mahalwari system.
• Drain of wealth.
• De-industrialization and Decline of towns till 1872.

Rebellion of 1857:
• Nature, Causes, Consequences and Failures.
• Company and the native states (1757 – 1947).

Social and National Awakening
• Causes.
• Raja Ram Mohan Roy and subsequent reform movements.
• Brahma Samaj.
• Arya Samaj.
• Aligarh Movement.

PAPER II

HISTORY OF MODERN INDIA (PART II)

Growth of national movements in India
• Causes.
• Formation of Indian National Congress.
• Moderates and militant.
• Partition of Bengal.

Gandhiji’s Political Philosophy
• Khilafat and Non-Cooperation Movement.
• Pro Changers and No Changers.
• Swarajists: achievements and failures.
• Revolutionary Terrorism.
• Civil Disobedience Movements.
• Development of Communalism in India.
Constitutional Developments in India
• Regulating Act.
• Queen’s Proclamation.
• Act of 1909, 1919, 1935.

Simon Commission.
Nehru Report.
Cripps Mission.
Quit India Movement.
Cabinet Mission Plan.

PAPER III
Project and Assignment

Readings
➢ Banerjee, A.C and Gosh, D.K – Comprehensive History of India Vol IX.
➢ Chand, Tara: History of the freedom movement in India. Vol. I to IV.
➢ Chandra, Bipin and Aditya Mukherjee- India’s freedom struggle for Independence.
➢ Chandra, Bipin- Nationalism and Colonialism in Modern India.
➢ Desai, A.R - Social background of the National Movement in India.
➢ Dutt, R.C - India Today.
➢ Dutt, R.C-Economic History of India. Vol. I & II.
➢ Sarkar, Sumit- Modern India (1858-1947).
➢ Thompson & Gerrelt- Rise and fulfillment of British rule in India.
SEMESTER-VI

PAPER I

HISTORY OF ENGLAND (1485-1919) (Part I)

Tudor England (1485 – 1603)
The New Monarchy:
Henry VII anti-haronial measures, The Beginning of the English Commercial Power: The Reformation, the Radical Reformation and the Counter Reformation under Edward VI and Mary, Erig and Europe.

Regime of the Early Stuarts (1603-40):
The Emergence of Whig Oligarchy. William and Anne, and the Foreign Wars (1689-1714).

PAPER II

HISTORY OF ENGLAND (1485-1919) (Part-II)

The Whig Oligarchy (1714-60)
The nature of the Oligarchy. Walpole and Cabinet system. The beginning of Colonial system and overseas wars (from 1739).

The Industrial Revolution 1760-1815:
The Agricultural Revolution, Enclosures, Growth of population.
The new industrial technology, textile and Iron and coal. Improvements in transport.
Conditions of working class.
Government and Politics.
Structure of Parliament and Regime of George III (1760-84), Revolt or American Colonies and England, Pitt the younger and impact of French Revolution war with revolutionary and Napoleonic France.
Economic impact of the war. Social unrest after 1815.

The Bourgeois Order 1815-16
The Liberal Era (1846 – 85):
British Economic Supremacy Foreign policy, Palmerston. The Liberals and the Conservatives, Disraeli and the Reform Act of 1867.
Gladsoone and liberalism (1868-1885), Disraeli and new conservatism (1874—80), Gladstone and Ireland (1880-1885).

Rivalry with Germany and the causes of the First World War, consequences of the war.

PAPER III
Project and Assignment

Credits: 2

Readings

➢ Hill, Chrestopher- Reformation to Industrial Revolution.
➢ Hobsbawn, Eric- Industry and Empire.
➢ Morton, A.L - People’s History of England.
➢ Richard, D &Quick, A – Britain under Tudor & Stuarts Britain 1851- 1945.
➢ Warner and Martin – Ground work of British History.
SEMESTER – VII

PAPER I

TIBET:
Understanding Basic Tibetan Cultures and History; a Training based teaching in School Level:
Introducing basic Tibetan cultures and history through the readings of:
1. Tibetan Civilization by R. A Stein.
2. My Land and My People by Tenzin Gyatso, the 14th Dalai Lama.
3. Tibet: A Political History by W. D Shakapba.

Readings

➢ Gyatso, Tenzin, the 14th Dalai Lama. My Land and My People (1997), Grand Central Publishing.
SEMESTER VIII

PAPER I

MODERN EUROPE (1748-1945) Part –I

1. Napoleon III: His Foreign Policy, Domestic Policy.
2. Emergence and developments of nationalism: Italy, Germany.
3. The Eastern Question disintegration of Turkish empire
   - The Crimean Wars (1854 – 56).
   - Berlin Congress, 1878.
   - Young Turk Revolution, 1908.
   - Balkan Wars (1912-13).

PAPER II

MODERN EUROPE (1748-1945) Part-II

1. Socialist Though and Movement in Europe with reference to:
   • St. Simon.
   • Robert Owen.
   • Charles Fourier.
   • Prodhoun.
   • Karl Marx.
2. The Third Republic in France-Its achievements.
3. Bismarck: His Foreign Policy, Domestic Policy.

PAPER-III

MODERN EUROPE (1748-1945) Part-III

1. New Imperialism-Partition of Africa.
2. Kaiser William II – His Foreign Policy.
3. Formation of Triple Entente and division of Europe into two armed campus.
4. World War- I:
   • Causes and effects.
   • Peace Settlements of 1919.
5. The Russian Revolution of 1917:
   • Events leading to the Revolution.
   • Lenin-
     - His role in the Revolution.
     - New Economic Policy.
     - His Foreign Policy.
   • Stalin-
     - His Five Year Plan.
     - His Foreign Policy.
MODERN EUROPE (1748 – 1945) Part –IV

1. The League of Nations
   • Its aim and Organization.
   • Achievements and Failure.
2. Inter-War Dictatorship
   • Italy and Germany.
4. World War II – Causes.

PAPER V

Project, Assignment
Internal Assessment/Paper Based on Seminar, Panel, Workshop/Conference:

Readings

➢ Athawale, Sadashiv- Arwachin Europe.
➢ Cambridge Modern History (Relevant volumes).
➢ Carr, E.H. - International relations between the two World wars.
➢ Gathorn, Hardy- A short history of Internal Affairs (1920-30).
➢ Grant and Temperley- Europe in the 19th and 20th Centuries.
➢ Hayes- Contemporary Europe since 1870.
➢ Hazon- Europe since 1815.
➢ Kulkarni &Phadke- Adhunik Europe
➢ Lipson-Europe in the 19th and 20th Centuries.
➢ Moon, H.P.T – Imperialism and world politics.
➢ Seaman from Vienna to Versailles.
➢ Taylor, A.J.P- The struggle for mastery in Europe.
ECONOMICS
SEMESTER – I

PAPER I: Microeconomics


- Related Preference Hypothesis.

- **Theory of Production**- Production Functions Laws of Production – Laws of variable Proportion; Law of Returns to Scale, Isoquants, Iso-cost lines, Producer’s Equilibrium, Expansion Path; Ridgelines, Concept of Costs.

PAPER II: Structure of Indian Economy

- Indian Economy on the eve of Independence, Development of Planning Exercise in India.

- National Income (Output) and Employment Structure of Indian Economy, Composition and Relative growth of Agriculture, Industry and Service Sector.


- Trends in Agricultural Production; Land Reforms, Green revolution and its Effects.

- Trends and Patterns of Industrial Sector; Changes in the Structure of Indian Public Sector – Growth, Structure and its role.

- Trends in exports and Imports, Composition and Direction of Foreign Trade, Balance of Payments.

Readings

- Agarwal, A.N. Indian Economy; Problems of Development and Planning.
- Dutta, R. and Sundaram, K.P.M. Indian Economy.
- Economic Survey. Publication Division, Government of India.
- Mishra and Puri. Indian Economy.
- Five Year Plan (Various). Planning Commission, Govt. of India.
- Jain, T.R. Microeconomics and Basic Mathematics.
➢ Koutsoyiannis, A. Modern Microeconomics.
➢ Prasad, A.R. Working Tools of Microeconomics.
➢ Ray, N.C. An Introduction to Microeconomics.
➢ Seth, M.L. Micro-Economics.

PAPER III: Project /Assignment

Credits: 2
SEMESTER – II

PAPER I: Macroeconomics

- Nature and Scope.
- Natural Income Accounting and Natural Income Identities, Measurement of National Income.
- Theory of Employment and Output; The Classical Analysis, the Keynesian Analysis and the Neo Classical IS-LM Model.
- Investment Multiplier – Leakages and Limitations.
- Investment Functions – MEC & MEI, saving and Investment Identity.
- Acceleration Principle.
- Economic Fluctuations, Theories of trade cycles & Samulson Hicks. Recent Global Recessions.

PAPER II: Indian Economic Policy

- Population Policy, Anti-Poverty Programmes, Employment Policy, Poverty-Unemployment Relationship.
- Evaluation of Agricultural Price Policy, Food Policy; Components, Measures and Effectiveness.
- Public distribution System; Evolution and Effectiveness.
- Industrial Policy – FERA, FEMA de-licensing, Disinvestment MRTP, SMEs; Growth, Structure, Policy, Performance.
- Monetary and Fiscal Policy and Macroeconomic Policy in India: Exim Policy, Policy on Foreign capital.
Readings

➢ Agarwal, A.N. Indian Economy; Problems of Development and Planning.
➢ Dutta, R. and Sundaram, K.P.M. Indian Economy.
➢ Economic Survey. Publication Division, Government of India.
➢ Five Year Plan (Various). Planning Commission, Govt. of India.
➢ Mishra and Puri. Indian Economy.
➢ Richard Froyen. Macroeconomics.

PAPER III: Project /Assignment

Credits: 2
PAPER I: Money and Banking

- Meaning and functioning of Money.
- Demand for Money – Conventional, Neo Classical and Keynes’ approach.
- Value of Money – Cash Transaction and Cash Balances approach, Keynes’ view.
- Inflation and Deflation – Causes and Effects and Measures to control, Inflationary Gap.
- Commercial Banking– Measuring and Functioning, Process of Credit creation.
- Central Banking – Functions, Methods of Credit Control, Role and Functions of RBI.

PAPER II: Public Economics – I

- Role of Public Finance; Equity and the Social Welfare Function.
- Public Budget – Optimum Budget, Budget Vs. Plan, Budgetary Procedure in India.
- Principles of Taxation – Ability to Pay and its different criteria, Types of Taxes, Incidence and Shifting of Tax, Taxable capacity, Effect of Tax on Price and output.
- Indian Tax System – Types, Issues of Tax buoyancy in India, General Sales tax and Value Added Tax.

Readings

➢ Chelliah, Raja J. et.al. Trends and Issues in India’s Federal Finance.
➢ Chelliah, Raja J. Fiscal Policy in Underdeveloped Countries.
➢ Myles, Gareth D. Public Economics.
➢ Rosen, Harvey, S. Public Finance.

PAPER III: Project /Assignment

Credits: 2
PAPER I: Market Analysis

- Market Structure- Market Definition, Concept of product and Factor Markets; Features and the Shapes of the Demand (or Average Revenue) Curve under Perfect Competition, Monopoly, Monopolistic competition and Oligopoly Market Structures; Concepts of Firm and industry, Equilibrium of the firm-total and marginal approach.


PAPER II: Public Economics – II


- Public expenditure Wagner’s Law and Wiseman-Peacock hypothesis, Relationship between Public expenditure and Fiscal Deficit, Public expenditure in India; Pattern and Growth.

- Fiscal Policy – Keynesian and Neoclassical framework, Fiscal policy and Neo-liberalism; Instruments and Effectiveness of fiscal Policy in India in context of roll back of state.

- Federal Finance – Principles, financial relationship between the Centre and States in India, Finance Commissions.
Readings

➢ Chelliah, Raja J. et.al. Trends and Issues in India’s Federal Finance.
➢ Chelliah, Raja J. et.al. Trends and Issues in India’s Federal Finance.
➢ Chelliah, Raja J. Fiscal Policy in Underdeveloped Countries.
➢ Chelliah, Raja J. Fiscal Policy in Underdeveloped Countries.
➢ Myles, Gareth D. Public Economics.
➢ Myles, Gareth D. Public Economics.
➢ Rosen, Harvey, S. Public Finance.
➢ Rosen, Harvey, S. Public Finance.

PAPER III: Project /Assignment

Credits: 2
SEMESTER – V

PAPER I: Factor Pricing and Welfare Economics


PAPER II: Elementary Statistics

- Classification of Data, Graphical Presentation.
- Measures of Central Tendency – Mean, Median and Mode.
- Dispersion – Mean Deviation and Standard Deviation.
- Correlation – Spearman and Kaul Pearson.
- Index Number – Laspeyer, Paasche and Fisher.
- Skewness and Kurtosis.
- Concept of Probability, Theory of Probability.

Readings

➢ Chou, Y. Statistical Analysis.
➢ Jain, T.R. Microeconomics and Basic Mathematics.
➢ Koutsoyiannis, A. Modern Microeconomics.
➢ Nagar, A. L. and Das, R. K. Basic Statistics.
➢ Prasad, A.R. Working Tools of Microeconomics.
➢ Ray, N.C. An Introduction to Microeconomics.

Paper III: Project /Assignment

Credits: 2
SEMESTER – VI

Paper I: International Economics  

- Importance of International Economics, regional and International Trade.
- Theories of Trade – Absolute and Comparative Advantage, Reciprocal Demand and Opportunity Cost, Heckscher-Ohlin theory.
- Trade and Growth, Import-substitution Vs. Export Orientation.
- Concept of items of Trade; its relation with Economic Development, Gains from trade.
- Tariffs and Quota, Free trade Vs. Protection, The globalization debate.

Paper II: Population Studies  

- Demography-Meaning and Difference from Population Studies.
- Population Theories-Malthusian, Neo Malthusian and Optimum Theory, Theory of Demographic transition.
- Age Pyramids-Concepts and Objects.
- Fertility-Measurement, Factors Affecting Fertility.

Readings

➢ Sahoo, Fakir Mohan (ed). (2009). Behavioural Issues in Aging; Care, concern and commitment.

Paper III: Project /Assignment

Credits: 2

SEMESTER – VII

Innovative Teaching Module relevant to School Teaching

Credits: 2
SEMESTER – VIII

Paper I: International Macroeconomics

- Balance of Payments; Concept and Component, Disequilibrium and Measures to Correct Disequilibrium in the BOP.
- Concept of Foreign Trade Multiplier.
- International Monetary System; Foreign Exchange Market-Functions, Nominal and Real Exchange Rates, Fixed and Floating Exchange Rates, Buying and Selling Rate, Theories of Exchange Rate Determination.
- International Capital Movement; FDI and Portfolio Investment, Role of MNCs, Foreign Aid, Dual Gap Theory.
- International Institutions; IMF and World Bank, the GATT/WTO Agreements, Problems of International Liquidity and SDR, New International economic order.

