As per the NEP 2020

Four Year Integrated Teacher Education Programme

(B.A. B.Ed./B.Sc. B.Ed. Course Secondary Stage)

(Effective from Academic Year 2024-2025 onwards)

Faculty of Education
(Syllabus & Scheme of Examination)

Pandit Deendayal Upadhyaya Shekhawati University Sikar
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Shekhawati University,
Sikar(Rajasthan)

The Pandit Deendayal Upadhyaya Shekhawati University, Sikar hereby constitutes the following ordinances under Four year Integrated Teacher Education Programme B.A.B.Ed./B.Sc. B.Ed.Secondary stage course-adualMajorholisticBachelor'sdegreein Education as well as in specialised subject such as Hindi/ English/ Urdu/ History/ Geography/ Mathematics/ Botany/ Physics/ Chemistry/ Zoology etc. The ordinance shallgovern admission, course of study, examination and other matters relating to the degree of B.A. B.Ed./B.Sc. B.Ed.(Secondary Stage with Majorin Hindi/ English/ Urdu/ History/ Geography/ Mathematics/ Botany/ Physics/ Chemistry/ Zoology etc.) under the Faculty of Education.

1. Eligibility:

The four-year Integrated Teacher Education Programme envisions the creation of passionate, motivated, qualified, professionally trained and well-equipped teachers capable of designing and implementing developmentally appropriate learning experiences for students at different stages of school education. The Four year Integrated Teacher Education Programme seeks to ensure that the prospective teachers are given the highest quality education in content, pedagogy, values,skills and practice. The eligibility for admission to the ITEP leading to the degree of B.A.B.Ed./B.Sc. B.Ed. (Secondary Stagewith Major in Hindi /English/ Urdu/ History/ Geography /Mathematics/ Botany/ Physics/ Chemistry/ Zoology etc.) is as under:

- Candidate should have passed Class XII or equivalent stage of education with a minimum of 50%marks in aggregate or an equivalent grade from a recognized Board/University.
- Candidate has to appear in the Pre-Teacher Education Test (PTET) conducted by the Authorized examination body and admission in the programme will be based on Merit of candidate.
- The reservation and relaxation in marks for admission belonging to SC/ST/OBC/PwBD/EWS and other category shall be as per the rules of the Central Government/ State Government whichever is applicable time to time.
- Four year Integrated Teacher Education Programme, a 4-year dual major degree programme, offers one major in Education and the other major in any one of the discipline Hindi/ English/ Urdu/History/ Geography/ Mathematics/ Botany/ Physics/ Chemistry/ Zoology etc.with different minor.
- The students seeking admission in any of the above mentioned disciplinary majors in Four year Integrated Teacher Education Programme must haveappeared inthe respective domain/ subject in NCET.
- Absence in any NCET subject disqualifiesthe candidate from consideration for admission.

2. Programme:

- The Integrated Teacher Education Programme (ITEP) is designed as a comprehensive four year DualMajor degree Programme uniquely focused on preparing future educators specializing in the secondary stage of school education. This specialized programme is primarily offered for the Secondary stage,Science, Social Science/Language discipline (B.A. B.Ed./B.Sc. B.Ed.). The discipline offers a set of major and minor courses customized to provide aspiring teachers with the essential knowledge and skills required for proficient teaching in their selected subjects.
- This degree B.A. B.Ed./B.Sc. B.Ed. is equivalent to B.A. (Honours)./B.Sc. (Honours) and B.Ed. degrees of the PDUS University Sikar.Students who pass this programme are considered eligible to pursue Masters Degree in the respective disciplinary major sasper UGC and NCTE regulations.
- The course contents related to disciplinary majors viz Hindi /English /Urdu /History /Geography offered in B.A. B.Ed.**or** Mathematics/ Botany/ Physics / Chemistry/ Zoology offered in B.Sc. B.Ed.Degree coursesare equivalent to that of B.A. (Honours)/B.Sc. (Honours) of PDUS University Sikar. The programme contentsrelated to education componentsin B.A. B.Ed./B.Sc. B.Ed. Degree courses are equivalent to that of B.Ed. of PDUS University Sikar.
- Structured in a semester-wise format, the programme is meticulously designed to span

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eight semesters in total.This allows for a well-organized and comprehensive approach to covering essential content, pedagogy, and practical experiences vital for future teachers. Importantly, the programme is flexible andinclusive, allowing for multiple exits and entries, providing students the opportunity to customize their academic path according to their individual needs and circumstances.

- Students have the opportunity to re-enter in the programme within a three-year period, ensuring the fulfilment of the other required guidelines of UGC and NCTE. This flexibility is a testimony to the programme's commitment to inclusivity and accessibility,enabling in dividualstos trike a balance between their educational pursuits and other aspects of life. Moreover, the flexibility extends to the over all completion of the degree, permitting students to complete the Four year Integrated Teacher Education Programme within a maximum period ofseven years.
- The Integrated Teacher Education Programme shall include a structured and comprehensive internship provision aimed at providing practical, hands-on experience to aspiring teachers. This internship component is a crucial part of the programme, offering students the opportunity to apply the theoretical knowledge and pedagogical techniques they have acquired throughout their academic journey.During the internship, students are typically placed in educational settings such as schools or educational institutions, where they actively engage in teaching, classroom management, lesson planning, and other essential teaching responsibilities under the guidance and supervision of experienced mentors.
- The internship provision in the programme will allow students to gain valuable in sights into the dynamics of a class room, interact with students, understand diverse learning styles and implement effective teaching learning strategies. It serves as a bridge between academic learning and real-world teaching experiences, preparing students to enter the teaching profession with confidence and competence.
- In essence, the Four year Integrated Teacher Education Programmenot only sets ahigh standard for teacher education but also acknowledge sthediversepathsstudents may take,of feringa flexible and supportive structure to accommodate the multifaceted aspects of their educational journey.
- The programme will have a provision of end-semester examinations and internal assessments as per structure of the course.

3. Promotion to next semester:

A candidate shall be promoted to the next semester if she/he achieves a grade point of 4 (Letter Grade P)and above in all papers, as per the rules mentioned here in after. However, the students may clear their back papers within the stipulated time of **seven years**. In caseof discrepancy, candidates may appeal for revaluation of their end semester examination answer script except Practicals/ School experiences (Internship) and Community Engagement & services.

4. Course Details:

The Four year Integrated Teacher Education Programme B.A.B.Ed./B.Sc. B.Ed Course spans a four-year duration, covering eight semesters of academic study. This unique programme encompasses a dual-major bachelor's degree structure, wherein one major is focused on Education and the other one is specific disciplinary or interdisciplinary field of knowledge.

The programme framework is structured as follows:

A. Foundation of Education (30 Credits):
   a. Nine Core Courses
   b. One Elective in Education
B. Disciplinary/ Interdisciplinary (72 Credits):
   As per UG Program in the university
C. Stage-Specific Content-Cum-Pedagogy (16 Credits):
   a. 7 Courses

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D. Ability Enhancement & Value-Added Courses (28 credits):
   a. 10Courses

E.School Experiences (20 credits):
   a. 6 Courses (Internship)

F. Community Engagement and Services (2 credits):
   a.One Course

This comprehensive programme structure ensures a well-rounded educational experience, combining a strong foundation in education with specialized knowledge in a chosen discipline. This programme also provides students with a holistic perspective, preparing them to excel as teachers in their respective fields.