Credits: 3

Paper II: Introduction to Research Methodology

- The Nature of Economic Reality.
- Introduction to Descriptive, Analytical, Fundamental, Quantitative and Qualitative Research Approaches.
- The Time consideration; Historical, Experimental and Ex Post Facto.
- Positivism and Scientific Method, question of Objectivity and Subjectivity.
- Formulation of Research Problems; Review of Literature, Aim/objective, Hypothesis and Hypothesis testing.
- Data – Nature of Data, collection of Primary and secondary Data, Preparation of Questionnaire/Schedule, Reliability and validity.
- Introduction to Sampling Methods.
- Writing of a Report.

Credits: 3

Paper III: Development Economics

- Meaning, Definition and Measurement of Economic Development, Concept of Sustainable development, Concept of Human Development, Indicators of Development, economic Growth Vs. Development
- Level of living, Poverty and Basic Needs – Indices of Poverty, Relative inequality, rural Poverty, Development with Disguised unemployment.

Credits: 3

**Paper IV: Environmental Economics**

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- Historical Development of Environmental Economics; The Environment-Economy Interaction, Basic Concepts of Resource Economics.
- Pollution as an Economic Problem; Market Failure, Externality, Alternative Definitions of Pollution, Optimal Pollution, Marginal Damage and Marginal Abatement Cost.
- Instruments of Pollution control; Economic Instruments, International Agencies and Environment; UNEP, UNFCC.
- Environment Valuation; Concept of Total Economic Value, Uncertainty and Irreversibility; Economic Growth and Environment.
- The Basic Issues of Sustainable Development, Meaning, Indicators and Measurement.
- Environment Policy; National and International.

**Readings**

- Agarwal R. C. Economics of Development and Planning.
- Cooper D. and Schindler P. Business Research Methods.
- Ghatak S. Introduction to Development Economics.
- Good and Heart. Research Methods.
➢ Ray D. Development Economics.
➢ Thirlwal A.P. Growth and Development.

Paper V: Project /Assignment  Credits: 4
GEOGRAPHY
SEMESTER-I

Paper I: Physical Basis of Geography

Unit I

Origin of the solar system and earth (James and Jeffereys, Russell, Lytilleton, Lemaitre); Interior of the earth; Rocks: origin and classification; Earth’s movements.

Unit II

Major landforms: mountains, plateaus and plains; Gradational processes: weathering and erosion; Works of water, glacier and wind.

Unit III

Composition and structure of the atmosphere; Insolation; Temperature: vertical and horizontal distribution; Pressure and pressure belts; Winds: planetary, periodic and local.

Unit IV

Theories on origin of ocean basin, Physical properties of sea water: temperature and salinity; Ocean currents; Tides and Coral reefs.

Paper II: Practical: Map: Reading and Interpretation

Meaning and types of scale: simple, diagonal and comparative; Elements of map reading and Interpretation of toposheets, Relief features and profiles (serial, superimposed, composite and projected), Reduction and enlargement of maps.

Readings

Paper III: Project / Assignment

Credits: 2
Unit I
Meaning, nature and scope of human geography; Development and branches of human geography; Concepts of human geography, Man-environment dynamic relationships: determinism, possibilism and probabilism.

Unit II
Evolution of man; Classification of races; Characteristics of races and their broad distribution; Human adaptation to environment: Eskimo, Masai and Bushman; Primitive people of India: Naga and Bhil.

Unit III
Growth of population; Distribution of population; Major human agglomerations; Trends of urbanization.

Unit IV
Rural settlements: characteristics, types and regional patterns; Urban settlements: evolution and classification; Rural houses in India: types, classification and regional patterns; Cultural regions of the world: classification and its attributes.

Paper II: Practical: Elementary Statistics
Sources of data; Tabulation and classification of data. Measures of central tendency: mean, median and mode; quartile, decile and percentile; Measures of dispersion: range, quartile deviation, mean deviation, standard deviation and relative dispersion; Measures of skewness: coefficient of skewness. Correlation (Karl Pearson and Spearman) and regression analysis.

Readings
  Meerut: Rastogi Publication.
  Publications.
  Prakashan.
  Bhawan.
  Arnold (Publishers) Ltd.
  Publications.

Paper III: Project / Assignment

Credits: 2
Paper I: Regional Study of Selected Developed and Developing countries- USA and China

Credits: 2

Unit I
Concepts, bases and characteristics of developed and developing countries, level of development: First, Second, Third and Fourth Worlds.

Unit II
Physical resources base: Physiography, climate, soil, vegetation, power and mineral resources.

Unit III
Cultural resource base: Population, Agriculture and Industries.

Unit IV
Agricultural and Industrial regions of USA, Agricultural and geographical regions of China.

Paper II: Practical: Map Projection and Weather Map

Credits: 2

Map Projection: Conical: simple conic with one and two standard parallels, Bonne’s, Cylindrical: simple and equal area.

Zenithal (Polar case): equidistant and equal area.

Weather Map: Weather symbols, Representation of atmospheric features, Interpretation of Indian daily weather maps (July, October and January).

Readings


Paper III: Project / Assignment

Credits: 2
SEMESTER – IV

Paper I: Economic Geography  
Credits: 2

Unit I
Meaning, scope and approaches to economic geography; Main concepts of economic geography; Resource: concept and classification; Natural resources: soil, forest and water.

Unit II
Mineral resources: iron ore and bauxite; Power resources: coal, petroleum and hydroelectricity; Resource conservation; Principal crops: wheat, rice, sugarcane and tea

Unit III
Agricultural regions of the world (Derwent Whittle sey); Theory of agricultural location (Von Thunen); Theory of industrial location (Weber); Major industries: iron and steel, textiles, petrochemical and sugar; industrial regions of the world.

Unit IV
World transportation: major trans-continental railways, sea and air routes; International trade: patterns and trends; Major trade blocks: NAFTA, EEC, ASEAN; Effect of globalization on developing countries.

Readings

Paper II: Practical: Surveying

Credits: 2

Surveying: meaning, classification and significance. Chain and Tape surveying; Plane Table surveying; Prismatic Compass, Abney Level and Indian Clinometer

Readings


Paper III: Project / Assignment

Credits: 2
SEMESTER – V

Paper I: Geography of India Credits: 2

Unit I
Geology; Physiographic divisions; Drainage system; Climate and climatic regions; Soil and vegetation.

Unit II
Minerals and power resources (iron ore, bauxite, coal and petroleum); Multipurpose projects; Irrigation; Major industries (iron and steel, cotton textile, sugar and cement).

Unit III
Crops (rice, wheat, sugarcane, cotton and tea) and agricultural regions, Green revolution and its consequences.

Unit IV
Macro-regions of India and their geographical specialities; Transport and communication; Trade: composition and recent changes.

Paper II: Practical: Representation of Geographical Data Credits: 2

Graphical Representation:
Bar diagram, Histogram, Frequency polygon, Frequency curve, Cumulative frequency curve or Ogive Rainfall dispersion diagram, Climograph, Hythergraph, Ergograph.

Cartographic Representation

Readings

Paper III: Project / Assignment

Credits: 2
Paper I: Geomorphology

Unit I
Nature and scope of geomorphology; Principles and basis of geological time scale; Fundamental concepts: uniformitarianism and dynamic equilibrium, relief and differential rates of geomorphic processes; Models of landscape development- Davis, Penck and King.

Unit II
Cycle of erosion and slope evolution; Isostasy, Plate tectonics, Earthquakes; Folded structure and topography; Faulted structure and topography.

Unit III
Mass wasting and different geomorphic agents and processes- running water, wind, glacier, wave and underground water.

Unit IV
Evolution and development of river valleys; Drainage pattern and their significance; concept of graded stream; river channels- form, pattern and dynamics; Photo-geology and remote sensing application; Regional geomorphology of Appalachian Highland, Uttarakhand, Himalaya and Middle Ganga Plain.

Paper II: Practical: Geological Map and Map Projection

Geological Map: Conformable and folded geological structure and their description.

Map Projection: Conical: Polyconic, Sinusoidal, and Mollweide’s; Cylindrical: Gall’s and Mercator’s; Zenithal: Gnomonic, Stereographic and Orthomorphic; International Map Projection
Readings


Paper III: Project / Assignment

Credits: 2

SEMESTER-VII

Innovative Teaching Module relevant to School Teaching

Credits: 2
SEMESTER-VIII

Paper: I: Agricultural Geography

Unit I
Meaning and scope of agricultural geography; Approaches to agricultural geography; Physical, cultural and institutional factors affecting agriculture.

Unit II
Crop concentration and crop diversification; Delineation of crop combination regions; Agricultural regions of the world; detailed study of subsistence, plantation, commercial and mixed farming.

Unit III
Agricultural land-use and carrying capacity; Land use pattern with special reference to India; Measures of agricultural efficiency and agricultural productivity.

Unit IV
Agricultural planning and policies in India, Agro-climatic regions of India, Green revolution in India; Second generation reforms in Indian agriculture: Land and institutional reforms, Evergreen revolution; Organic and contract farming.

Paper II: Climatology

Unit I
Meaning and scope of climatology; Atmospheric chemistry; Insolation: determinants and distribution, Temperature: factors, Distribution and processes of heating and cooling of the atmosphere.

Unit II

Unit III
Monsoon, Jet Stream and their significance with reference to India; Precipitation: forms and types; Air Masses: classification and modification; Fronts: source regions, types and associated weather.

Unit IV
Cyclones: tropical and temperate; Climatic classification: Koppen and Thornthwaite; Climatic change: evidences and theories; Global warming and micro-climate.
Unit I
The field of geography: Geography as a discipline: natural science vs. social science; Relation with other branches of knowledge; Approaches to geography; Relevance of geography.

Unit II
Classical contributions to geographical thought: Greek, Roman, Indian, Arab; Geography rethought: Varenius and Immanuel Kant.
Evolution of geography in India: formative periods and establishments.

Unit III
Foundations of geography: major contributions of Alexander von Humboldt, Carl Ritter, and Frederick Ratzel; Dualism and Unity in geography.

Unit IV
Schools of geographical thought: French, British, Swedish and American; Evolution of modern geography in India; Recent trends in geography.

Paper IV: Practical: Field study, Field Trip and Report writing Credits: 3

Fieldwork: Meaning, types and objectives of fieldwork; Fieldwork methods and techniques; Importance of fieldwork in geography, Field work-based report writing.

Field Study in Local Environment: Preparation of field report through fieldwork on any ONE of the following areas:
A locality of Varanasi city, a village near BHU, a river course near Varanasi.

Field Trip: Garhwal Himalaya, Kumaon Himalaya, Vindhyan Plateau, Thar Desert.

Readings

Paper V: Project/Assignment

Credits: 4
SEMESTER – I

ENGLISH-I
Credits: 2

Indian English Poetry

1) R.N. Tagore - (i) Where the mind is without fear (ii) I had gone a-begging from door to door.
2) Henry L. Derozio – To the Pupils of the Hindu College.
3) Toru Dutt – The Lotus.
4) Sarojini Naidu – Awake!
5) Nissim Ezekiel – Very Indian Poem in Indian English.
6) A.K. Ramanujan – Another View of Grace, Striders.
8) Kamala Das – The Old Playhouse.

Indian English Fiction


Critical Appreciation of Poetry (Unseen)

Essay Writing (Unseen)

ENGLISH-II
Credits: 2

Guided Composition

1) Paragraph Development (With given hints).
2) Note Making
   Selecting essential information, note-taking from reading, drawing recommendations, summarizing, taking down the bare essentials, writing definitions and precise descriptions.
3) Précis Writing.
Grammar and Vocabulary

1) Parts of Speech (especially forms and functions of nouns, pronouns, verbs, adjectives, conjunctions, prepositions and interjections).

2) Re-arranging jumbled words into a meaningful order.

3) Correction of Errors in Sentences.

4) Antonyms.

5) Synonyms.

6) Homonyms.

7) One-word Substitution.

Readings


ENGLISH III

Credits: 2

Project Work

• A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.
• The Supervisor/the Board of Supervisors may allot a new topic for Project if the topics suggested by the student-teacher are found to be lacking merit.
• Each student-teacher has to prepare a synopsis followed by a final draft on the topic she/he chooses for her/his Project.
SEMESTER – II

ENGLISH-I

Credits: 2

Indian Drama

1) Girish Karnad – The Dreams of Tipu Sultan.

2) Vijay Tendulkar – Silence! The Court is in Session.

Indian English Fiction

1) Amitav Ghosh – The Hungry Tide.

Critical Analysis of a Prose Passage (Unseen).

Essay Writing (Unseen).

ENGLISH-II

Credits: 2

Free Composition

Letter Writing – Formal and Informal

(a) Formal Letters
   i. Business Letters or Commercial Letters.

   ii. Application Letters.


(b) Informal/personal correspondence to parent(s), friend(s) or relative(s)

   i. Story Writing (A few hints may be given from which the story needs to be developed; the moral also requires to be mentioned).

   ii. Essay Writing – Approximately 350-500 words.
Functional Grammar

1) Agreement of the verb with the subject.

2) Use of Tense.

3) Active and Passive Voice.

4) Use of Articles and Prepositions.

5) Direct and Indirect Speech.

6) Use of Punctuation.

7) Use of Phrasal Verbs and Everyday Idioms.

8) Words commonly Misspelt.

9) Correction of Errors.

10) Transformation of Sentences

   i) Interchange between Parts of Speech.

   ii) Interchange between the Degrees of Comparison.

   iii) Interchange between Positive, Negative, Interrogative and Exclamatory Sentences.

   iv) Interchange between Simple, Complex and Compound Sentences.

Readings

➢ Miller, Edwin L. Practical English Composition, Book II.
ENGLISH III  

Credits: 2

Project Work

- A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.

- The Supervisor/the Board of Supervisors may allot a new topic for Project if the topics suggested by the student-teacher are found to be lacking merit.

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SEMESTER – III

ENGLISH-I

Poetry

Renaissance Poetry


2) John Milton – On his Blindness.

Romantic Poetry


3) S.T. Coleridge – Kubla Khan.

4) P.B. Shelley – To a Skylark.

5) John Keats – Ode to Autumn.

6) Lord Byron – She Walks in Beauty.

Drama

1) William Shakespeare – The Merchant of Venice.

Figures Of Speech/ Literary Terms


Critical Appreciation of Poetry (Unseen).

ENGLISH-II

Listening

Concept, Significance and Activities to Develop Listening (Audio CDs prepared by BBC and other standard companies may be used in the Language Laboratory).

Speaking

Concept, Significance and Activities to Develop Speaking (Recording of own articulation following a standard variety of English may be encouraged during the Language Laboratory practices).

Reading


ENGLISH III

Credits: 2

Project Work

- A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.

- The Supervisor/the Board of Supervisors may allot a new topic for Project if the topics suggested by the student-teacher are found to be lacking merit.

- Each student-teacher has to prepare a synopsis followed by a final draft on the topic she/he chooses for her/his Project.
ENGLISH-I

Poetry

Victorian Poetry
1) Lord Tennyson – The Lotos Eaters.
2) Robert Browning – My Last Duchess.