5. B.A.B.Ed./B.ScB.Ed.(Bachelorof Arts and Bachelor of Education/ Bachelor of Science and Bachelor of Education): Integrated Course programme.

Ten major primary courses: Hindi, English, Urdu, History and Geography, Botany etc. with diverse minor course combinations outlined in the Table below:

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S.No.	Major Subject Area	Minor subject Area
1	Hindi	English, Sanskrit,Urdu, Economics, Geography, History, Political Science, Chemistry, Physics, Mathematics, Zoology, Botany, Physical Education and Yoga
2.	English	Hindi,Urdu, Sanskrit, Economics, Geography, History, Political Science, Chemistry Physics, Mathematics, Zoology, Botany, Physical Educationand Yoga
3	Urdu/Sanskrit	Hindi, English, Economics, Geography, History, Political Science, Chemistry, Physics, Mathematics, Zoology, Botany, Physical Education and Yoga
4.	History	Hindi, English, Urdu, Sanskrit, Economics, Geography, Political Science, Chemistry, Physics, Mathematics, Zoology, Botany, Physical Educationand Yoga
5.	Geography	Hindi, English, Urdu, Sanskrit, Economics, History, Political Science, Chemistry, Physics, Mathematics, Zoology, Botany, Physical Education and Yoga
6.	Botany	Physics, Mathematics, Chemistry Physical Education and Yoga, Hindi, English, Urdu, Sanskrit, Economics, Geography, History and Political Science
7.	Chemistry	Physics, Mathematics, Zoology, Botany, Physical Education and Yoga, Hindi, English, Urdu, Sanskrit, Economics, Geography, History and Political Science
8.	Mathematics	Physics, Zoology, Botany, Chemistry Physical Education and Yoga, Hindi, English, Urdu, Sanskrit, Economics, Geography, History and Political Science
9.	Physics	Mathematics, Zoology, Botany, Chemistry Physical Education and Yoga, Hindi, English, Urdu, Sanskrit, Economics, Geography, History and Political Science
10.	Zoology	Physics, Mathematics, Chemistry Physical Education and Yoga, Hindi, English, Urdu, Sanskrit, Economics, Geography, History and Political Science

7. Programme Learning Outcomes (PLOs):

Programme Learning outcomes of Four year Integrated Teacher Education Programme B.A.B.Ed./B.Sc. B.Ed.Secondary Stage course are to achieve the creation of passionate, motivated, qualified, professionally trained, and well-equipped teachers capable of designing and implementing developmentally appropriate learning experiences for students at secondary stage of school education. Also ensure that the prospective teachers are given the highest quality education in content, pedagogy, skills, values and practices.

8.Examinations:

- There shall be a University examination at the end of each semester as per details of the scheme of examination.
- A candidate will be permitted to appear in the end semester examination only if she/he has pursued a regular course of study and attended at least 80% of the classes for all the course work and practicum and 90% for School experiences (Internship) and Community engagement services.
- In order to qualify for B.A.B.Ed./B.Sc. B.Ed. degree course a candidate should obtain a minimum of **40% marks in theory and 50% marks in practical's separately,** wherever applicable in each subject in each semester of the programme and 50% marks in School experiences (Internship) and Community engagement & services.
- B.A.B.Ed./B.Sc. B.Ed. Course offers the partial carry over scheme as

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- ***For admission to semester VII, candidates should have successfully cleared all the papers of semesters I and II.***

- If a candidate fails to clear any paper(s) in odd/even semesters in the first attempt, she/he is allowed to clear the back paper(s) in two more consecutive attempts in odd/even semesters only. Odd semester (I, III, V, VII) is from July to December and even semester (II, IV, VI, VIII) is from January to June.The respective end semester examinations shall normally be held in November-December and May-June every year.
- A candidate will be given maximum of **three attempts** (first attempt as main examination and two attempts as reappear examinations) to pass the examination of any paper(s) in the permissible semester of the programme. The candidate has to complete the programme within maximum **seven (4+3) years**, which includes duration of the programme i.e. four years. **If she/he does not pass the examination even after seven years, she/he will not be eligible for award of Degree.**
- A candidate will not be required to appear in practical (s) /internal assessment(s) if she/he has already cleared the same. A candidate who fails in any paper(s) of theory examination but passes in practical (s)/ internal assessment(s), she/hewill be required to reappear again in that paper(s) of theory.However, marks obtained inpractical(s)/ internal assessment (s) will becarried over.
- No improvement in courses(s)/ paper(s) will be allowed if the candidate has secured pass marks in the paper(s).
- Division/ grade will be awarded to the successful candidates only after the 8th semester examination and on the basis of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average

  (CGPA) obtained in all the eight semesters of the programme in all the subjects including School experiences (Internship) and Community engagement services.
- Institute will submit the consolidated marks of the internal assessments and practical examinations to the Controller of Examination of the University, not later than seven days at the end of the semester.
- A variety of assessment methods that are appropriate to a given disciplinary/subject area and a programme of study are used to assess progress toward the course /programme learning out comes. Priority is accorded to formative assessment. Evaluation is based on continuous assessment, in which sessional assessment, mid semester and the end semester examinations contribute to the final grade.
- *The assessment is–Formative and Summative ‖innature. The assessment of students is based on*
  - Assessment methods align with the specific discipline or subject area and the programme of study,ensuring appropriateness.
  - Assessing progress towards course and programme learning outcomes.
  - Continuous assessment,incorporating sessional assessment and terminal examination contributions for determining the final grade.
  - Assessment weightage: 30% for formative assessment and 70% for summative assessment.
  - Minimum passing requirement of marks for each course in a semester is 40% marks in theory, tutorial, 50% marks in practical, and practicum components; however, in school experiences (Internship), a candidate is required to secure 50% marks. Candidate is required to pass in theory and practical separately.
  - If a candidate fails to secure 40% marks in any course, she/he will have to clear that particular course(s) (back papers) in subsequent semesters.
  - Candidates with back papers have the opportunity to clear them within seven years from the date of Admission.
  - Re-evaluation of the end semester examination answer scripts is allowed in case of discrepancies, excluding Practical and School experiences (Internship) as per University rules.

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Question paper Patterns:

- Pattern of question paper (C3) aimed to examine higher order thinking, critical thinking and analytical reasoning pertaining to the concerned subjects.
- Each question paper will be divided into two parts viz A and B. Questions of each section will cover all the units of the paper. Part A is compulsory and part B with internal choices and need to attempt one question from each unit.
- Part-A will consist of 11 compulsory questions from all the units. These questions will be short answer type.
- Part-B will consist of 3 questions of essay type (300words) from each unit with internal choices.
- Each question of part-A will carry 2 marks with a total of 22 marks. Questions of part B will carry remaining proportions of the maximum marks of the paper.
- The overall question paper will have difficulty level as Easy 30%, Average:40% and Difficult:30%
- Internal assessment will be as detailed in corresponding course/paper.