Modern Poetry
1) W.B. Yeats – An Acre of Grass.
2) Wilfred Owen – Strange Meeting.
3) T.S. Eliot – The Hollowmen.

Drama

1) T.S. Eliot – Murder in the Cathedral.

Prosody (Scansion)

Critical appreciation of poetry (Unseen)

ENGLISH-II

Listening
Sentence drilling while listening to Audio CDs, Recorded Prepared Speeches by Famous Orators may also be shown as exemplary articulation patterns.

Speaking
Group Discussion, Framing and Delivering Dialogues on a Given Situation, Prepared and Extempore Speeches.

Reading
Recitation of a given poem, Reading a given prose piece etc. Intellectually stimulating topics should be carefully selected as reading passages to practise both silent and loud readings. A precise lecture on reading styles and types may be delivered by the teacher before the sessions of practice.

Writing
1) Speech(s) on given topic(s).
2) Newspaper reports.

Integration of the Four Skills
Tasks should be designed integrating the four skills viz., Listening, Speaking, Reading, Writing, by the teacher for more practice.
Readings


ENGLISH III

Credits: 2

Project Work

- A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.

- The Supervisor/the Board of Supervisors may allot a new topic for Project if the topics suggested by the student-teacher are found to be lacking merit.

- Each student-teacher has to prepare a synopsis followed by a final draft on the topic she/he chooses for her/his Project.
SEMESTER – V

ENGLISH-I

Credits: 2

Short Stories

1) Somerset Maugham – The Lotus Eater.
2) James Joyce – Araby.

Essays and Sketches

2) E.M. Forster – Notes on the English Character.
3) Virginia Woolf – The Mark on the Wall.

Novel

1) Charles Dickens – David Copperfield.

Twentieth Century Literary Criticism

1. Absurd Drama.
2. Imagism.

Critical analysis of a Prose Passage (Unseen)

ENGLISH-II

Credits: 2

Phonetics

Phonemic transcriptions, Phonemes and their articulation patterns.

Concepts of Modern Grammar

1) Difference between traditional and modern grammars.
2) Morphology.
3) Immediate Constituent (IC) Analysis.

English Language Education

1) Introduction to English Language Education.
2) Role of English in Indian Education.
3) English in Indian Classrooms.
4) Methods of Teaching English.
5) Recent Trends in Teaching English.
Readings

- O’Grady, W., Dobrovolsky, O.M. & Aronoff, M. Contemporary Linguistics: An Introduction, Chapter 4, pp. 111-155, New York: St. Martin’s Press,
Project Work

- A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.

- The Supervisor/the Board of Supervisors may allot a new topic for Project if the topics suggested by the student-teacher are found to be lacking merit.

- Each student-teacher has to prepare a synopsis followed by a final draft on the topic she/he chooses for her/his Project.
SEMESTER – VI

ENGLISH-I

Credits: 2

Short Stories

1) H.E. Bates – The Ox.

2) Katherine Mansfield – The Fly.

Essays and Sketches

1) George Orwell – Shooting an Elephant.

2) D.H. Lawrence – The Spinner and the Monks.

3) G.B. Shaw – Freedom.

Novel

1) Rudyard Kipling – Kim.

Critical Analysis of a Prose Passage (Unseen).

ENGLISH-II

Credits: 2

Phonetics

Accents, Intonations, Rhythm and Rhyme, Word articulation.

Concepts of Modern Grammar

1) Phrase Structure (PS) Grammar.

2) Transformational Generative (TG) Grammar.

English Language Education

1) Behaviourism – The Behaviourist View of Language Learning and the Language Teacher.

2) Cognitivism – Cognitive views on Learning, the Cognitive Theory of Learning Extended to Learning of Languages.

3) Developing Teaching Materials.

4) Curriculum Designing.
Readings


ENGLISH III

Project Work

- A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.

- The Supervisor/the Board of Supervisors may allot a new topic for Project if the topics suggested by the student-teacher are found to be lacking merit.

- Each student-teacher has to prepare a synopsis followed by a final draft on the topic she/he chooses for her/his Project.
SEMESTER - VII

Innovative Teaching module for school teaching  
Credits: 2

SEMESTER - VIII

ENGLISH-I  
Credits: 3

Literary Genres

1) The Epic.
2) Tragedy.
3) Comedy.
4) The Novel.

Twentieth Century Literary Tendencies

1) Absurd Drama.  2) Imagism.  3) Symbolism.  4) Naturalism.

An Introduction to Twentieth Century Literary Theory and Criticism

1) What is Theory?
2) What is Literature and does it matter?
3) Language, Meaning and Interpretation.
4) Literature and Cultural Studies.

ENGLISH II  
Credits: 3

Literary Concepts/Ideas

1) ‘Imitation’ as an Aesthetic Form.
2) Poetic Truth.
3) Art and Nature.
4) Art and Morality.
Critical Approaches to Literature

1) A Historical Approach to Literature Reading.

2) A Philosophical Approach to Literature Reading.

ENGLISH-III

Contributions/Theories of Some Selected Critics to Literary Criticism

1) Philip Sidney: Superiority of poetry over other sciences/disciplines (From An Apology for Poetry).

2) Samuel Johnson: Defence of Shakespeare’s intermingling of the tragic and the comic in drama (From Preface to Shakespeare).


Film Appreciation

Critical Analysis of a Prose Passage (Unseen).

ENGLISH – IV

Seminar Work

- From a proposed list of topics each student-teacher will finally opt for one topic.

- The Supervisor/the Board of Supervisors may allot a new topic for Seminar if the topics suggested by the student-teacher are not the mark.

- Each student-teacher shall prepare a synopsis followed by a final draft and a presentation thereon.

Report Writing


Acquiring Dissertation Writing skills such as

1) Structure and Format of Dissertation.

2) Studying the MLA style.

Critical Analysis of Poem (Unseen).
Readings

- Gayley and Scott. Introduction to Methods and Materials of Literary Criticism (Ginn and Company).
- Gummere. Handbook of Poetics (Ginn and Company).
- Gummere. The Popular Ballad (Houghton).
- Hamilton. Materials and Methods of Fiction (Baker).
- Hughes, Glenn. Imagism and the Imagists, Humanities.
- Moulton. Library of Literary Criticism, 8 vols. (Malkan).
- Perry. Study of Prose Fiction (Houghton).
- Raleigh. The English Novel (Scribner).
➢ Steenstrup. The Mediæval Popular Ballad, translated from the Danish by Edward Cox (Ginn and Company).
➢ Winchester. Principles of Criticism (Macmillan).
➢ Worsfold. Principles of Criticism (Longman).

ENGLISH – V

Credits: 4

Dissertation Writing
A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.

The Supervisor/the Board of Supervisors may allot a new topic for dissertation if the topics suggested by the student-teacher are found to be lacking merit.
हिन्दी (HINDI)
### पाठय-

<table>
<thead>
<tr>
<th>कबीर ग्रन्थावली</th>
<th>सम्पादक - श्यामसुंदर दास, नागरी प्रचारिणी सभा, काशी, संस्करण- संवत् २०२१</th>
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### व्याख्या - दो

1. मध्ययुगीन काव्य का विकास, पाद्यमंत्रों की काय्यगत विशेषताएं एवं प्रतिपाद से समाविष्ट एक दौर सत्यविद्यालय प्रस्तुत।

2. कविताओं का मूल स्वर, रचनाकार का साहित्यिक परिचय आदि पर चार लघूतरीय प्रस्तुत।

3. पाद्य मंत्रों से समाप्ति तीन अट्ठ लघूतरीय प्रस्तुत।

4. पाद्य मंत्रों पर आधारित दस अत्यन्त लघूतरीय प्रस्तुत।

5. (२)

### सहायक ग्रन्थ -

1. कबीर - हंजारी प्रसाद द्विवेदी
प्रथम अध्याय, द्वितीय प्रश्नपत्र
हिंदी

हिंदी कहानी और व्याकरण

क्रेडिट - 2

पाठ-
क. कथा एकादशी - सम्पा.- डॉ. विजयपाल सिंह, संजय बुक सेंटर, गोलघर, वाराणसी।
ख. व्याकरण -

क. कथा एकादशी
- व्याख्या- दो 5 + 5 = 10
- हिंदी कहानी का उद्देश्य एवं विकास, पठित कहानियों का प्रतिपाद एवं सारांश, कहानी-सारांश आदि पर आधारित एक दीर्घ उत्तरीय निबन्धालक प्रश्न-

ख.-
- कथा एकादशी के पाठांशों की विषय-वस्तु, विशेषताएँ, चरित्र-विवरण आदि से संबंधित चार लघुतरीय प्रश्न- 4 x 3 = 12
- पठित कहानियों की संबंधता, मूल-स्वर, उदेश्य आदि पर तीन अति लघुतरीय प्रश्न- 3 x 2 = 6
- पठित कहानियों एवं व्याकरण पर पाँच वस्तुनिष्ठ प्रश्न- 5 x 1 = 5

ख. व्याकरण-
- शब्द-रचना - उपसर्ग और प्रक्षय- 3
- वाक्य-भेद और वाक्य रूपांतरण - (सरल, मिश्र एवं संयुक्त)- 3
- लोकोक्तियाँ एवं मूहावरे- 4

सहायक प्रश्न-

Page 294 of 372
प्रथम अधिसत्र, तृतीय प्रश्नपत्र

परियोजना(Project)/दत्तक (Assignment)/सैलिक कार्य-कलाप(Academic Activities)

* 

द्वितीय अधिसत्र, प्रथम प्रश्नपत्र

हिंदी एकांकी एवं व्याकरण और रचना

<table>
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<tr>
<th>पाठ्य-</th>
<th>क.</th>
<th>एकांकी-कुञ्ज</th>
<th>सम्पा.- डा. गोपीनाथ तिवारी, डा. देवर्षि सनाक्षा, विश्वविद्यालय प्रकाशन, चौक, वाराणसी।</th>
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<td>ख.</td>
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पाठ्य प्रयोग-

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<tr>
<td>१. हिंदी नाटक : उद्धव और विकास</td>
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<td>२. आधुनिक हिंदी नाटक</td>
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<td>३. लेखन समीक्षा</td>
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<td>४. हिंदी मानवकार</td>
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<td>५. आधुनिक हिंदी व्याकरण और रचना</td>
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<td>६. अच्छी हिंदी</td>
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डा० दसरथ ओझा, राजपाल एड्ड संस, दिल्ली।
डा० गोपीनाथ, साहित्य रत्न भण्डार, आगास।
डा० रघुवालकात वर्मा, संजय बुक सेंटर, गोलचर, वाराणसी।
जयनाथ मिलिन, अयामार एड्ड संस, दिल्ली-६।
डा० बाबुरायन न्दन प्रसाद, भारती भवन (पक्षिश्रेष्ठ एड्ड इंट्राब्लूट्स)।
गोविन्द मिर्जा रेड, पटना।
रामचन्द्र वर्मा।
पाठ्य-
क.
1. यशोधरा - मैथिलीशरण गुप्त, साहित्य-सदन, झारखंड (३०)
2. बुद्ध कविता - सम्पादक- डा० श्रीमसाद, केंद्रीय उच्च शिक्षा संस्थान, सातसागर, वाराणसी
ख.
आधुनिक हिंदी कविता पर बोध प्रभाव

क. यशोधरा एवं बुद्ध कविता
- व्याख्या- दो
  ५ + ५ = १०
  - आधुनिक हिंदी कविता का विकास, पठित कविताओं का साहित्यिक विचार, काव्य-सौंदर्य के माध्यम से आधारित एक दृष्टि उन्मूलन निविद्यालय

७
- पठित अंशों का क्षेत्रबाट, विशेषता, आदि से सम्बन्ध चार लघुसंरचनाओं
  ४ × ३ = १२
- पाठ्य कविताओं विशेषता के शिक्षात्मक विचार, विषयवस्तु, मूल-स्वर आदि से तीन अत्यधिक लघुसंरचनाओं
  ३ × २ = ६
- पाठ्य कविताओं के काव्य-सौंदर्य पर आधारित पांच अनुसंधान लघुसंरचनाओं
  ५ × १ = ५

ख. हिंदी कविता पर बोध प्रभाव
  १०

साहित्य ग्रन्थ-
  १. मैथिलीशरण गुप्त : पुनर्मूल्यांकन
  २. हिंदी साहित्य की भूमिका
  ३. हिंदी साहित्य का इतिहास
  ४. आधुनिक हिंदी कविता
  ५. कवि समीक्षा
  ६. व्यक्तिगत हिंदी व्याकरण
  ७. आधुनिक हिंदी साहित्य पर बोध प्रभाव
  डा० जगदीश कुमार

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परियोजना (Project)/दस्तावेज (Assignment)/शैक्षणिक कार्य-कलाप (Academic Activities)
पाठ्य:-
1. निबन्ध-निकष - सम्पादक- डॉ. रामचन्द्र तिवारी, विश्वविद्यालय प्रकाशन,
चौक, वाराणसी।
2. अतीत के चलचित्र - महादेवी वर्मा

- दो-व्याख्या-
- हिंदी निबन्ध एवं संस्मरण का परिचय, प्रतिपाद, मूलस्वर, निबन्ध और संस्मरण का अन्तर,
चरित्र-चित्रण, लेखकों का साहित्यिक परिचय आदि पर दो दीर्घ उत्तरीय आलोचनात्मक प्रश्न -
$5 + 5 = 10$
- पाठ्य वस्तु पर आधारित चार लघुतरीय प्रश्न - $4 \times 3 = 12$
- पाठ्य वस्तु पर आधारित तीन अति लघुतरीय प्रश्न - $2 \times 3 = 6$
- निबन्ध एवं संस्मरण पर आधारित दस वस्तुनिष्ठ प्रश्न - 
$10 \times \frac{3}{2} = 5$

सहायक प्रश्न-
1. हिंदी निबन्ध और निबन्धकार
2. हिंदी निबन्धकार
3. हिंदी के रेखाचित्र
4. हिंदी का संस्मरण साहित्य
5. महादेवी : नयामूर्त्यांकन

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तृतीय अधिस्त्र, द्वितीय प्रश्नपत्र
हिंदी

हिंदी नाटक

पाठ्य:-
क. धृष्ट-स्वामिनी - जयशंकर प्रसाद
ख. आन का मान - हरिकृष्ण प्रेमी
धृष्ट स्वामिनी एवं आन का मान

- दो व्याख्यान- 6+6=12
- नाटक का उद्देश्य और विकास, नाटक के तत्त्व, तत्त्वों के आधार पर समीक्षा, कथानक आदि पर एक दीर्घ उत्तरी श्लोक प्रश्न- 6
- पदार्थ नाटकों पर चार लघुवाचीय प्रश्न- 4+2=6
- कथावस्तु, चरित्र-चित्रण, उद्देश्य नाटक एवं एकांकी में अन्तर आदि पर चार लघुवाचीय प्रश्न- 3×3=9
- पदार्थ नाटकों पर आधारित दस वस्तुनिष्ठ प्रश्न- 10×1=10

सहायक प्रश्न-

1. हिंदी नाटक : उद्देश्य और विकास  
डा. दशरथ ओझा, राजपाल एण्ड सन्स, दिल्ली।

2. आधूनिक हिंदी नाटक  
डा. नगेन्द्र, साहित्य रत्न भण्डार, आगरा।

3. हिंदी नाटककार  
जयनाथ नारायण, अतमाराम एण्ड संस, दिल्ली।

4. प्रसाद के नाटक : रचना और प्रक्रिया  
डा. जगन्नाथ प्रसाद शर्मा, सरस्वती मन्दिर, जयनगर, वाराणसी।

5. नाटक की परख  
डा. एस. पी. खेमी।

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तृतीय अध्यास  
तृतीय प्रश्नपत्र

हिंदी   
क्रेडिट- 2
परियोजना(Project)/दलकार्य (Assignment)/शैक्षिक कार्य-कलाप(Academic Activities)  
*
पाठ्य-
क.
1. निर्मला - प्रेमचन्द
2. पिवलेखा - भवानीचरण वर्मा
ख.
हिंदी उपन्यास और हिंदी उपन्यास पर बोध प्रभाव

क. निर्मला एवं पिवलेखा-
- व्याख्या - दो
- हिंदी उपन्यास का उद्देश्य और विकास, उपन्यास कला की कसौटी पर पठित उपन्यासों का मूल्यांकन, उपन्यासकारों का साहित्यिक परिचय आदि पर आधारित एक दौरे उत्तरीय साहित्यात्मक प्रश्न -
- उपन्यास की कथावृत्ति, विशेषताएँ, चित्रकला-रचना, उद्देश्य आदि पर आधारित चार लघुपहाड़ी प्रश्न - 4 x 3 = 12
- पठित उपन्यासों के प्रतिपाद एवं शिल्पगत विशेषताओं से सम्बन्ध तीन अंतिमपुत्री प्रश्न - 3 x 2 = 6
- पठित उपन्यासों पर पांच अत्यंत लघुपहाड़ी प्रश्न - 5 x 1 = 5

ख. हिंदी उपन्यास और बोधधर्म से सम्बन्ध प्रश्न-

सहायक प्रश्न -
1. हिंदी उपन्यास
2. हिंदी उपन्यास और व्याख्यावाद
3. आज का हिंदी उपन्यास
4. हिंदी उपन्यास
5. आधुनिक हिंदी साहित्य पर बोध प्रभाव
6. मध्यकालीन हिंदी साहित्य पर बोधधर्म का प्रभाव

शिवनारायण श्रीवास्तव, सरस्वती मणिद्र, वाराणसी।
डॉ. त्रिपुरन सिंह, हिंदी प्रचारक संस्थान,
पिपासाचार्य, वाराणसी।
डॉ. इन्द्रनाथ मदन, राजकमल प्रकाशन, नई दिल्ली।
सुभाष धवन, राजकमल प्रकाशन, नई दिल्ली।
डॉ. जगदीश कुमार
डॉ. सरला त्रिपुराणवत, साहित्य निकेतन,
श्रद्धानंद राखै, कनपुर।

* चतुर्थ अधिसत्र, द्वितीय प्रश्नपत्र
हिंदी
हिंदी आलोचना और आलोचक क्रेडिट- 2

पाठ्य-
क. हिंदी आलोचना-
ख. हिंदी के प्रमुख आलोचक- आचार्य रामचन्द्र शुक्ल, आचार्य हजारी प्रसाद द्विवेदी, आचार्य नन्द दुलारे वाजपेयी, डॉ. नंदेन्द्र, डॉ. रामचित्रास शर्मा
- आलोचना का स्वरूप, आलोचना का विकास, आलोचना की प्रकृतियाँ एवं आलोचकों की आलोचना पद्धति पर तीन दीर्घ उत्तरीय निबन्धात्मक प्रश्न- 7×3=21
- आलोचना और आलोचकों से सम्बन्धित चार लघुतरीय प्रश्न- 4×4=16
- आलोचकों के आलोचना सिद्धांत पर तीन अति लघुतरीय प्रश्न- 3×2=6
- आलोचना और आलोचकों पर आधारित सात वस्तुनिष्ठ प्रश्न- 7×1=7

सहायक प्रश्न-
1. आलोचक और आलोचना डॉ. बच्चन सिंह
2. हिन्दी आलोचना डॉ. विष्णुवर्मा वियाणी
3. हिन्दी आलोचना : शिक्षकों का साक्षात्कार डॉ. रामचंद्र तिवारी
4. रामचंद्र शुक्ल और हिन्दी आलोचना डॉ. रामविलास शर्मा
5. हिन्दी समीक्षा : स्वरूप और सन्दर्भ डॉ. रामदरा मिश्र

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चतुर्थ अधिसत्र, तृतीय प्रश्नपत्र

हिन्दी क्रेडिट- 2

परियोजना(Project)/दस्तकार्य (Assignment)/शैक्षिक कार्य-कलाप(Academic Activities)

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पंचम अधिकार, प्रथम प्रश्नपत्र
हिंदी
गद्द की लघु विख्याति एवं हिंदी साहित्य का इतिहास

पाठ्य-
क. विषया - सम्पा०-डॉ० संज्ञानन्द, अमृत प्रकाशन, ईश्वरगंगी, वाराणसी।
ख. हिंदी साहित्य का इतिहास - (रीतिकाल एवं आधुनिककाल)

क. विषया -
  1. व्याख्या-दो
  2. हिंदी गद्द का उद्गम और विकास, हिंदी गद्द की लघु विख्याति—संस्मरण, जीवनी, आत्म-कथा, रेखाचित्र,
     रिपोर्टज आदि का परिचयात्मक अध्ययन एवं लेखकों का साहित्यिक परिचय से सम्बन्धित एक दीर्घ उत्तरीय
     निबन्धात्मक
     प्रश्न- 6 + 6 = 12
  3. संस्मरण, जीवनी, आत्म-कथा, रेखाचित्र, रिपोर्टज की विषय-वस्तु, सारांश, चरित्र-चित्रण, मूल-व्यर्थ आदि
     से सम्बन्धित चार लघूतरीय प्रश्न- 4 × 3 = 12
  4. संस्मरण, जीवनी, आत्म-कथा, रेखाचित्र, रिपोर्टज का अर्थ, परिभाषा, विशेषता आदि से सम्बन्ध तीन आति
     लघूतरीय प्रश्न- 3 × 2 = 6
  5. विषया के पाठों एवं हिंदी-साहित्य के इतिहास पर आधारित पाँच अन्यत्र बस्तुमिश्र प्रश्न-5 × 1
     = 5

ख. हिंदी साहित्य का इतिहास (रीतिकाल एवं आधुनिककाल)- 8
  1. रीतिकाल एवं आधुनिक काल का नामकरण, परिस्थितियाँ, प्रवृत्तियाँ एवं उनका महत्त्व आदि पर प्रश्न।

सहायक प्रश्न-
  1. हिंदी साहित्य का इतिहास आचार्य रामचन्द्र शुक्ल, नागरी प्रचारिणी सभा, काशी।
  2. हिंदी साहित्य : एक परिचय डॉ० तिब्बुन सिंह, हिंदी प्रचारक संस्थान, पिशाचमोचन, वाराणसी।
  3. हिंदी साहित्य का इतिहास सम्पा०-डॉ० नंदन, नेशनल पब्लिशिंग हाउस, नई दिल्ली।
  4. हिंदी निबन्ध और निबन्धकार डॉ० रामचन्द्र नवाबी, विद्वानविद्वालय प्रकाशन, वाराणसी।
  5. हिंदी का संस्मरण साहित्य डॉ० कामेश्वर शरण सहाय माखनलाल सर्वां
पंचम अधिष्ठ, द्वितीय प्रश्नपत्र
हिंदी
प्रयोजन- मूलक हिंदी और हिंदी साहित्य का इतिहास
क्रेडिट- 2

पाठ्य-
क. प्रयोजन-मूलक हिंदी
- प्रयोजन-मूलक हिंदी का अभिप्राय और महत्व
- हिंदी-भाषा के विभिन्न रूप - राष्ट्रभाषा, राजभाषा, राजभाषा एवं सम्पर्क भाषा
- व्यावहारिक हिंदी - प्राचीन के प्रकार
ख. हिंदी साहित्य का इतिहास (आदिकाल एवं भंकिकाल)
- काल-विभाजन सीमा एवं नामकरण
- आदिकाल की प्रमुख रचनाएँ
- आदिकाल की प्रवृतियाँ एवं महत्व
- भक्तिकाल का नामकरण एवं आंचलिक
- भंकिकाल के प्रमुख कवि एवं उनकी कृतियाँ
- भक्त-अनुभोलन एवं भक्तिकालीन काव्य की प्रवृतियाँ
- हिंदी साहित्य में भक्तिकाल का महत्व

- प्रयोजन-मूलक हिंदी : आदिकाल एवं भंकिकाल पर तीन दौरों उत्तरीय निबन्धात्मक प्रश्न - 7×6+6=49
- आदिकाल एवं भंकिकाल से सम्बंधित तीन लघुत्तम प्रश्न - 4×3=12
- पाठ्यांकों पर आधारित तीन अति लघुत्तम प्रश्न - 3×3=9
- प्रयोजन-मूलक हिंदी एवं हिंदी साहित्य के इतिहास पर आधारित दस वस्तुतिष्ठ प्रश्न - 10×1=10

सहायक प्रश्न-
1. हिंदी साहित्य का इतिहास
2. हिंदी साहित्य : उद्घाटन एवं विकास
3. हिंदी साहित्य का इतिहास: सम्पा.- डा. नगेन्द्र
4. हिंदी साहित्य : एक परियोजना
5. हिंदी में सरकारी काम-काज
6. प्रयोजन-मूलक हिंदी
7. प्रयोजन-मूलक हिंदी
8. प्रशासनिक हिंदी प्राप्ती और पत्र-लेखन
9. प्रयोजन-मूलक हिंदी

* पंचम अधिष्ठ, तृतीय प्रश्नपत्र
हिंदी
परियोजना(Project)/दक्षिण (Assignment)/शैक्षिक कार्य-कलाप(Academic Activities)

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पाठ्य-

1. साकेत (नवम सर्ग) - मैथिलीशरण गुप्त
2. कामाख्यी (श्रद्धा एवं लज्जा सर्ग) - जयशंकर प्रसाद
3. तारापथ (मौन निमंत्रण, हुला इत्यादि) - सुमित्रानन्द पंत
   (जगत के जीवनपत्र, बापू के प्रति, भारतमाता)
4. संग-विराग (सरोज-स्वरूप) - सं.० रामदास शर्मा

- दो-व्याख्या
- आधुनिक कविता : एक परिचय पर एक दीर्घ उत्तरीय निबन्धात्मक प्रश्न
- कविता की विषय-वस्तु, प्रतिपाद, मूल स्वर एवं संदेश, कविता विशेषताएँ, चरित्र-विवरण, कवियों का साहित्यिक परिचय आदि पर एक आलोचनात्मक प्रश्न
- पाठ्य वस्तु पर आधारित तीन लघूसूत्रीय प्रश्न
- पाठ्य वस्तु पर आधारित तीन अति लघूसूत्रीय प्रश्न
- पाठ्य वस्तु पर आधारित पाँच वस्तुनिष्ठ प्रश्न

सहायक प्रश्न-

1. जयशंकर प्रसाद
2. कामाख्यी : एक दृष्टिकोण
3. कामाख्यी : अवधारण की समस्याएँ
4. कामाख्यी-विषय
5. मैथिलीशरण गुप्त : पुनरुल्लाखन
6. सुमित्रानन्द पंत
7. ज्ञानिकारी कवि सिद्धांत
8. निर्णय : आत्महत्या : आशा
9. छायावाद

नन्दनकुटौं, वाजियें, भारतीय भंडार, हलाहाबाद
नन्दनकुटौं, वाजियें, भारतीय भंडार, हलाहाबाद
डॉ.० नगेन्द्र, साहित्य रत्न भंडार, आगाज
डॉ.० भगिरथ मिश्र
डॉ.० नगेन्द्र, श्रमात्मक प्रकाशन, नन्दनकुटौं, वाजियें
डॉ.० नगेन्द्र, साहित्य रत्न भंडार, आगाज
डॉ.० बन्दर सिंह, नन्दनकुटौं, वाजियें, भारतीय भंडार, हलाहाबाद
डॉ.० नानकर सिंह, भारतीय भंडार, हलाहाबाद
पाठ्य-

(क) हिंदी भाषा-
(ख) लिपि-

- हिंदी शब्द की व्युपति, अभिव्यक्ति एवं प्रयोग, हिंदी क्षेत्र का विस्तार, हिंदी शब्द-समूह, हिंदी भाषा का उद्देश्य और विकास, देवनागरी लिपि का उद्देश्य और विकास आदि पर तीन दीर्घ उत्तरीय निबन्धालयक प्रश्न- 7×3=21
- देवनागरी लिपि का नामकरण, विशेषताएं, गुण-दोष एवं सुधार के प्रयास, देवनागरी लिपि की वैज्ञानिकता, लोकप्रियता आदि पर चार लघुत्तम प्रश्न - 4×4=16
- हिंदी भाषा और लिपि पर तीन अलग लघुत्तम प्रश्न - 3×2=6
- हिंदी भाषा और लिपि पर आधारित सात वस्तुनिष्ठ प्रश्न- 7×1=7

सहायक प्रश्न-

1. हिंदी भाषा का इतिहास बाबूराम समसेना
2. हिंदी : उद्देश्य, विकास और रूप हरदेव बाहरी
3. हिंदी भाषा : इतिहास और स्वरूप राजमणि शर्मा
4. हिंदी भाषा और विकास उदय नारायण तिवारी
5. हिंदी भाषा और लिपि का विकास डॉ. सत्यनारायण तिवारी

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षष्ठ अधिष्ठत, द्वितीय प्रश्नपत्र 
हिंदी 
परियोजना(Project)/दशकार्य (Assignment)/शैक्षिक कार्य-कलाप(Academic Activities) 

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सप्तम अधिष्ठत 

School Attached Programme
पाठ्य-

1. कनूनिया-
   - धर्मवीर भारती, भारतीय ज्ञानपीठ प्रकाशन, नई दिल्ली

2. काव्य-निष्ठा-
   - सम्पादन-डॉ.विभवान प्रसाद, डॉ.रामसुंदर सिंह, संजय बुक सेंटर, गोलकंडा, वाराणसी

   जयशंकर प्रसाद - आशा सर्ग (प्रारम्भ के केवल दस छंद)
   सूर्यकांत श्रीपाठी 'निराला' - सन्त्य सूदर, बादल-राग-6
   सुमित्रानन्द पन्ना - मोह, में नहीं चाहता चिर सुख
   सचिवादन धामानन्द वात्सायन 'जनेकर' - नन्दी के दौं, बावसा अहेंरी
   गजानन माधव मुक्करियाण - भूल-गलती, भूरी-भूरी खाक-भूल
   सचेत्ता दयाल सक्सेना - भूख, मेरे भीतर की कोयल, दस्ताने
   सुदामा पाण्डेय 'धूमिल' - मोंच्छालाम