1. Grading System (Absolute/ Relative):

The Semester Grade Point Average(SGPA)is computed from the grades to evaluate the student's performance in a given semester, while the Cumulative GPA (CGPA) is based on the grades in all courses taken after joining the course of study. In the marksheet, Both The course grades as well as marks will be mentored Additionally, they may calculate and present a weighted average of marks, considering the marks achieved across all semesters for providing valuable information to the students.

LetterGrade	GradePoint
O(outstanding)	10
A+(Excellent)	9
A(Verygood)	8
B+(Good)	7
B(Aboveaverage)	6
C(Average)	5
P (Pass)	4
F(Fail)	0
Ab(Absent)	0

Computation of SGPA and CGPA

The procedure has been adopted to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) as per UGC recommendations.

The SGPA is the ratio of the sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses under gone by a student, i.e.

$$\textbf{SGPA } (Si)=\sum(CixGi)/\sum Ci$$

Where Ci is the number of credits of the i^{th} course and Gi is the grade point scored by the student in the i^{th} course.

Example for Computation of SGPA

Semester	Course	Credit	LetterGrade	Gradepoint	CreditPoint (CreditxGrade)
I	Course1	3	A	8	3X8=24
I	Course2	4	B+	7	4X7=28

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I	Course3	3	B	6	3X6=18
I	Course4	3	O	10	3X10 =30
I	Course5	3	C	5	3X5=15
I	Course6	4	B	6	4X6=24
		20			139
	SGPA				139/20=**6.95**

The Cumulative Grade Point Average (CGPA) is also calculated in the same manner taking into account all the courses under gone by a student over all the semesters of a programme, i.e.

$$\mathbf{CGPA}=\sum(\mathrm{CixSi})/\sum\mathrm{Ci}$$

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

Example for Computation of CGPA

Semester1	Semester2	Semester3	Semester4	Semester5	Semester6
Credit: 21SGP A:6.9	Credit: 22SGP A:7.8	Credit:2 5SGPA: 5.6	Credit: 26SGP A:6.0	Credit:26 SGPA:6.3	Credit25 SGPA8.0

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.**Transcript (Format):** Based on the above recommendations on Letter grades, grade points, SGPA and CCPA, the University issues the transcript for each semester and a consolidated transcript indicating the performance in all semesters.

2. Transfer of Credits

Transfer of Credits corresponding to the ITEP will be as per the UGC rules (https://www.ugc.gov.in/pdfnews/5266217_Draft-version-ABC-Regulations-2021-SPT-02-01-2021.pdf)

9. School Experiences (Internship):Activities per taining to school experiences are as follows:

- ***Pre-Internship Practice:*** **Preparation for School Experience:**
  - Orientationon School Experience:
  - Demonstration lessons by Teacher Educators and/ or by expert teachers:
  - Peer Teaching- I:Pedagogy of chosen subjects relating to two of the curricular areas such as Interdisciplinary Areas, Language(s) and Social Sciences Mathematics and Sciences included in the curriculum for Grades 9 &10.
  - Peer Teaching - II: Pedagogy of chosen subjects from two of the curricular areas such as Interdisciplinary Areas, Language(s) and Social Sciences, Mathematics and Sciences included in the curriculum for Grades 9 &10.
- ***School observation involving:***
  - Observation of teaching-learning activities in Grades 9-12 in Schools; Observation of full school activities with special focus on Grades 9-12.
  - Observation of Government and Private Schools across as many contexts as possible (e.g., Rural, Urban, Residential, Schools with alternative approaches, Ashram schools, Demonstration Multipurpose Schools (DMS) etc.); Observation of full school activities with special focus on Grades 9 – 12.
- ***Practice Teaching:***
  - Assisting classroom teachers in Grades 9-12 in schools – Focus on teaching of subjects relating to two of the curricular areas such as Interdisciplinary Areas, Language(s) and Social Sciences, Mathematics and Sciences prescribed for study in Grades 9 & 10 (no independent teaching).

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- Block/Unit Teaching in school: Planning for Teaching; Taking classes observed by the class room teacher (no teaching without the classroom teacher present); Classes in two chosen subjects relating totwo of the curricular areas, i.e., Interdisciplinary Areas, Language(s) and Social Sciences, Mathematics and Sciences prescribed for study in Grades 9 & 10. Equal time shared two curricular areas and vocational education; teachinga logical set of lessons or a complete unit closely observedby class room teacher swith equal time with children in Grades 9, 10,11&12 in schools.

➢ ***School Internship:***

- Independent Teaching, equal time shared across two subjects relating to two of the curricular areas, i.e., Interdisciplinary Areas, Language(s) and Social Sciences, Science prescribed for study in Grades 9-10 (Min:10 lessons for each subject)
- Observation of transaction of lessons by teachers of Secondary Stage.
- Acting as assistant to the regular class room teacher before taking independent charge of classroom teaching at the Secondary Stage.
- Independent Teaching, equal time shared across two subjects relating to two of the curricular areas, i.e., Interdisciplinary Areas, Language(s) and Social Sciences Mathematics and Sciences prescribed for study in Grades 9-10.
- Providing support to carry out everyday activities of schools (e.g., conducting the school assembly, organizing various school events. etc.).
- Exposure to school administrative practices (e.g., maintaining administration records, creating an annual calendar. etc.).
- Participation in all aspects of teaching - preparation, planning, developing/collecting/localizing teaching-learning material, classroom transactions, and learning assessment processes.

➢ ***Creating Teaching-Learning Material:***

- Development of relevant teaching-learning material for specific groups of children with whom the student-teacher had interacted during their school experience.
- Development of Vocational skill based projects, Maps, Science Experiments, Projects having linkages with industry etc.

10. Community Engagement and Service:

The educational segment focusing on–community engagement and service lend eavours to immerse student- teachers in understanding socio-economic challenges within society. It aims to introduce them to community-driven development initiatives, enriching their academic knowledge with practical life encounters, ultimately fostering the capacity to devise solutions for real-world issues. This course is meticulously designed to cultivate a deeper understanding of community dynamics, augment the student-teachers' proficiency in garnering community backing for school-related initiatives, advocate for the importance of education, and shed light on matters concerning schooling, children's health, and over all well-being. Additionally, it strives to sensitize and galvanize community members to address prevalent social, cultural, and educational obstacles.

11. Evaluation: Rules and Regulations:

- Attendance: Following are the rules relating to attendance requirements:
- Every candidate is expected to have 100% attendance in each subject in which she/he has registered at the beginning of the semester. However, in case of attendance less than mandatory 80%, condonation for shortage of attendance upto 20% may be granted by the Head of the Institution.
- A candidate not having the mandatory requirement of minimum 80% attendance in any course(s)/paper(s), shall not be permitted to appear for the end semester examination in that paper(s) and is awarded 'FA' (Insufficient attendance) grade.
- Course(s) if the period of leave exceeds two weeks, application for leave shall have to be submitted to theHead of the Institution, stating fully the reasons for the leave requested along with supporting document(s).The Head of the Institution will grant such leave and the candidate will be marked as absent during thatperiod.