कनूनिया एवं काव्य-निष्ठा

- व्याख्या - दो
- आधुनिक हिंदी काव्य का विवाद, पाठ्यांशों की काव्यगत विशेषताएं
  एवं प्रतीतिवेद दो समान्तृत दो दृष्टिनिरीक्षण निवन्धात्मक प्रश्न 7 + 6 = 13
- कविताओं का मूल स्तर, पाठों का चित्रकलाण, रचनाकारों का साहित्यिक परिचय
  आदि पर आधारित चार लघुपुस्तकीय प्रश्न 4 x 3 = 12
- पाठ्य प्रश्नों से सम्बन्धित तीन अतिलघुपुस्तकीय प्रश्न 3 x 2 = 6
- पाठ्य-प्रश्नों पर आधारित सात लघुपुस्तिक प्रश्न 7 x 1 = 7

(2)

सहायक प्रश्न-

1. हिंदी साहित्य का इतिहास
   आचार्य रामचन्द्र शुक्ल, नागरी प्रचारणी सभा, वाराणसी।
2. क्रांतिकारी कवि निराला
   डॉ.बच्चन सिंह, नन्द किशोर एण्ड सनस, चीक, वाराणसी।
3. आधुनिक साहित्य की प्रतिवादियाँ
   डॉ.नामवर सिंह, लोकभारती प्रकाशन, हल्लाबाग।
4. आधुनिक हिंदी कविता
5. बारह हिंदी काव्य
6.
पाठ- 
- काव्य का स्वरूप 
- काव्य-प्रयोजन 
- काव्य-हेतु 
- काव्य के प्रकार 
- काव्य-गुण 
- काव्य-दृष्टि 
- रस-सिद्धान्त - रस का स्वरूप, भेद एवं उनका सामान्य परिचय 
- अलंकार सिद्धान्त - प्रमुख अलंकारों का सामान्य परिचय 
- सीता-सिद्धान्त, वक्रोक्ति-सिद्धान्त एवं ध्वनि-सिद्धान्त का सामान्य परिचय

- पाठांशों पर आधारित तीन दीर्घ उत्तरीय निबन्धात्मक प्रश्न- 7+6+6=19
- पाठ-वस्तु पर चार लघूतरीय प्रश्न- 4×3=12
- पाठ-वस्तु पर तीन अति लघूतरीय प्रश्न- 3×3=9
- रस, अलंकार, वक्रोक्ति एवं ध्वनि-सिद्धान्तों पर आधारित दस वस्तुनिष्ट प्रश्न- 10×1=10

सहायक प्रश्न
1. काव्य-शास्त्र डॉ. भगिरथ मिश्र, विश्वविद्यालय प्रकाशन, चौंक, बाराणसी।
2. भारतीय काव्यशास्त्र के नये क्षितिज डॉ. रामरूप त्रिपाठी, राजकमल प्रकाशन, नई दिल्ली।
3. भारतीय काव्यशास्त्र डॉ. देवेन्द्रनाथ शाम्भू
4. भारतीय काव्यशास्त्र डॉ. सच्चदेव चौधरी, अलंकार प्रकाशन, दिल्ली।
5. भारतीय काव्यशास्त्र की भूमिका डॉ. नगेन्द्र
6. सिद्धान्त और अभ्यास गुलाब राय

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पाठव:-
- पेटेटो - काव्य-सिद्धान्त
- अरस्सू - अनुकरण सिद्धान्त, विचरण-सिद्धान्त एवं पेटेटो तथा अरस्सू के काव्य-सिद्धान्तों की तुलना
- टी.एस. इलियट - परम्परा की परिकल्पना एवं वैयक्तिक प्रशान्त
- आई.ए. रिचर्ड्स - व्याकरणिक आलोचना
- वैरोजवर्ध - काव्य-भाषा के सिद्धान्त
- लांजाइनस-काव्य के उदाहरण की अवधारणा

- तीन दीर्घ उत्तरीय निबन्धात्मक प्रशन- ७+६+६ = १९
- चार लघुतरीय प्रशन- ४ × ३ = १२
- तीन अति लघुतरीय प्रशन- ३ × ३ = ९
- दस वर्तुनिश्च प्रशन- १० × १ = १०

सहायक प्रश्न-
1. पाश्चात्य काव्य-शास्त्र के सिद्धान्त
   डॉ. सानिता स्वरूप गुप्त, अरोक प्रकाशन, नई दिल्ली
2. पाश्चात्य काव्यशास्त्र की परम्परा विश्वविद्यालय,
3. पाश्चात्य समीक्षा शास्त्र - सिद्धान्त एवं परिदृश्य
   डॉ. नगेन्द्र
4. पाश्चात्य साहित्य शास्त्र
   डॉ. रामपुर्जन तिवारी
5. पाश्चात्य काव्यशास्त्र
6. पाश्चात्य साहित्य-फिल्म
DeffOeme$e øeMvehe$e - 4 (IV-Paper)

DeffOeme$e øeMvehe$e - 5 (V-Paper)

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PSYCHOLOGY
SEMESTER – I

PAPER I: Introductory Psychology  
Credits: 2

Unit-I  
1. Introduction. Psychology as a science  
2. Biological basis of behaviour  
3. Structure and function of visual and auditory senses  
4. Sensory and Perceptual Processes  
5. Perception; nature and determinants  

Unit-II  
a. Learning: Classical and Instrumental conditioning, Schedules of Reinforcement, Extinction  
   Memory: Sensory, STM, LTM, Forgetting and its causes.  
b. Affective processes: Autonomic, expressive and cognitive components  
   Theories: James-Lange, Cannon-Bard, Schachter-Singer and Lazarus. Motivation; nature and types; Need hierarchy model.

Unit-III  
a. Individual differences: Intelligence structures and measurement.  
b. Personality: Traits and Type approaches, assessment of personality, objective and projective tests.

PAPER II: Laboratory Work (Practicals)  
Credits: 2

Practicals: (Laboratory Work)  
1. Effect of knowledge on performance  
2. Span of attention  
3. Serial position effect (human memory)  
4. Human Maze Learning  
5. Verbal test of Intelligence (Mohsin)  
6. Personality Measure: TPPS.

Readings  
➢ Tripathi, R.R. Prayogatamak Manovigyan, Agra: Agra University.

PAPER III: Project & Assignment  
Credits: 2
PAPER I: Applied Psychology

c. Mental health, mental disorders, psychoneuroses and Psychoses, Psychotherapies.
d. Psychology in industry and organization, personnel selection. Job-analysis, Fatigue and accidents, advertising and salesmanship.
e. Psychology and social behavior-Prejudice, stereotypes; conflict and its resolution.

PAPER II: Laboratory Work (Practicals)

Practicals (Laboratory Work)

a. Anxiety test (state-trait and free-floating)
b. Mental fatigue
c. Adjustment test
d. Emotional maturity test
e. Nonverbal intelligence test

Readings


PAPER III: Project & Assignment

Credits: 2
SEMESTER – III

PAPER I: Experimental Methods and Elementary Statistics Credits: 2

a. Experiments: Steps in experimentation. Problem, hypothesis, variables, their types and their control.

b. Experimental design: Meaning and purpose; single group design, pre and post measurements. Between subjects designs. Randomized and matched.

c. Statistics and its application in Psychology: Frequency distribution and graphical representation of data.

Descriptive statistics: Mean, Median, Mode, Range, Quartile Deviation and Standard Deviation.

d. Hypothesis testing: significance of difference between two means and standard deviations. Correlations and Chi-square-test.

e. Normal Probability Curve: Properties and applications.

Correlation: Product-moment and Rank Difference.

Readings


PAPER II: Practicals: (Laboratory Work) Credits: 2

1. Formulation of Before and After Test Design in Learning Experience.

2. Experimental design between experimental and control groups.

3. Significance of difference between related and unrelated means (given-data).

4. Testing the reliability of means and SDs (given-data)

PAPER III: Project & Assignment Credits: 2
SEMESTER - IV

PAPER I: Abnormal Psychology  
Credits: 2

a. Concepts of normality an abnormality, Causes of Psychopathology. Classification of disorders according to DSM-IV-TR.

b. Disorders of childhood: Mental retardation, Autism, Attention-Deficit Hyperactivity disorder (ADHD)


d. Psychotic disorders: schizophrenia, bipolar mood disorder, delusional disorder.

e. Personality disorders: Psychopathy-moral insanity.

PAPER II: Practicals (Laboratory Work)  
Credits: 2

a. NEO-FFI.

b. MMPI, (Indian adaptation) M C Joshi

c. WAIS

d. TPPS, R. R. Tripathi

e. Anxiety (State Trait and Free-floating)

Readings


PAPER III: Project & Assignment  
Credits: 2
SEMESTER – V

PAPER I: Clinical Psychology

Credits: 2

b. Diagnostic assessment and clinical tools, Interview, Case Study, Observational Assessment.
c. Diagnostic Tests: Intelligence tests: Scatter analysis. S-B Test and WAIS. Personality tests: MMPI, NEO-FFI, TAT and Rorschach

PAPER II: Practicals (Laboratory Work)

Credits: 2

a. Anxiety Scale (State-Trait and Free-floating) RRT
b. MMPI (Clinical Scales, Indian adaptation) M C Joshi
c. Eysenck Personality Questionnaire (EPQ)
d. Systematic desensitization. Wolpe, J.
e. WAIS-II – Indian adaptation

Readings


PAPER III: Project & Assignment

Credits: 2
SEMESTER – VI

PAPER I: Developmental Psychology Credits: 2

b. Infancy: Sensory and perceptual development. Language, emotional and social development.
c. Childhood: Developmental tasks, cognitive, social and moral development.
e. Adulthood and old age: Adjustment problems and specific issues.

PAPER II: Practicals (Laboratory Work) Credits: 2

a. Moral Development.
b. Eysenck Inventory Questionnaire (EPQ).
c. Embedded Figure Test.
d. Assessment of Life Satisfaction.
e. Self-esteem.

Readings

➢ Bhutt, G. (1990), Vikasatmak Manovigyan, Delhi: Delhi University.

PAPER III: Project & Assignment Credits: 2
SEMMESTER - VII

Innovative Teaching Module relevant to School Teaching  
Credits: 2

SEMMESTER - VIII

PAPER I: Culture and Human Behaviour  
Credits: 3


c. Sensation and Perception, colour perception (culture specific). Interpreting Patterns and Pictures, perception of time.


PAPER II: Practical  
Credits: 3

1. Psychological Survey and field experiments.
2. Measurement and Evaluation

PAPER III: Psychology of Social Behaviour  
Credits: 3

a. Introduction: Nature and scope group structure and functions. Social facilitation, social loafing and social conformity.


e. Pro-social behavior: Cooperation and helping behavior Detrainments of helping behaviour.
Readings


PAPER IV: Dissertation Credits: 3

PAPER V: Project & Assignment Credits: 4
SOCIology
SEMESTER – I

PAPER I: Sociology: Key Concepts          Credits: 2

1) Emergence of Society as a scientific discipline, its meaning, nature and scope.

2) Concepts
   • Social group: Meaning and types
   • Community: Meaning and characteristics
   • Society: Rural and Urban
   • Status and Role: Ascriptive and achieved
   • Class: Definition and determinations

Readings

➢ H.M. Johnson: Sociology: A systematic introduction.

PAPER II: Perspectives of Indian Society          Credits: 2

1. Indological and Historical perspectives
2. Traditional bases: Varna, Ashram, Purushartha, Dharma, Karma
3. Trends in the Tradition of Indian Society

Readings

➢ N.N. Srinivas: Caste in Modern India and other essays.
➢ G.S. Ghusye: Caste in India.
➢ N.N. Srinivas: Dimensions of Social Change
➢ Yogendra Singh: Modernization of Indian Tradition.

PAPER III: Project & Assignment          Credits: 2
SEMESTER – II

PAPER I: Social Processes


b. Stratification: Meaning and Basis.


d. Social Change: Meaning and factors.

PAPER II: Indian Society and Culture

a. Institutions: Marriage (Hindu, Muslim), Kinship and Family, Religion.

b. Jajmani System: Concept and Relevance.

c. Caste: Structure, function and change.

d. Current issues: Communalism, Regionalism and Ethnocentrism.

Readings

➢ Augustine, S. Indian Family in transition.
➢ Kapadia, K.M. Marriage and family in India.
➢ Kingsley, Davis: Human Society.
➢ Srivastva, H.C., & Srivastava, C.P. Samajik Niyaman Evam Parivartan.
➢ Tumin, M.M. Social Stratification.

PAPER III: Project & Assignment
SEMESTER – III

PAPER I: Social Movement: Concept and Theories          Credits: 2

b. Agents of social movements.
c. Theories: Relative Deprivation Theory, structural strain* theory Revitalization theory.

PAPER II: Dynamics of Indian Society                     Credits: 2

a. Processual and Functional changes: sanskritization, modernization, secularism and digitalization.
b. Structural changes.
   • Land reforms
   • Industrialization & SEZ
   • Urbanization
   • Green revolution
   • Gender and Women Empowerment
   • Aging and Healthcare

Readings

➢ Baig, M.R.A. The Muslim Dilemma in India.
➢ Banks, J.R. The Sociology of Social movement.
➢ Desai, A.R. Social Background of Indian Nationalism.
➢ Mohan, Radhey (Ed.). Composite Culture and Indian Society.
➢ Singh, Yogendra. Modernization of Indian Tradition.
➢ Srivastva, S. K., & Srivastva, A. L. Social movement for Development

PAPER III: Project & Assignment                          Credits: 2
SEMESTER – IV

PAPER I: Major Social Movements in India  
Credits: 2

a. Types of Social Movements

b. Major contemporary movements with special reference to the components, agents and factors.
   (i) New Peasant movement: Bharatiya Kisan Union.
   (ii) Naxalism
   (iii) Environment Movement: Chipko
   (iv) Feminism

PAPER II: Constitutional safeguards and National Issues  
Credits: 2

a. Constitutional provision regarding scheduled castes and scheduled tribes socially backward classes, women and minorities.


c. Panchayat Raj System

Readings

➢ Dhanagore, D. N. Peasant movement in India 1920-1950
➢ Madhata, M.D. Supreme Court on Reservations.
➢ Oommen, T.K. Protest and change studies in social movement.
➢ Parvathamma, C. Schedule castes at Cross-roads.
➢ Phadnis, Urmila. Ethnicity and nation building.
➢ Rao, M. S. A. Social movements in India, 2 Vols.
➢ Wadhva, K.K. Minority safeguards in India.

PAPER III: Assignment & Project  
Credits: 2
SEMESTER – V

PAPER I: Indian Social Thought

Credits: 2


e. Mahatma Gandhi: Trusteeship and Gram Swaraj.

PAPER II: Introduction to Sociological Thought

Credits: 2

a. Emergence of Sociological Thought.

b. Positivism: Comte, Durkheim


Readings

➢ Aurobindo. The Human Cycle.
➢ Basham, A.L. A Cultural History of India.
➢ Kane, P.V. History of Dharma Shastras.
➢ Kangle, R.P. The Kautilaya Artha Shastra.
➢ Mukherjee, S.N. India: History and Thought.
➢ Parsons, T. The structure of social action. The Social System.
➢ Rex, John. Key Problems of Sociological Theories.
➢ Ritzer, George. Sociological Theory.

PAPER III: Project & Assignment

Credits: 2
PAPER I: Method of Social Research and Statistics  

   c. Data Collection: (a) Sources of data, (b) Sampling, (c) Techniques: Observation, Questionnaire, Schedule, Interviews and case study.

PAPER II: Sociology of Development: Concepts and Theories  

   a. The concept of development and underdevelopment.
   b. Theories of Development: (a) Dependency Theory (b) World System theory.
   c. Process and Characteristics of: (a) Capitalism (b) Imperialism.

Readings

➢ Garrett, H. E. Statistics in Psychology and Education.
➢ Horowitz. Three Words of Development.
➢ Wilber (ed.). Political Economy of Development and Underdevelopment.
➢ Young, P. V. Scientific Social Surveys and Research.

PAPER III: Project & Assignment  

   Credits: 2
SEMESTER - VII

Innovating Teaching Module relevant to School Teaching  
Credits: 2

SEMESTER – VIII

PAPER I: Sociology of Administration  
Credits: 3

a. Concept and Scope.
b. Authority and Power.
c. Concept of Bureaucracy
d. Bureaucrat-citizen Relationship.

PAPER II: Sociology of Deviance  
Credits: 3

a. Concept of Deviance in Sociology.
b. Social organization and disorganization.
c. Theories of deviance.

PAPER III: Modern Indian Social Thought  
Credits: 3

Modern Indian Social Thought
a. Pandita Ramabai: Women Education
b. Iqbal: Social Philosophy
c. B.R. Ambedkar: Social Justice
d. Madan Mohan Malviya: Education, Rastravad
e. Radha Kamal Mukherji: Sociology of Values.

Readings
➢ Chandra, Sushil. Sociology of Deviance in India.
➢ Clinard. Sociology of Deviant Behavior.
➢ Dubin. Human Relation in Administration.
➢ Elliot &Merrill. Social Disorganazation.
➢ Saiyaden, K.G. Iqbal’s Educational Philosophy.
➢ Simon: The Administrative Behaviour.
➢ Sutherland. White Collar Crime.
➢ Tracker. Group Process in Administration.
➢ While, L.D. The Art of Administration.

PAPER IV: Dissertation

PAPER V: Project & Assignment
PHILOSOPHY
Paper I: Indian Philosophy-I

Unit I
Nature of Darśana, Classification of Indian Philosophy, Characteristics of Indian Philosophy, Problems and purpose of Indian Philosophy, Distinction between Darśana and Philosophy.

Unit II
Introduction to the Vedas: Samhitā, Brāhmaṇa, Āraṇyaka and the Upanisad, Upanişadic view of saviśeṣa (determinate) and Nirviśeṣa (indeterminate) Brahman, Relation of Brahman and Soul. The Philosophy of Bhagavadgītā: Jñānayoga, Karmyoga and Bhakti yoga.

Unit III
Lokāyata: Metaphysics, Epistemology and Ethics
Jainism: Nature and Classification of Reality, Syādvāda, Anekāntavāda

Unit IV
Buddhism: Four noble truths, Anātmavāda (No-soul theory), Theory of Momentariness, Nirvāṇa.

Paper II: Western Philosophy-I

Unit I
Origin and Nature of Greek Philosophy, chief characteristics of Western Philosophy, The ultimate principles in Ionic and Pythagorean schools, Being in Eleatic School, Heraclites’ doctrine of Becoming, Empedocles’ doctrine of Elements.

Unit II
Atomic theories of Leucippus and Democritus, Anaxagoras’ doctrine of Nous, Main principles of Sophists, The Socratic Method, Plato’s Theory of Knowledge, Doctrine of Ideas,

Unit III
Aristotle: Criticism of theory of ideas, Matter and form, causality,

Unit IV
St. Augustine’s Theory of Knowledge, the Problem of Evil,
Thomas Aquinas’s view of God, Distinction between faith and Reason.
Readings

➢ Dayakrishna (1996). Indian Philosophy, Oxford University Press.
➢ Dutta, & Chatterjee (1968). An Introduction to Indian Philosophy, University of Calcutta.
➢ Singh, B.N. Paschatya Darshan, Allahabad: Kitab Mahal.

Paper III: Project / Assignment

Credits: 2
SEMESTER – II

Paper I: Indian Philosophy-II

Credits: 2

Unit I
Sāmkhya Yoga: Satkāryavāda, Prakṛti, Theory of Evolution, Puruṣa, Kaivalya, Eight fold path and God.

Unit II
Nyāya-Vaiśeṣika: Padārthas, Atomism, Pramāṇas, Proofs for the Existence of God,

Unit III
Mīmāṃsā: concept of Dharma, Apūrva,
Advaita- Vedānta: Brahman, Māyā, Mukti,

Unit IV
Viśiṣṭādvaita: Brahman, Māyā, Mukti
Dvaita Vedanta Brahman, God Bhakti and Mukti.

Paper II: Western Philosophy-II

Credits: 2

Unit I
Spinoza: Refutation of Descartes conception of substance, concept of substance, attribute and mode, God and Pantheism.

Unit II
Leibniz: Theory of Monads and Pre-established Harmony.
John Locke: Refutation of Innate ideas, Theory of Knowledge, Substance, Primary and Secondary Qualities.

Unit III
George Berkeley: Criticism of Materialism, Esse Est Percipi and Subjective Idealism
David Hume: Culmination of Empiricism, Refutation of Metaphysical entities and Causality, Skepticism

Unit IV
Immanuel Kant’s Reconciliation of Rationalism and Empiricism, Space and Time, Phenomena and Noumena.
Hegel: Dialectic Method, Absolute
Readings

➢ Dutta, & Chatterjee (1968). An Introduction to Indian Philosophy, University of Calcutta.

Paper III: Project / Assignment  Credits: 2

Page 331 of 372
Paper I: Ethics  

Unit I  
Ethical concepts: Good, Right, Duty, Value, Postulates of Morality, The Nature and object of Moral Judgment  

Unit II  
Psychological and Ethical Hedonism, Utilitarianism of Bentham & J.S. Mill, Deontological theory  

Unit III  
Kant’s moral Law and Good will perfectionism, theory of reward and punishment.  

Unit IV  
Conception of Purusārtha, Vedic Concept of Rta and Ṛṣṇa  

Paper II: Logic  

Unit I  
**Introduction**: Nature of Logic, Propositions, Arguments and their forms, Deduction and Induction, Truth and Validity.  
Categorical Propositions and Classes, Quality, quantity and distribution of terms, Traditional Square of Opposition, Immediate inference.  

Unit II  
**Categorical Syllogism**: Standard form of Categorical Syllogism, The Formal Nature of Syllogistic Argument,  
Venn-Diagram Technique for Testing Syllogism, Rules and Fallacies.  

Unit III  

Unit IV  
Inductive Reasoning and Probability, Simple Enumeration and Analogy.  
Mill’s Methods of Experimental Enquiry.
Readings

➢ Chakraborti, Chhanda. Logic: Informal, symbolic and Inductive, New Delhi: PHI.
➢ Copi & Cohen (2002). Introduction to Logic (11e), Pearson Education Inc.
➢ Rogeres, A.P. History of Ethics.

Paper III: Project / Assignment

Credits: 2
SEMESTER – IV

Paper I: Philosophy of Religion  
**Credits: 2**

**Unit I**
Nature and scope of philosophy of religion, Concept of Philosophy, Concept of Religion, Relationship between Philosophy of religion and philosophy, Theology and Philosophy of Religion.

**Unit II**
Definition, origin and development of Religion, Ancestor Worship, Manaism, Totemism, Magic and Religion, Religion and morality, Religion and science.

**Unit III**
Concept of God: Theism, Deism, Pantheism, Polytheism and Monotheism, God and Absolute. The arguments to prove the existence of God: Ontological, Cosmological, Teleological and Moral arguments.

**Unit IV**

Paper II: Asian Philosophy and Religion  
**Credits: 2**

**Unit I**
The importance of Asian Philosophy and Religion in the world culture, close relation between moral law and natural law, moral law as universal protector of the harmonious interests of all beings,
The whole world as a single family. Family- Ethics of India, China, Korea and Japan, suffering as unifying principle (Gotra) of the whole humanity, The doctrine of Prajñā and Mahākarunā, Bodhisattvas’ families and their determination to turn hell into heaven.

**Unit II**
The ideal of self realization in Hinduism, The distinction between Pravṛtti-Mārga and Nivṛtti-Mārga, the importance of Nivṛtti-Mārga in Jainism and Buddhism, Jaina doctrine of tri-ratna and Buddhist doctrine of four noble truths,
The path of devotion and nature of ultimate reality in Saivism, Vaisnavism and Sikhism,

**Unit III**

Confucianism: Classics of Confucianism, Concept of Jen, Shu, Li and Chun-tzu, characteristics of the native pon-religion of Tibbat and the native Shinto-religion of Japan

Taoism: Meaning and Nature of Tao, Relationship of Tao and Teh, Concepts of Wei-wu-wei, Hsu and Fan

**Unit IV**

Theravada and Mahayana schools of Buddhism, Buddhagosh contribution to Buddhism and characteristics of sheela in south-east Therāvāda Buddhism, the characteristics of Samatha and Vipasyanā in Vermeese Buddhism.

The characteristics of the Mahayana schools of China, Japan and Korea, The elements of Zen Buddhism: Satori, Koan, Emptiness and Meditation, Pure-Land tradition and worship of Amitābha in China and Japan, The cult of Avalokiteshvara in central Asia and his worship in China, chief characteristics of Buddhism in Himalayan Regions, characteristics of Tantrāyāna Buddhism practiced in Tibet.

**Readings**

- An Introduction to the Philosophy of Religion, Calcutta: Chatterjee and Co.

**Paper III: Project / Assignment**

Credits: 2
Paper I: Indian Epistemology

Credits: 2

Unit I
Nature of knowledge (Jñāna): Difference between Pramā (valid knowledge) and Apramā (invalid knowledge), main characteristics of Pramā, forms of Apramā (invalid knowledge), Theories of Truth (Prāmanyavāda): Svatahpramānyavāda (Theory of Intrinsic Validity): Sānkhya and Mimamsā, Paratahpramānyavāda (Theory of Extrinsic Validity): Nyāya and Buddhism

Unit II
Theories of error (Khyātivāda): Asatkhyaśavāda, Ātmakhyātivāda and Anyathākhyativāda. Viparītakhyātivāda, Akhyātivāda and Anirvacnyākhyātivāda

Unit III
Sources of Valid knowledge (Pramānas) Perception (Pratyakṣa): The nature of perception and its different forms. Inference (Anumāna): Nature and forms of inference, grounds of inference (Vyāpti and Pakṣadharmatā), Fallacies of inference (Hetvabāsa)

Unit VI
Verbal testimony (Śabda), Comparison (Upamāna): Presumption (Arthāpatti) and Non-apprehension (anupalabdhi).

Paper II: Western Epistemology

Credits: 2

Unit I
Nature of knowledge, Distinguishing ‘knowing that’ from ‘knowing how’, Definition of knowledge. The Gettier Problem, The Structure of knowledge (Foundationalism and Coherentism)

Unit II
Kinds of knowledge: a priori and a posteriori. Sources of knowledge: Sense-experience, Reason, Authority, Intuition and Revelation.

Unit III
Subject-Object Relation: Idealism (Subjective idealism), Realism (Naïve Realism, Representative realism, Neo-realism & critical realism) Limits of knowledge: Scepticism and Agnosticism.

Unit IV
Readings


Paper III: Project / Assignment

Credits: 2
SEMESTER –VI

Paper – I Contemporary Indian Philosophy-1  
Credits: 2

Unit I  
Introduction and characteristics of Contemporary Indian Philosophy, Rammohan Roy:  
Brahmasamāja, Nationalism and Internationalism, unity of Religions.

Unit II  
Swami Dayananda Saraswati: Ārya Samāja, Veda, Reality, Swami Vivekananad: God, Māyā,  
Liberation.

Unit III  
Dr. Annie Besant: Concept of Philosophy, Religion and God,  
Balgangadhar Tilak: Brahman, Atman, Karma, Swarāja.

Unit IV  
R.N. Tagore: Reality, Soul, Humanism,  
Mahamana Pt. Madan Mohan Malviaya: Sanātana Dharma, God, education,

Paper II: Contemporary Western Philosophy – I  
Credits: 2

Unit I  
The Absolute Idealism of F. H. Bradley, Appearance: Primary and secondary qualities;  
substantive and adjective, relation and quality, causation appearance and Reality. Nature of  
reality – absolute, degrees of Truth and Reality.

Unit II:  
Pragmatism: C.S. Pierce’s theory of meaning, William James’ Radical empiricism, Conception  
of Reality and theory of truth, John Dewey’s Instrumentalism, Meliorism.

Unit III:  
Marxism: Dialectical Materialism, Revolution and state,  
Chief Characteristics of Existentialism,

Unit IV  
Major concepts of Phenomenology: Noesis, Noema, Intentionality, Epoche and Reductionism,

Readings
➢ Bhattacharya Haridas, (1956). The cultural heritage of India Vol. IVth, Calcutta:  
Ramakrishana mission.
University Press.
➢ Copleston. Contemporary Philosophy.
➢ Lal, B.K. Contemporary Indian Philosophy (Hindi & English versions).
➢ Mahadevan, T.M.P., & Saroja, G.V. Contemporary Indian Philosophy.
➢ Narvane, V.S. Modern Indian Thought (Hindi & English translation)
➢ Tilak, Bal Gangadhar. Bhagavadgita Rahasya or Karmayogashastra.
➢ स्वामीए छण नन् सरस्वती: सत्यार्थ प्रकाशन

Paper III: Project / Assignment

Credits: 2

SEMESTER-VII

Innovative Teaching Module relevant to School Teaching

Credits: 2
SEMESTER-VIII

Paper I: Indian Metaphysics
Credits: 3

Unit I
The nature of physical world, Materialism, Realism & Idealism. The theories of creation, Atomism, Prakrti, Māyā, Sāmkhya theory of evolution.

Unit II
Theories of causation: Svabhāvavāda, Pratityasamutpāda, Satkāryavāda, Asatkāryavāda, Vivartavāda.

Unit III
The nature of God and proofs for the existence of God according to Nyāya and Yoga Philosophy. The Nature of Absolute according to Advait and Viśiṣṭādvaita schools of Vedanta.