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- Absence for a period not exceeding two weeks in a semester due to sickness or any other valid reason for which prior application could not be made; the leave may be granted ex-post facto by the Head of the Institution provided she/he is satis fied with the explanation.
- Candidates who represent their Institute/ University/ State/ Nation in recognized sports/ games/ cultural/ literary/ NCC/ NSS activities will get credit of attendance for that period. This will be allowed on production of a certificate from the concerned organizing authority and on the basis of the recommendations of the Head of the Institution.
- A candidate representing the Institute in approved co-curricular activities such as Games & Sports, Literary & Cultural Meets, Seminar, Workshop, Conference and Interview arranged through Placement Cell shall be considered as on-duty subject to a maximum of five days in a semester. Prior permission from Head of theInstitution is required for availing on duty permission. However, this period of absence shall be counted as pre sentfor the purpose of computation of attendance.
- I: for–Incomplete Assessment‖, when the candidate misses the end-semester examination on medical grounds.
- FA: for–Insufficient Attendance‖ in the course (s) / paper(s).
- W:for–Withdrawal‖from the programme.

X:for–Debarred‖on grounds of indiscipline/malpractices in examinations.

12. Awarding UG Certificate, UG Diploma, and Degrees:

Certificate in Integrated Teacher Education Programme (Undergraduate Certificate)

Students who opt to exit after completion of the first year and have secured 44 credits will be awarded a UG certificate if, in addition, they complete one vocational course of 4 credits during the summer vacation of the first year. These students are allowed to re-enter in the degree programme within three years and complete the degree programme within the stipulated maximum period of seven years.

Diploma in Integrated Teacher Education Programme (UG Diplomain ITEP)

Students who opt to exit after completion of the second year and have secured 84 credits will be awarded the UG diploma if they complete one vocational course of 4 credits during the summer vacation of thesecond year. These students are allowed to re-enter within a period of three years and complete the degree programme within the maximum period of seven years.

Bachelor of Arts (B.A.) Degree: Students who wish to undergo a 3-year UG programme will be awarded a UG Degree in the major discipline after completing three years, securing 128 credits, and satisfying the minimum credit requirement.

B.A.B.Ed. B.Sc. B.Ed. (Secondary Stage with Major in Hindi/ English/ Urdu/ History/ Geography/ Zoology/ Physics/ Chemistry etc.) degree: Afour-year UG dualmajor degreewill be awarded to those who complete a four-year degree programme with minimum 168 credits and have satisfied the credit requirements.

13. Reappear Examination:

- Candidates appearing in reappear examination fo rclearing their back papers shall be governed by the following rules:
- Candidates with–FA‖Grade are not eligible for writing the reappear examination unless she/he completes the required attendance.
- Candidates with–F‖and–I‖Grade only are eligible to write reappear examination.
- A candidate who has obtained–F‖ Grade in Reappear examination may register in the permissible semester.
- Candidates can apply for re-evaluation in any of the theory examination as per rules stipulated by the University.

14. Miscellaneous:

- These regulations will apply to the candidates admitted for the academic year 2024-25 and onwards.
- Statutes/ Ordinances/ Rules/ Regulations/ Syllabi may be amended by the University from time to time.
- Other regulations not specifically mentioned above are as per the regulations of the University as applicable from time to time.

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- Any issue not envisaged above, shall be resolved by the Vice-Chancellor in consultation with the appropriate Bodies of the University,which shall be final and binding.
- Legal matters are subject to the jurisdiction of Sikar.

Curricular Structure of the Four Year Integrated Teacher Education Programme													
S. No	Curricular components	Courses	Credits per semester								Total credits per course	Total credits
			S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8		
1.	1. Student Induction Programme	Two-Week Student Induction Programme	--	--	--	--	--	--	--	--	--	--
2.1	2. Foundations of Education	Evolution of Indian Education	4	--	--	--	--	--	--	--	4	30
2.2		Child Development& Educational Psychology	--	--	4	--	--	--	--	--	4	
2.3		Philosophical & Sociological Perspectives of Education-I	--	--	--	4	--	--	--	--	4	
2.4		Assessment & Evaluation	--	--	--	--	2	--	--	--	2	
2.5		Inclusive Education	--	--	--	--	--	2	--	--	2	
2.6		Perspectives on School Leadership and Management	--	--	--	--	--	--	2	--	2	
2.7		Curriculum Planning& Development (text books, material development, etc.)-(Stage Specific)	--	--	--	--	--	--	2	--	2	
2.8		Philosophical& Sociological Perspectives of Education-II	--	--	--	--	--	--	4	--	4	
2.9		Education Policy Analysis	--	--	--	--	--	--	2	--	2	
2.10		One Elective from the offered courses as per thechoice of student-teachers (Adolescence Education, Education for Mental Health, Education for Sustainable Development, Emerging Technologiesin Education, Gender Education,Guidance and Counselling, Human RightsEducation, Peace Education, Sports and Fitness etc.)	--	--	--	--	--	--	--	4	4	

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3.1	3. Disciplinary /Inter-disciplinaryCourses	One/two discipline(s) from any of the school curricular areas. I)Languages ii) Physical Sciences (Physics, Chemistry, etc.) iii) Biological Sciences (Zoology, Botany, etc.) iv) Mathematics v) Social Sciences & Humanities (Economics, History, Geography, Psychology, Political Scienceetc.) vi) Business Studies, Accountancy, etc. vii) Arts(Visualand Performing) viii) Physical Educationand Yoga ix) Vocational Education x) Computer Science xi) Agriculture xii) Home Science xiii) Any other school subject	12	12	12	12	12	12	--	--	72	72
4.1	4. Stage-SpecificContent-cum-Pedagogy	Stage-Specific Content-cum-Pedagogy Courses	--	--	4	22	22	22	--	--	16	16
5.1	5. Ability Enhancement & Value-Added Courses	Language-I(as per the 8th schedule of constitution of India)	4	--	--	--	--	--	--	--	4	28
5.2		Language-II (Other than Language-I)	--	4	--	--	--	--	--	--	4	
5.3		Art Education (Performing and Visual)	2	--	--	--	--	2	--	--	4	
5.4		Understanding India (Indian Ethos and Knowledge Systems)	2	2	--	--	--	--	--	--	4	
5.5		Teacher and Society	--	2	--	--	--	--	--	--	2	
5.6		ICT in Education	--	--	--	--	--	2	--	--	2	
5.7		Mathematical & Quantitative Reasoning	--	--	--	--	--	--	2	--	2	
5.8		Sports, Nutritionand Fitness	--	--	--	--	--	--	2	--	2	
5.9		Yoga and Understanding Self	--	--	--	--	--	--	2	--	2	
5.10		Citizenship Education, Sustainability and Environment Education	--	--	--	--	--	--	--	2	2	

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6.1	6. School Experience	Pre-internship Practice (Demonstration lessons, Peer teaching)	--	--	--	--	2	--	--	--	2	20
6.2		School Observation (Field Practice)	--	--	--	--	--	2	--	--	2	
6.3		School-based Research Project	--	--	--	--	--	--	- -	2	2	
6.4		Internship in Teaching	--	--	--	--	--	--	- -	10	10	
6.5		Post Internship (Review and Analysis)	--	--	--	--	--	--	--	2	2	
6.6		Creating Teaching Learning Material/ Work Experience (Educational Toy making, local/ traditional vocations, etc)	--	--	--	--	--	--	2	--	2	
7.1	7. CommunityEngagementandService	Community Engagement and Service (Participation in NSS-related activities, New India Literacy Programmeetc.)	--	--	--	--	--	--	2	- -	2	2
		Total	**24**	**20**	**20**	**20**	**20**	**24**	**20**	**20**	**168**	**168**

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Four Year Integrated Teacher Education Programme

Semester I

S. N.	Course Code	Course Title	Course Category	Credit	CIA	Theory	Prac.	Total
1		Evolution of Indian Education	CC	4	30	70	-	100
2	Disciplinary/Inter - disciplinary Courses (As per UG. Sem-I)	One/ Two discipline(s) from any of the school Curricular areas. (i) Languages Physical Science (Physics, Chemistry, etc.) (iii) Biological Science (Zoology, Botany, etc.) Mathematics (v) Social Science & Humanities (Economics, History, Geography, Psychology, Political Science etc.) (vi) Business Studies, Accountancy, etc. (vii) Arts (Visual and Performing) (viii) Physical Education and Yoga Vocational Education Computer Science (xi) Agriculture (xii) Home Science (xiii) Any other school subject	CE	12	90/30	210/180	0/90	300
3		Language-I (as per the8th schedule of constitution of India)	CC	4	30	70	-	100
4		Art Education (Performing and Visual)	CC	2	15	35	-	50
5		Understanding India (Indian Ethos and Knowledge Systems)	CC	2	15	35	-	50
			Total	24	180/120	420/390	0/90	600

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Semester II

S. N.	Course Code	Course Title	Course Category	Credit	CIA	Theory	Prac.	Total
1	Disciplinary /Inter-disciplinary Courses (As per UG. Sem-II)	One/ Two discipline(s) from any of the school Curricular areas. Languages Physical Science (Physics, Chemistry, etc.) (iii) Biological Science (Zoology, Botany, etc.)(iv) Mathematics Social Science & Humanities (Economics, History, Geography, Psychology,Political Sience etc.) (vi) Business Studies, Accountancy, etc. (vii) Arts (Visual and Performing) (viii) Physical Education and Yoga (ix) Vocational Education Computer Science (xi) Agriculture (xii) Home Science (xiii) Any other school subject	CE	12	90/30	210/180	0/90	300
2		Language-II (Other than Language-I)	CC	4	30	70		100
3		Understanding India (Indian Ethos and Knowledge Systems)	CC	2	15	35		50
4		Teacher and Society	CC	2	15	35		50
			Total	20	150/ 90	350/ 320	0/90	500

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Semester III

S. N.	Course Code	Course Title	Course Category	Credit	CIA	Theory	Prac.	Total
1		Child Development &Educational Psychology	CC	4	30	70		100
2	Disciplinary /Inter-disciplinary Courses (As per UG. Sem-III)	One/ Two discipline (s) from any of the school Curricular areas. (i) Languages (ii) Physical Science (Physics, Chemistry, etc.) (iii) Biological Science (Zoology, Botany, etc.) (iv) Mathematics (v) Social Science & Humanities (Economics, History, Geography, Psychology, Political Science etc.) (vi) Business Studies, Accountancy, etc. (vii) Arts (Visual and Performing) (viii) Physical Education and Yoga (ix) Vocational Education Computer Science (xi) Agriculture (xii) Home Science (xiii) Any other school subject	CE	12	90/30	210/180	0/90	300
3		General Pedagogy (For all Curricular Areas)	CC	4	30	70		100
			TOTAL	20	150/ 90	350/320	0/90	500

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Semester IV

S. N.	Course Code	Course Title	Course Category	Credit	CIA	Theory	Prac.	Total
1		Philosophical & Sociological Perspectives of Education-I	CC	4	30	70		100
2	Disciplinary /Inter-disciplinary Courses (As per UG. Sem-IV)	One/ Two discipline(s) from any of the school Curricular areas. (i) Languages (ii) Physical Science (Physics, Chemistry, etc.) (iii) Biological Science (Zoology, Botany, etc.) (iv) Mathematics (v) Social Science & Humanities (Economics, History, Geography, Psychology, Political Science etc.) (vi) Business Studies, Accountancy, etc. (vii) Arts (Visual and Performing) (viii) Physical Education and Yoga (ix) Vocational Education (x) Computer Science (xi) Agriculture (xii) Home Science (xiii) Any other school subject	CE	12	90/30	210/180	0/90	300
3		Content-cum-Pedagogy Courses (Any Two)	CE	2	15	35		50
				2	15	35		50
			TOTAL	20	150/ 90	350/320	0/90	500

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Semester V

S. N.	Course Code	Course Title	Course Category	Credit	CIA	Theory		Total
1		Assessment & Evaluation	CC	2	15	35		50
2	Disciplinary /Inter-disciplinaryCourses (As per UG. Sem-V)	One/ Two discipline(s) from any of the school Curricular areas. (i) Languages (ii) Physical Science (Physics, Chemistry, etc.) (iii) Biological Science (Zoology, Botany, etc.) (iv) Mathematics (v) Social Science & Humanities (Economics, History, Geography, Psychology, Political Science etc.) (vi) Business Studies, Accountancy, etc. (vii) Arts (Visual and Performing) (viii) Physical Education and Yoga (ix) Vocational Education (x) Computer Science (xi) Agriculture (xii) Home Science (xiii) Any other school subject	CE	12	90/30	210/180	0/90	300
3		Content-cum-Pedagogy Courses (Any Two)	CE	2	15	35		50
				2	15	35		50
4	School Experience	Pre-internship Practice (Demonstration lessons, Peer teaching)	CC	2	50	--		50
			TOTAL	20	185/ 110	315/250	0/90	500

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Semester VI

S. N.	Course Code	Course Title	Course Category	Credit	CIA	Theory	Prac.	Total
1		Inclusive Education	CC	2	15	35		50
2	Disciplinary /Inter-disciplinary Courses (As per UG. Sem-VI)	One/ Two discipline(s) from any of the school Curricular areas. (i) Languages (ii) Physical Science (Physics, Chemistry, etc.) (iii) Biological Science (Zoology, Botany, etc.) (iv) Mathematics (v) Social Science & Humanities (Economics, History, Geography, Psychology, Political Science etc.) (vi) Business Studies, Accountancy, etc. (vii) Arts (Visual and Performing) (viii) Physical Education and Yoga (ix) Vocational Education (x) Computer Science (xi) Agriculture (xii) Home Science (xiii) Any other school subject	CE	12	90/30	210/180	0/90	300
3		Content-cum-Pedagogy Courses (Any Two)	CE	2	15	35		50
				2	15	35		50
4		Art Education (Performing and Visual)	CC	2	15	35		50
5		ICT in Education	CC	2	15	35		50
6	School Experience	School Observation (Field Practice)	CC	2	50	-		50
			TOTAL	24	215/140	385/320	0/90	600