Unit IV
The nature of Self according to Cārvāka, Jainism and Buddhism.
The nature of self according to Sāṅkhya Nyāya-Vaiśeṣika and Advaita Vedanta.

Paper II: Western Metaphysics
Credits: 3

Unit I
The concept of metaphysics, The nature and problems of metaphysics, The need for metaphysics, Causation: Regularity theory, Entailment theory & Activity theory.

Unit II
Universals and Particulars: Concept of universal, Concept of particular, Theories of universals; Realism, Nominalism and Conceptualism.

Unit III
Concept of Substance: Aristotle, Rationalists, Empiricists and Kant.
Unit IV

Paper III: Contemporary Indian Philosophy-II

Unit I
M.K. Gandhi: Truth, Non-violence, Satyāgrah, Means and End, Dr. B.R. Ambedkar: Reality, Religion, Critique of caste-system,

Unit II
Sri Aurobindo: Absolute, Supermind, Involution, Evolution, S. Radhakrishnan: Absolute, Spirit, Intellect and Intuition,

Unit III
K.C. Bhattacharya: Self, Theoretic Consciousness, Philosophy and Science, Mohammad Iqbal: God, Self, Intuition,

Unit IV
M.N. Roy: Man, New Humanism, N.K. Devaraja; Creative Humanism and Culture,

Paper IV: Contemporary Western Philosophy-II

Unit I

Unit II
Logical Positivism, Verification principle, refutation of Metaphysics. Emotive theory, the difficulties of Logical positivism.

Unit III

Unit IV
Readings

- Copleston. Contemporary Philosophy.
- Lal, B.K. (2002). Contemporary Indian Philosophy (Hindi & English translations), Delhi: MLBD.
- Mahadevan, T. M. P., & Saroja, G.V. Contemporary Indian Philosophy.
- Narvane, V.S. Modern Indian Thought (Hindi & English).
- Raja C.K. Some fundamental problems in Indian philosophy.
- मूर्ति, समकालीन (समाप्त) समकालीन भारतीय दर्शन
- दुर्ग, कुमार चन्द: श्री अरविन्द एवं ब्रेडले का परम्परागत, नद्द किसीर एण्ड ब्रुस, वाणीसी।
- गंगाधर, डी.एदो: समस्तावलिय ग्रामाकृत्सन, का धर्म एवं दर्शन, कला प्रकाशन, वाणीसी।
- जहां, डी.बाबासाहेब आंबेडकर का समाजदर्शन, समाज प्रकाशन, जयपुर।
- संस्कृति तथ्य (समाप्त): समकालीन भारतीय दर्शन, उत्तर प्रदेश हिंदी ग्रन्थ अकादमी, लखनऊ, 1974
- मिथ्र, हृदय नागरण: समकालीन दर्शने, किताब घर, कानपुर।

Paper V: Project / Assignment  Credits: 4
POLITICAL SCIENCE
Paper – I : Colonialism in India

I. Imperialism and colonialism (12 Lectures)
   1. Brief History: Global and Indian
   2. Main Perspectives on Colonialism: i. Liberalism ii. Marxism iii. Post-colonialism

II. Foundations of Colonial Rule in India (10 Lectures)
   1. Consolidation of British power: Police and Civil Administration
   2. Legal Foundations of the Colonial State: Issues related to the sovereignty and relations with British Parliament and major constitutional developments

III. Economy and Society (12 Lectures)
   1. Impact on Agriculture, land relations and ecology

IV. Religion and Society (12 Lectures)
   1. Colonial Ideology of Indian Improvement/‘civilizing mission’: Orientalists and the Anglicists (Utilitarians and Missionaries)
   2. Shaping Communities: Census and Enumeration
      3. Colonialism and the Gender question

VI. Early Indian Responses (8 Lectures)
   1. Peasant and Tribal Uprisings
   2. The 1857 Rebellion

Paper – II : Political Theory: Concepts

Core Concepts:
I. Importance of Freedom (10 Lectures)
   a) Negative Freedom: Liberty
   b) Positive Freedom: Freedom as Emancipation and Development

Important Issue: Freedom of belief, expression and dissent

II. Significance of Equality (12 lectures)
   a) Formal Equality: Equality of opportunity
   b) Political equality
   c) Egalitarianism: Background inequalities and differential treatment

Important Issue: Affirmative action

III. Indispensability of Justice (12 Lectures)
   a) Procedural Justice
   b) Distributive Justice
c) Global Justice

Important Issue: Capital punishment

IV. The Universality of Rights (13 Lectures)

a) Natural Rights
b) Moral and Legal Rights
c) Three Generations of Rights
d) Rights and Obligations

Important Issue: Right of the girl child

Readings.


Paper – III: Project / Assignment

Credits : 2
SEMESTER – II

Paper-I: Constitutional Democracy and Government in India

I. The Constituent Assembly and the Constitution (15 Lectures)
   (a) The formation of the Constituent Assembly; the philosophy of the Constitution and its main features.
   (b) Fundamental Rights and Directive Principles

II. Organs of Government (15 Lectures)
   (a) The Legislature: Parliament
   (b) The Executive: President, Prime Minister and Governor
   (c) The Judiciary: The Supreme Court

III. Federalism and Decentralization (15 Lectures)
   (a) Centre-state relations; constitutional provisions regarding emergency and centre-state relations; special provisions for some states and the fifth and sixth schedule areas
   (b) Third tier of government: panchayati raj; urban local bodies

IV. Security Laws (15 Lectures)
   (a) Preventive detention laws and constitutional exceptions
   (b) Extra-ordinary laws: anti-terror laws, laws against organized crimes

Paper – II Nationalism in India

I. Reformism and Anti-Reformism in the 19th Century
   Major Social and Religious movements among Hindus and Muslims; Brahm Samaj, Arya Samaj, Dharma Sabhas, Aligarh Movement

II. Nationalist Politics and Expansion of its Social Base
   (a) Phases of Nationalist Movement and different ideological streams: Moderates and Extremists within Congress and revolutionary radicals; Formation of the Muslim League
   (b) Gandhi and mass mobilisation: Khilafat, Non-cooperation and Civil Disobedience Movements
   (c) Socialist alternatives: Congress socialists, Communists
   (d) Communalism in Indian Politics
III. Social Movements

(a) *The Women’s Question:* participation in the national movement and its impact  
(b) *The Caste Question:* anti-Brahmanical Politics  
(c) *Peasant, Tribals, and Workers* movements

IV. Partition and Independence The two-Nation theory, negotiations over partition

Readings

- Constitution: Ideas, Practices and Controversies, New Delhi: Permanent Black

III. Social Movements

IV. Partition and Independence


Paper – III : Project / Assignment

Credits : 2
SEMESTER – III

Paper – I : Understanding Political Theory

Credits : 2

I: Introducing Political Theory
1. What is Politics: Theorizing the ‘Political’
2. Traditions of Political Theory: Liberal, Marxist, Anarchist and Conservative
3. Approaches to Political Theory: Normative, Historical and Empirical

II: Political Theory and Practice

The Grammar of Democracy
1. Democracy: The history of an idea
2. Procedural Democracy and its critique
3. Participation and Representation

Paper – II: Introduction to Comparative Government and Politics

Credits : 2

I. Comparative Government and Politics
Nature and scope

II. Historical context of Modern Government (22 Lectures)

a. Capitalism: meaning and development; globalization
b. State Socialism: meaning, growth and development
c. Colonialism and Decolonisation: meaning, context, forms of colonialism; anti-colonial struggles and process of decolonization

III. Themes for Comparative Analysis (18 Lectures)

A comparative study of Constitutional Developments, Political Economy, Executive and Judiciary and Representation and Participation in the following countries:

Britain, USA and China

Readings


Paper III : Project / Assignment

Credits : 2
Semester – IV

Paper – I : Theories of International Relations  Credits : 2

I. Theoretical Perspectives
   (a) Studying International Relations:
   (b) Realism and Neorealism
   (c) Liberalism and Neoliberalism

II. An Overview of Twentieth Century IR History
   (a) World War I: Causes and Consequences
   (b) Significance of the Bolshevik Revolution
   (c) Rise of Fascism / Nazism
   (d) World War II: Causes and Consequences
   (e) Cold War: Different Phases

III. Third World and Cold War
   (a) Emergence of the Third World
   (b) Collapse of the USSR and the End of the Cold War
   (c) Post Cold War Developments and Emergence of Other Power Centers of Power: Japan, European Union (EU) and Brazil, Russia, India, China (BRIC)

Paper – II Indian Political Thought- 1  Credits : 2

I. Ved Vyasa (Shantiparva): Rajadharma
II. Manu: Social Laws
III. Kautilya: Theory of State
IV. Agganasutta(Digha Nikaya) : Theory of kingship [06 lectures]

Readings

➢ Saberwal Satish (2008). Ch. 1, Medieval Legacy, New Delhi:

Paper – III : Project / Assignment

Credits : 2
Paper-I : Indian Political Thought- 2

I. Rammohan Roy: Rights
II. Pandita Ramabai: Gender
III. Vivekananda: Ideal Society
IV. Gandhi: Swaraj
V. Ambedkar: Social Justice
VI. Nehru: Secularism
VII. Lohia: Socialism

Paper – II India’s Foreign Policy

I. Determinants and Principles of India’s Foreign Policy.
   a) Domestic and International sources of India’s Foreign Policy
   b) Objectives and Principles
   c) Non-Alignment: Concepts, Policy and Relevance
II. India and the Global Political Regimes – Main Issues
    India at the United Nations: Security Council Reforms
III. Changing Relations with the US and Russia from Cold War to Post Cold War
IV. India China Relations: Challenges and Prospects
V. India and Regional Organizations - European Union (EU), Association of South East Asian Nations (ASEAN) and South Asian Association of Regional Cooperation (SAARC)

Essential Readings


Paper – III : Project / Assignment

Credits : 2
Semester – VI

Paper – I : Development Process and Social Movements in Contemporary India

Credits : 2

I. Perspectives on Development since Independence
   (a) State and planning (b) reforms, liberalization and the emergence of middle class.

II. Industrial development strategy and its impact on social structure
    Mixed economy, privatisation, special economic zones (SEZ)

III. Agrarian development and strategies
    Land reforms, Green Revolution, emergence of Naxalism

IV. Social Movements: old and new (13 Lectures)
   (a) Peasants, and tribals
   (a) Students, environmental and civil liberties and democratic rights movements

V. Contemporary rights-based concerns (11 Lectures)
    Rights to food, work, education and information; rights of forest dwellers

Paper – II : Global Politics

Credits : 2

I. Globalisation: Conceptions and Perspectives (25 Lectures)
   (a) Political, Cultural and Technological Dimensions
   (b) Global Economy: Its Significance and Anchors
   (c) Global Social Networks / Global Resistances

II. Contemporary Global Issues (35 Lectures)
   (a) Ecological Issues: historical overview of international environmental agreements, climate change, global commons debate.
   (b) Proliferation of Nuclear Weapons
   (c) International Terrorism: non-state actors and state terrorism; war on terror.
   (d) Poverty, Development and Human Security

Readings
➢ Harris, J. (2009). Harvesting Despair: Agrarian Crisis in India,
➢ Harris, J. (ed). Local Power and the Agrarian Political Economy.

Paper – III: Project / Assignment

Credits : 2
Paper – I : Political Institutions and Processes  Credits : 3

I. Approaches to Studying Politics
Traditional Institutional, Political Systems, Political Culture and New Institutionalism

II. Electoral System
Definition and procedures: Types of electoral systems (First Past the Post, Proportional Representation, Mixed Representation)

III. Party System
Historical contexts of emergence of the party system and types of parties

IV. Nation-state
What is a nation-state?
Historical evolution in Western Europe and postcolonial contexts
‘Nation’ and ‘State’: debates

V. Democratization
Process of democratization in postcolonial, post-authoritarian, and post communist countries

VI. Federalism
Historical contest
Federation and Confederation: debates around territorial division of power.

Paper – II Modern Political Philosophy  Credits : 3

Section A:
Understanding modern political philosophy: The Enlightenment tradition

Section B:

I  Hobbes
II  Locke
III  Rousseau
Paper III  The United Nations, Global Conflicts and Peace Making  Credits : 3

I. The United Nations

(a) An Historical Overview of the United Nations
(b) Principles and Objectives
(d) Peace Keeping, Peace Making and Enforcement, Peace Building and Responsibility to Protect
(e) Millennium Development Goals

II. Major Global Conflicts since the Second World War

(a) Korean Problem
(b) Vietnam War
(c) Afghanistan Wars
(d) Balkans: Serbia and Bosnia

Paper IV  Indian Government and Politics  Credits : 3

1. Approaches to the Study of Indian Politics and Nature of the State in India: Liberal Marxist and Gandhian
2. Indian Constitution : basic features, debates on Fundamental Rights and Directive Principles
3. Institutional Functioning: Prime Minister, Parliament and Judiciary
4. Power Structure in India : Caste, class and patriarchy
5. Religion and Politics: debates on secularism and communalism
6. Parties and Party systems in India
7. Strategies of Development in India since Independence: Planned Economy and Neo-liberalism
8. Social Movements : Workers, Peasants, Environmental and Women’s Movement
Readings


**Paper V : Project / Assignments**

**Credits : 4**
TIBETAN HISTORY
SEMESTER – I

Paper I

Credits: 2

བོད་ཀྱི་སྣོད་བཅུད་བཤད་པ་དང་།སྱི་ལོ་བརྒྱ་ཕྲག་དགུ་པ་བར་གྱི་བཙན་པོའི་དུས་སྐབས། (History of Tibet up to 9th century with brief description of Geography and People of Tibet)

བོད་ཀྱི་ཡུལ་དང་།མྱི་རྱིགས་ཀྱི་བྱུང་བ།ཆོས་དང་འཇྱིག་རེན་གྱི་གནའ་བོའི་གཤིས་ལུགས།

བཙན་པོའི་གདུང་རྒྱུད་དང་

dེའྱི་སྱིད་དབང་ཚུགས་ཚུལ།

Paper II

Credits: 2

བོད་བཙན་པོའི་ཆབ་སྱིད་མངའ་ཐང་དང་།ཡུལ་ཁག་གཞན་དང་ཆབ་སྱིད་འབེལ་བ།(Tibetan Monarchy Period and Political Contacts with Foreign Powers)

སོང་བཙན་ནས་དང་མ་འུ་དུམ་བཙན་པོ་བར་བོད་བཙན་པོའི་ཆབ་སྱིད་ཀྱི་མངའ་ཐང།

ཡུལ་ཀྱི་སྱིད་ཀྱི་འཛིན་སོང་དང་དྲག་པོའི་

དཔུང་སྡེ་བཀོད་འདོམས་ཀྱི་ཁྱིམ་སོལ་ལམ་ལུགས།

ཤར་དུ་རྒྱ་ནག་པོ་དང་།

ལྷོར་བལ་པོ་སོགས་ཕོགས་བཞྱིའྱི་ཡུལ་ཁག་

དང་ཆབ་སྱིད་ཀྱི་འབེལ་བའྱི་སྐོར།

སོབ་ཚན་ཀློག་དེབ།

༡། ཞྭ་སབ་པའྱི་བོད་ཀྱི་སྱིད་དོན་རྒྱལ་རབས།

༢། ཇ་སེལ་ཚེ་བརན་ཕུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རྱིམ་གཡུ་ཡི་ཕྲེང་བ།