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Semester VII

S. N.	Course Code	Course Title	Course Category	Credit	CIA	Theory	Total
1		Perspectiveson School Leadership and Management	CC	2	15	35	50
2		Philosophical & Sociological Perspectives of Education-II	CC	4	30	70	100
3		Curriculum Planning & Development (textbooks, material development, etc.)- (Stage Specific)	CC	2	15	35	50
4		Education Policy Analysis	CC	2	15	35	50
5		Mathematical & Quantitative Reasoning	CC	2	15	35	50
6		Sports, Nutrition and Fitness	CC	2	15	35	50
7		Yoga and Understanding Self	CC	2	15	35	50
8	SchoolExperience	Creating Teaching Learning Material/ Work Experience (Educational Toy making,local/traditional vocations, etc)	CC	2	50	-	50
9	Community Engagement and Service	Community Engagement and Service (Participation in NSS-related activities, New India Literacy Programme etc.)	CC	2	50	-	50
			TOTAL	20	220	280	500

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Semester VIII

S. N.	Course Code	Course Title	Course Category	Credit	CIA	Theory	Total
1		One Elective from the offered courses as per thechoice of student-teachers (e.g., Adolescence Education, Education for Mental Health, Education for Sustainable Development, Emerging Technologiesin Education, Gender Education, Guidance and Counselling, Human Rights Education, Peace Education, Sports and Fitness Education, Tribal Education, Economics of Education ,or any other relevant course decided by the University/ Institution)	CE	4	30	70	100
3		Citizenship Education, Sustainability and Environment Education	CC	2	15	35	50
4	SchoolExperience	School-based Research Project	CC	2	50	-	50
5		Internshipin Teaching	CC	10	250	-	250
6		Post Internship (Reviewand Analysis)	CC	2	50	-	50
			TOTAL	20	395	105	500

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SEMESTER - I

1.0 STUDENT INDUCTION PROGRAMME

(Two-Weeks Student Induction Programme)

To be evolved by the Institution concerned

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24BIEI5101T:Evolution of Indian Education

Credits:3L+1T+0P
Periods per week: 5
Examination:3 hours

Marks:100
C1+C2=30
C3=70Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

C1:WrittenTest as per schedule (at the end of 8 th week)

C2:As per class schedule-WrittenTest/Assignment/ Essay/ Presentation/ Report/ Seminar/ Quiz(at the end of fifteen week).

About the Course

The course seeks to develop an understanding among student teachers of the evolution ofeducation in India that would allow student teachers to locate themselves within the larger system of education. The course aims at orienting student teachers to the historical perspective of Indian education including the development and features of education in ancient India such asthe Gurukuls, post-Vedic period, during Mauryan and Gupta empires, during colonial era and post-independence period, and future perspectives about education development in India, and progression from Education 1.0 to Education 4.0 etc. This course also provides an overview ofthe contribution of Indian thinkers to evolve Indian Education system – Savitri bai and Jyotiba Phule, Rabindranath Tagore, Swami Vivekananda, Mahatma Gandhi, Sri Aurobindo, Gijubhai Badheka, Pt. Madanmohan Malaviya, Jiddu Krishnamurti, Dr.Bhima Rao Ambedkar and others.

Learning Outcomes

After completion of this course, student teachers will be able to:

- discuss genesis, vision, and evolution of education inancient India to the contemporary India,
- enable them selves to shape their educational perspective to act as on effective teacher.

UNIT-I

Ancient Indian Education:Vedic Period

A. Vision,objectives and salient features of Vedic Education System.
B. Teaching and Learning Process.
C. Development of educational institutions: Finances and Management.
D. Famous Educational institutions and Guru-Shishya.
E. Education at the time of Epics: Ramayana and Mahabharata.

UNIT-II

Ancient Indian Education:Buddhist and Jain Period

A. Vision, objectives and salient features of Buddhist and Jain Education System.
B. Teaching and Learning Process.

C. Finance and Management of Educational Institutions.
D. Educational Institutions: Nalanda,Taxila, Vikramshila, Vallabhi, Nadia.
E. Famous Guru-Shishya.

UNIT-III

Post-Gupta Periodto Colonial Period

A. Vision,objectives, brief historical development perspectiveas wellas salient features of Education in India.
B. Teaching and Learning Process.
C. Finance and Management of educational institutions.

UNIT-IV

Modern indian education

A. Colonial Education in india, Woods Despatch, Macaulay Minutesand Westernization of Indian Education
B. Shiksha ka Bhartiyakaran (Indigenous Interventions in Education) (Bird' sey eview of their contribution) -Swadeshi and Nationalist attempts of educational reforms with special reference to general contribution of Indian thinkers–Savitribai and Jyotiba Phule, Rabindranath Tagore, Swami Vivekananda, Mahatma Gandhi, Sri Aurobindo, Gijubhai Badheka, Pt. Madan mohan Malaviya, Jiddu Krishna murti and Dr. Bhima Rao Ambedkar others–to the education systems of India.
C. Education in Independent India
   - Overview of Constitutional values and educational provisions.
   - Citizenship Education:
     - Qualities of a good citizen.
     - Education for fundamental rights and duties.
   - Overview of 20th Century Committees, Commissions and Policies.
   - UEE,RMSA,RTEAct2009:Overview and impact.
   - NEP2020: visionan dim plementation fo ravibrant India.

Suggestive Practicum

1. Prepare a report high lighting educational reforms with special reference to school education in the light of NEP 2020.
2. Critically analyze the concept of good citizen from the perspective of education for democratic citizenship.
3. Compare vision, objectives, and salient features of education during different periods.
4. Working out a plan to develop awareness, attitude and practices related to Fundamental Rights or fundamental duties or democratic citizenship qualities, execute it in the class and write the details in form of a report.
5. Sharing of student experiences (in groups) related to Indian constitutional values, helpthem to reshape their concept and enable them to develop vision, mission and objectives for a school and their plan to accomplish the objectives in form of a group report.
6. Analyses of current educational strengths and weaknesses of one's own locality and work out a critical report.
7. Visit to places of educational significance and value centers and develop a project report.
8. Observation of unity and diversity in a social locality and matching it with unity and diversity in the class and work out a plan for awareness for national-emotional integration for class to develop awareness, attitudes, skills, and participatory values, execute it in the class and report the details.

Suggestive Mode of Transaction

The course content transaction will include the following:

- Planned lectures infused with multimedia/ power-point presentations.
- Small group discussion, panel interactions, small theme-based seminars, group discussions, co-operative teaching and team teaching, selections from theoretical readings, case studies, analyses of educational statistics and personal field engagement with educationally marginalized communities and groups, through focus group discussion, surveys,short term project work etc.
- Hands on experience of engaging with diverse communities, children, and schools.

Suggestive Mode of Assessment

The assessment will be based on the tests and assignments.

Suggestive Reading Materials

Teachers may suggest books/ readings as per the need of the learners and learning content.

24BIBO5102T:DIVERSITY OF PLANT KINGDOM

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:

C1:Written Test as per schedule (at the end of 8th week)

C2:As per class schedule-WrittenTest /Assignment/ Essay/ Presentation/ Report/ Seminar/ Quiz(at the end of fifteen week).

Learning Objectives:

- This course will help the student to understand the diversity of plants and evolutionary process in plant kingdom

Learning outcomes:

By studying this course,the students will be able to:

- Understand the diversity among plants.
- Develop conceptual skill about identifying algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.
- Understand the plant body structure, economic importance and life cycle of algae, fungi, lichen, bryophyte, pteridophyte and gymnosperms.

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Unit -I

Algae: General characteristics, Classification (Fritsch) up to classes. Diverse habitat. Range of thallus structure, pigments and reproduction in Algae. Important features, structures and life history of *Nostoc* (Cyanophyceae); *Chara* (Chlorophyceae); *Polysiphonia* (Rhodophyceae):Economic importance of Algae.

Fungi: General characteristics; Thallus organization; Cell wall composition; Nutrition; Reproduction. Classification (Alexopoulos); Heterokaryosis and Parasexuality; Economic importance. Type studies *Albugo* **(Oomycota);** *Peziza* **(Ascomycota);** *Agaricus* **(Basidiomycota).**

Unit-II

Lichen - General characteristics; Morphology and reproduction. Economic importance of lichens.

Bryophytes: General characteristics, Classification (up to classes); Morphology and Reproduction of *Marchantia*, *Anthoceros, Funaria*. Ecological and economic importance of bryophytes.

Unit-III

Pteridophytes: General Characteristics; Classification (up to classes by Smith), Fossil pteridophytes (*Rhynia*). Morphology and Reproduction of *Selaginella* and *Marsilia*.; Stelar evolution, Heterospory and seed habit in Pteridophytes. Economic importance of Pteridophytes.

Unit-IV

Gymnosperms: General Characteristics and Classification by Sporne, 1965. Type studies: Life histories of *Cycas*, *Ephedra* (Developmental details not to be included). Economic importance of gymnosperms.

Angiosperms: General characters, Differences between Monocotyledons and Dicotyledons, Typical life cycle of Angiosperm.

Suggestive Readings:

1. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi. 2nd edition.

2. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley and Sons (Asia), Singapore. 4th edition

3.Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.

4. Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.

5. Singh V., Pandey P. C., Jain D. K. A textbook of botany.

6. Pandey B.P. (2022). Algae, Bryophytes and Lichens, S. Chand Publication.

24BIBO5102P:Practical

Learning Objectives

- To provide practical experience in identifying and understanding the diversity of plant forms and structures, including their classification and ecological roles.
- To explore the evolutionary relationships and adaptations of various plant groups.

Learning outcomes

- Students will learn to carry out practical work in the laboratory.
- Students will learn to study and describe the morphology and anatomy of various groups of plants.

Syllabus:

☆ **Algae-** Study of vegetative and reproductive structures of *Nostoc*, *Chara* and *Polysiphonia* through temporary preparations and permanent slides.

☆ **Fungi-**1. *Albugo*: Asexual stage from temporary mounts and sexual structures through permanent slides.

2. *Peziza*: Micropreparation and study of vegetative structure and ascocarp

3. *Agaricus*: Specimens of button stage and full-grown mushroom; Sectioning of gills of Agaricus.

Lichens- Study of growth forms of lichens through specimens and permanent slides (crustose, foliose and fruticose)

Bryophyta- 1.*Marchantia*- morphology of thallus, w.m. rhizoids and scales, v.s. thallus through gemma cup (all temporary slides), v.s. antheridiophore, archegoniophore, l.s. sporophyte (all permanent slides).

2. *Anthoceros*- morphology of thallus, w.m. rhizoids, v.s. thallus, t.s. and l.s. of sporophyte.

3. *Funaria*- morphology, w.m. leaf, rhizoids, operculum, peristome, annulus, spores (temporary slides); permanent slides showing antheridial and archegonial heads, l.s. capsule.

Pteridophyta- 1.*Selaginella*- morphology, w.m. leaf with ligule, t.s. stem, w.m. strobilus, (temporary slides), l.s. strobilus (permanent slide).

2. *Marsilea*- morphology, w.m. sporangium, w.m. spores (temporary slides), t.s. rhizome, l.s. sporocarp (permanent slide).

Gymnosperms- 1. *Cycas*- morphology (coralloid roots, bulbil, leaf), t.s. coralloid root, tv.s. leaflet, v.s. microsporophyll, w.m. spores (temporary slides), specimen megasporophyll, l.s. ovule (permanent slide).

2. *Ephedra*- morphology t.s. stem, l.s. male and female cone (temporary slides).

Angiosperms - Study of monocot and dicot flowers and seeds.

- **Viva-voce**
- **Practical Record**
- **Visit local garden/pond/field study of plants**

Suggestive Readings:

1. A text book of Practical Botany: Bendre & Kumar - Rastogi Publications, Delhi.
2. Practical Botany: H. N. Srivastava – Pradeep Publications, Jalandhar.

24BICH5103T: Chemistry

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3 hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:

C1:WrittenTest as per schedule (at the end of 8th week)

C2:As per class schedule-Written Test/Assignment/Essay/Presentation/Report/ Seminar /Quiz (at the end of fifteen week).

Learning Objectives

- The objective of this course is to provide students with a theoretical understanding of the different types of bonding and stereochemistry of organic compounds with an understanding of the enantiomers, diastereomers, D/L and R/S nomenclature. The aim of this course is to explain the structure and reactivity of aromatic hydrocarbons, and to explain the order and molecularity of the reactions, the rate law and ordere of reactions determination. In addition, the laboratory course is designed to provide students with practical experience in basic quantitative analytical techniques including volumetric analysis, qualitative analytical techniques, and the determination of kinetic parameters of reactions.

Learning outcomes

- Uponcompletion of the course, students should be able to:
  By the end of this course, students will have a clear understanding of drawing logical and detailed different types of bonding, classifying the molecules as chiral or achiral, determining the D/L and R/S nomenclature of stereoisomers and identifying the formation of racemic mixture or optically active compounds during the reactions. Students will also have an understanding about order and molecularity of reactions, rate law and methods determining of order and kinetic parameters of reactions. Students will also have practical experience in quantitative analytical techniques including volumetric analysis, identification of organic compounds by determination of functional groups, determination of order and rate constant of various reactions.

Unit-I

Atomicstructure: Bohr's theory and its limitations, dual behavior of matter and radiation, de Broglie's relation, Heisenberg's uncertainty principle, hydrogen atom spectra, radial and angular wave functions, probability distribution curves, shapesofs, p, dorbitals, nodalplanes time independent Schrodinger equation, significance of ψ and ψ^2, Schrödinger equation for hydrogen atom. Significance of quantum numbers, orbital angular momentum, quantum numbers, rules for filling electrons in various orbitals, electronic configurations ofthe atoms, stability of half-filled and fully filled or bitals, concept of exchange energy, relative energies of atomic orbitals, anomalous electronic configurations.

Unit-II

Covalent Bond: Valance bondapproach of covalent bond, shapes of some in organic molecules and ions on the basis of VSEPR theory, theconcept of hybridization with suitable examples of linear, trigonal planar, tetrahedral, trigonal pyramidal, trigonal bipyramidal, octahedral, and square planar arrangements. Concept of resonance and resonating structures in various inorganic compounds.

Metallic bond: Introduction, free electron theory, concept of band theory, importance of metallic bond, properties of semiconductors, insulators with examples.