༣། བོན་གྱི་ལོ་རྒྱུས་བསགས་པ་རྱིན་ཆེན་གྱིང་གྲགས།

༤། བོན་གྱི་ལོ་རྒྱུས་བསགས་པ་རྱིན་ཆེན་གྱིང་གྲགས།

༥། བོན་གྱི་ལོ་རྒྱུས་བསགས་པ་རྱིན་ཆེན་གྱིང་གྲགས།

༦། བོན་གྱི་ལོ་རྒྱུས་བསགས་པ་རྱིན་ཆེན་གྱིང་གྲགས།

༧། བོན་གྱི་ལོ་རྒྱུས་བསགས་པ་རྱིན་ཆེན་གྱིང་གྲགས།

༨། བོན་གྱི་ལོ་རྒྱུས་བསགས་པ་རྱིན་ཆེན་གྱིང་གྲགས།
Semester - II

Paper I

Credits: 2

བོད་དང་མཐའ་བཞྱིའྱི་ཡུལ་ཁག་དང་ཆོས་དང་རྱིག་གནས་ཀྱི་འབེལ་བ། (Tibet’s Cultural Contacts with Neighboring Countries (Part I))

1. བོད་ཀྱི་སྱིད་དོན་རྒྱལ་རབས།
2. མཁས་པའི་མཐའ་བཞིན་འོག་མུས་པ།
3. སློབ་དཔོན་ཆོས་གཡེས།
4. སློབ་དཔོན་བཙན་པོ་ཆོས་ཐོན་མྱི་ལ་སོགས་པ་དག་གསོ་བ་།
5. སློབ་དཔོན་བཀའ་ཆེམས་ཀ་ཁོལ་མ།

Paper II

Credits: 2

བོད་དང་མཐའ་བཞྱིའྱི་ཡུལ་ཁག་དང་ཆོས་དང་རྱིག་གནས་ཀྱི་འབེལ་བ། (Tibet’s Cultural Contacts with Neighboring Countries (Part II))

1. བཙུན་མོ་སོགས་མང་དག་བོད་དུ་ཕེབས་པ་དང་།
2. བོད་ཀྱི་མཁས་པ་ཐོན་མྱི་ལ་སོགས་པ་དག་གསོ་བ་།
3. བཙུན་པོ་དེ་ཁད།
4. བཙུན་པོ་དེ་ཁད།

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སྙིང་ཚོར་དོན་འབོད་ད་ཀྱང་། བོད་གི་དངོས་མོང་སངས་རྒྱས་ཀྱི་སྣམ་དཔེར་བཙོ་བུ། འོ་ཤྲི་འཛིན་པའི་དཔལ་ལྡན་དྲ་སངས་རྒྱས་ཀྱི་བསན་སོགས་གཞུང་གི་འཆད་ཉན་བཙུགས་པ་དང་སེལ་བ་བཅས།

Paper III  
Credits: 2

Assignment & Activities

SEMESTER – III

Paper I  
Credit: 2

(Revival of Buddhism in 11th Century)
Paper II

ཁོང་གསལ་སོབ་ཚན་དང་འབེལ་བའྱི་བརོད་གཞི་གང་རུང་ཐོག་རོམ་ཤོག་བྱི་རྒྱུ་དང་། རོམ་ཤོག་དེའྱི་ཐོག་འཛིན་གྲར་གཏམ་བཤད་དང་དྲྱི་བའྱི་ལན་འདེབས།

Paper III

Assignment & Project
Paper I

དཔལ་ལྡན་ས་ས་པ་དང་ཕག་མོ་གྲུ་པའྱི་དུས་སྐབས་ཀྱི་བོད་ཀྱི་སྱིད་དབང་། བོད་ཀྱི་སྣང་གི་དབང་། དུམ་པ་གཉིས་པ་

(History of Medieval Tibet (Part II)

བོད་ཀྱི་སྱིད་དབང་དང་། དེ་བཅས་ཀྱི་དགོངས་རོགས་གསང་རྒྱ་དང་།

དེ་རེས་སྡེ་སྐེལ་སོགས་པར་ཐོབ་དཔའ་

སོབ་ཚན་ཀློག་དེབ།

༡། ཐབ་བུའི་བོད་ཀྱི་སྱིད་དབང་རྒྱལ་རབས།

༢། ཆ་སྱིལ་ཚུལ་ཕུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རྱིམ་གཡུ་ཡི་ཕྲེང་བ།

༣། སྐད་སའྱི་གདུང་རབས་རྐྱིན་ཆེན་བང་མཛོད།

༤། སོག་ཚང་དཔལ་འབྱོར་བཟང་པའི་རྒྱ་བོད་ཡྱིག་ཚང་ཆེན་མོ།

༥། བྲ་སྐྱི་བྱང་ཆུབ་རྒྱལ་མཚན་གྱི་བཀའ་ཆེམས།

༦། རྣངས་ཀྱི་པོ་ཏྱི་བསེ་རུ།

༧། སྤྱོད་ཆེན་བསོད་གྲགས་ཀྱི་དེབ་ཐེར་དམར་པོ་གསར་མ།

༨། དུང་དཀར་གྱི་ཆོས་སྐྱིད་ཟུང་འབེལ་བཤད་པ།

Paper II

དགའ་ལྡན་ཕོ་བང་དུས་ཀྱི་བོད་ཀྱི་སྱིད་དབང་དང་། དོག་དཔོན་དེ་གྱིས་པ་

(History of Modern Tibet (Part I)

ཏཱ་ལའྱི་བ་མ་སྐུ་ཕྲེང་ལྔ་པ་ཆེན་པོ་དང་རྒྱ་ནག་མན་ཇུ་གོང་མའྱི་བར་མཆོད་ཡོན་འབེལ་བ།

ལྔ་པ་ཆེན་པོའི་དགོངས་རོགས་གསང་རྒྱ་དང་།

དེ་རེས་སྡེ་སྐེལ་སོགས་པར་ཐོབ་

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ཐབས་རོད་དང་དབང་འཛིན་འཕོ་འགྱུར།
༡༧༢༠ པའི་ལས་མས་ནས་རྒྱ་ནག་མན་ཇུའྱི་སྱིད་གཞུང་གྱི་ཐེ་འཇུས་དང་དམག་དང་དཔོན་རྱིགས་མྱི་སྣ་བོད་དུ་འབྱར་བ་དང་།

dེའྱི་རྒྱབ་ལོངས་བྱུང་རེན།

dབུས་གཙང་བཀའ་བོན་ནང་འཁྲུགས་དང་།
dེའྱི་ངན་འབས།

ཕོ་ལྷ་ཕ་བུའྱི་དུས་སྐབས་དང་རྒྱ་ནག་མན་ཇུའྱི་སྱིད་གཞུང་བར་གྱི་འབེལ་བ།

༡༧༥༡ འོར་རྒྱ་བོད་ད་གཉིས་མོལ་གྱིས་བོད་ཀྱི་ལས་དོན་བྱེད་ཕོགས་བསར་བཅོས་དོན་ཚན་༡༣གཏན་ལ་ཕབ་པར་ཞྱིབ་དཔད།

རྒྱལ་བ་སྐུ་ཕྲེང་བརྒྱད་པ་ནས་བཅུ་གཉིས་པ་བར་གྱི་ཡང་

སྤོབ་ཚན་ཀློག་དེབ།

༡། ཞྭ་སབ་པའྱི་བོད་ཀྱི་སྱིད་དོན་རྒྱལ་རབ།

༢། ཆབ་སེལ་ཚེ་བརན་ཕུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རྱིམ་གཡུ་ཡྱི་ཕྲེང་བ།


Paper III

Credits: 2

Assignment & Project

གོང་གསལ་སོབ་ཚན་དང་འབེལ་བའྱི་བརོད་གཞྱི་གང་རུང་ཐོག་རོམ་ཤོག་བྱི་རྒྱུ་དང་།

རོམ་ཤོག་དེའྱི་ཐོག་འཛིན་གྲར་གཏམ་བཤད་

dང་དྲྱི་བའྱི་ལན་འདེབས།
SEMESTER – V

Paper I

 Credits: 2

དགའ་ལྡན་ཕོ་བང་དུས་ཀྱི་བོད་ཀྱི་སྱིད་དབང་པོ་ིས། དུམ་པ་གཉིས་པ། (History of Modern Tibet (Part II))

སྐུ་ཕྲེང་བཅུ་གསུམ་པ་ཆེན་པོའི་ཡང་སྱིད་ངོས་འཛིན་ཁྱི་འདོན་དང་ཆབ་སྱིད་ཐུགས་འགན་བཞེས་པ། སྱིད་ཟུར་གྱིས་ཐུ་གཏད་བྱུང་། བཅུ་གསུམ་པ་ཆེན་པོས་ཆོས་དང་། ཆབ་སྱིད་ཀྱི་ལམ་སོལ་ལེགས་བཅོས་དང་གསར་གཏོད་བཅོས་བསྒྱུར། བཅུ་གསུམ་པ་ཆེན་པོའི་ཆུ་སེ་ཞལ་གདམས་དང་དགོངས་རོགས་བཅས།

སོབ་ཚན་ཀློག་དེབ།

༡། ཞྭ་སབ་པའི་བོད་ཀྱི་སྱིད་དོན་རྒྱལ་རབས།

༢། ཆ་སྐྱེལ་ཚེ་བརན་ཕུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རྱིམ་གཡུ་ཡི་ཕྲེང་བ།

H.E. Richardson. Tibet & its History.

༣། ཆབ་སྐྱེལ་ཚེ་བརན་ཕུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རྱིམ་གཡུ་ཡི་ཕྲེང་བ།

Melvyn C. Goldstein. A History of Modern Tibet, 1913-1951

Paper II

 Credits: 2

དུས་རབས་བཅུ་བདུན་པ་ཚུན་བོད་དང་ཕྱིའྱི་རྒྱལ་ཁབ་བར་གྱི་ཆབ་སྱིད་འབེལ་བ། དུམ་པ་དང་པོ། (Tibet's political Contacts with Foreign Power from 17th Century (Part I))

༡༦༤༡ལོར་བལ་བོད་དམག་འཁྲུག། ར༡༧༨༧ནས་བར་གྱིཝ༡༧༩༢ལོར་བུག་། ར༡༨༥༦ལོར་བུག་།

༢༦༨༡ནས་༢༦༨༤བར་ལ་དགས་དང་བོད་བར་གྱི་དམག་འཁྲུགཔ། ར༡༨༤༢ལོར་ལ་སྱིང་དམག་འཁྲུག་དང་ཆིང་ཡིག ༡༧༧༤ཡས་མས་ལ་དབྱིན་ཇི་དང་བོད་ཀྱི་བ་ཆེན་པོ་ཆེན་བོད་པའི་འབེལ་བ། ར༡༨༧༦ཡས་མས་ནས་དབྱིན་བོད་ས་མཚམས་ཀྱི་རོད་པ་དང་ ༢༦༨༨ལོར་དབྱིན་བོད་དམག་འཁྲུག་དང་། སྐྱིང་བོད་ཀྱི་འབེལ་བ་ཇི་སྡུག་ཇི་ཞན་དུ་སོང་བ།
སོབ་ཚན་ཀློག་དེབ།
1. རོ་རྱིང་བསན་འཛིན་དཔལ་འབྱོར་གྱི་རྣམ་ཐར།
2. ཞྭ་སབ་པའྱི་བོད་ཀྱི་སྱིད་དོན་རྒྱལ་རབས།
3. མ་ཡ་ཁལ་ཝན་པ་རག་གྱི་བོད་ཀྱི་གནས་བབས།
4. ཆབ་སེལ་ཚེ་བརན་ཕུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རྱིམ་གཡུ་ཡྱི་ཕྲེང་བ།

H.E. Richardson. Tibet & its History.
5. ཡོན་ཏོང་ཕར་བདེ་ཕུལ་སྤེལ་བཤད་ཀྱི་ཁྱབ་པའི་ཁྲུང་པོ་ཁྱི་ཐང་ཚགས་ཐོབ་པའི་སྤྱི་རྩོམ་

Paper III

Project & Project

ངོང་གསལ་སོབ་ཚན་དང་འབེལ་བའྱི་བརོད་གཞི་གང་རུང་ཐོག་རོམ་ཤོག་བྱི་རྒྱུ་དང་།
རོམ་ཤོག་དེའྱི་ཐོག་འཛིན་གྲར་གཏམ་བཤད་
དང་དྲྱི་བའི་ལན་འདེབས།
(Great Game) བོད་རེད་འགྲན་ཆེ་མོར་(History of Modern Tibet (Part II))

1910 ཨང 1915 རོ་དོ་དཔོན་པོ་མཐོང་ངོ་ལྷག་པར་ཆགས་ངོ་དོ་ཁ་དང་། བོད་ཇི་ལྟར་ཕྱིར་བོད་དོན་དང་འབེལ་བའི་ཆིངས་ཡིག་དང་།

Paper II

Credits: 2

(Great Game) བོད་རེད་འགྲན་ཆེ་མོར་(History of Modern Tibet (Part III))
སྟོབས་ཚན་ཀློག་དེབ།

༡། མུ་ཤེས་པའི་བོད་ཀྱི་སྱིད་དོན་རྒྱལ་རབས།
༢། ཆབས་སེལ་ཚེ་བརན་ཕུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རྱིམ་གཡུ་ཡི་ཕྲེང་བ།
༣། སཱད་ཀྱི་ཚུལ་བརྙན།

H.E. Richardson. Tibet & its History.
Melvyn C. Goldstein. A History of Modern Tibet

Paper III:  Credit: 2

Assignment & Activities

SEMESTER - VII

Innovative teaching module relevant to School Teaching  Credit: 2
SEMESTER - VIII

Paper I  Credit: 3
Dalai Lama and End of Gaden Phodrang Rule (Part I)

(14th Dalai Lama and End of Gaden Phodrang Rule (Part I)

Paper II  Credits: 3
Dalai Lama and End of Gaden Phodrang Rule (Part II)

H.E. Richardson. Tibet & its History.

Freedom in Exile: The autobiography of the Dalai Lama of Tibet.
Freedom in Exile: The autobiography of the Dalai Lama of Tibet.
2. Freedom in Exile: The autobiography of the Dalai Lama of Tibet.
3. Collected Statements, Articles and Interviews of H.H. the 14th Dalai Lama of Tibet.
5. Nobel Prize for Peace, Collected Speeches, Dalai Lama of Tibet.

Paper V

(A) Assignment & Project

(B) Assignment & Project