Ionic Bonding: General characteristics of ionic bonding, energy considerations in ionic bonding, lattice energy, solvation energy, their importance in the context of stability and solubility of ionic compounds, statement of Born-Landé equation for calculation of lattice energy, Born-Haber cycle and its applications, polarizing power, and polarizability,Fajan's rules, ionic character in covalent compounds, dipole moment and percentage ionic character.

Weak Chemical Interactions: vander Waals forces, ion-dipole forces, dipole-dipole interactions, instantaneous dipole-induced dipole interactions,induced dipole interactions, repulsive forces, hydrogen bonding, theories of inter- and intra-molecular hydrogen bonding,

valence bond treatment, effects of chemical forces on melting point, boiling point and solubility.

Unit-III

Fundamentals of Organic Chemistry: Covalent bond, hybridization and shapes of molecules, geometry and structure of sp^3,sp^2 and sp hybridized orbitals, influence of hybridization on bond properties.

Electronic displacements: Inductive, electromeric, resonance and field effect. Hyper conjugation, concept of dipolemoment, hemolytic and heterolyticfission, curve darrow notation, electrophiles and nucleophiles, types of organic reactions.

Types of reactive intermediates: Generation, shape and relative stability of different reactive intermediates namely carbocation, carbanion, free radicals, nitrene, carbene and benzyne.

Aromaticity:Introduction, Electronics tructure and Huckel'srule, aromatic city in carbocyclic, heterocyclic, benzenoid, non-benzenoid, aromatic ions, anti-aromatic and non-aromatic compounds.

Isomerism: Concept and significance of isomerism, structural isomersim and stereoisomerism.

Stereochemistry: Types of stereoisomerism, geometrical and optical isomerism.

Chirality: Concept of chirality (chirality upto two carbon atoms), stereogenic centre, optical activity,Cahn-Ingold-Prelog (CIP) rules and priority assignments, enantiomers,diastereomers and meso compounds.

Nomenclature systems: Cis-trans nomenclature, E/Z nomenclature, R/Snomenclature (upto two chiral carbon atoms), threo and erythro, D and L nomenclature

Conformational isomerism: Conformations with respect to ethane, butane and cyclohexane. Interconversion of Wedge formula, Newmann, Sawhorse and Fischer representations.

Unit-IV

Gaseous State: Postulates of kinetic theory of gases, deviation from ideal behaviour, van der Waals equation of state. Critical Phenomena: PV isotherms of real gases, continuity of states, the isotherms of van der Waals equation, relationship between critical constants and van der Waals constants, the law of corresponding states, reduced equation of state.

Molecular Velocities: Root mean square, average and most probable velocities. Qualitative discussions of the Maxwell's distribution of molecular velocities, collision number, mean free path and collision diameter. Liquification of gases (based on Joule-Thomson effect).

Liquid State: Intermolecular forces, structure of liquids (a qualitative description). Structural differences between solids, liquids and gases. Liquid Crystals: Difference between liquid crystal, solid and liquid. Classification, structure of nematic and cholesteric phases. Thermography and seven segment cells.

Reference Books:

1. Lee,J.D.;(2010),**Concise Inorganic Chemistry**, 5th Edition, WileyIndia.

2. Atkins, P. W.; Overton, T. L.; Rourke, J. P.; Weller, M. T.; Armstrong, F. A. (2010), **Shriver and Atkins Inorganic Chemistry**, 5th Edition, Oxford University Press.

3. Miessler, G. L.; Fischer P. J.; Tarr, D. A. (2014), **Inorganic Chemistry**, 5th Edition, Pearson.

1. 4. Housecraft, C. E.; Sharpe, A. G. (2018), **Inorganic Chemistry**, 5thEdition, Pearson.

5. Douglas,B. E.,McDaniel,D. H.;Alexander,J. J. (2007) **Concepts and Modelsin Inorganic**

Chemistry, 3rd Edition, John Wiley & Sons.
6. Morrison, R. N.; Boyd, R. N.; Bhattacharjee, S.K. (2010), **Organic Chemistry**, 7th Edition, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.
7.Solomons,T.W.G.;Fryhle,C.B.;Snyder,S.A.(2017),**Organic Chemistry**, 12th Edition, Wiley.
8. Eliel,E.L. (2000),**Stereochemistry of Carbon Compounds**,Tata McGraw Hill education.
9. Puri, B.R.; Sharma, L.R.; Pathania M.S. (2020) **Principles of Physical Chemistry**, Vishal Publishing Co.
10. Castellan,G.W.(2004),**Physical Chemistry**,4th Edition,Narosa.
11. Atkins, P.; de Paula, J. (2013), **Elements of Physical Chemistry**, 6th Edition, Oxford University Press.
12. Alberty, R. A.; (1987), **Physical Chemistry**, 7th Edition,Wiley Eastern Ltd.,Singapore.
13. Dogra, S.K.; Dogra, S. (2015), **Physical Chemistry Through Problems**, 2nd Edition,New Age International Publication.

24BICH5103P: Practical

1. Inorganic Chemistry

Separation and identification of six radicals (3 cations and 3 anions) in the given inorganic mixture including special combinations.

2. Organic Chemistry

Laboratory Techniques

(a) Determination of melting point (Naphthalene, benzoic acid, urea, atc.); boiling point (methanol, ethanol, cyclohexane, etc.): mixed melting point (urea- cinnamic acid, etc).

(b) Crystallization of phthalic acid and benzoic acid from hot water, acetanilide from boiling water, naphthalene from ethanol etc. Sublimation of naphthalene, camphor, etc.

Qualitative Analysis

Identification of functional groups (unsaturation, phenolic, alcoholic, carboxylic, carbonyl, ester, carbohydrate, amine, amide nitro and hydrocarbon) in simple organic compounds (solids or liquids) through element detection (N, S and halogens).

3. Physical Chemistry

Viscosity and Surface Tension:

a) To determine the viscosity/ surface tension of a pure liquid (alcohol etc.) at room temperature. (Using the Ostwald viscometer/ stalagmometer).

b) To determine the percentage composition of a given binary mixture (acetone and ethylmethyl ketone) by surface tension method.

c) To determine the percentage composition of a given mixture (non-interacting systems) by viscosity method.

d) To determine the viscosity of amyl alcohol in water at different concentration and calculate the excess viscosity.

4. Viva voce

5. Practical Record

24BIZO5104T:Biology of Non-Chordates

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-Written Test/Assignment/ Essay/ Presentation /Report/ Seminar /Quiz (at the end of fifteen week).

Learning Objectives

- To make students aware about the diversity of Animals present on the planet and how are they possibly related to each other in light of evolution.

Learning outcomes

By studying this course students will gain basic knowledge on

- The diversity of animals
- The irgeneral characteristics
- Various groups of animals and their evolutionary relationships
- Basic principles and concepts of evolution that contribute to animal diversity

Unit-I

Elementry Idea of Animal Taxonomy:- General principles of taxonomy, Five-kingdom concept, Origin of Metazoa, Basis of classification of non-chordata: Level of Organization, Symmetry, coelom, segmentation and embryogeny, Salient features and classification of Protozoa and Porifera, Coelenterata, Ctenophora, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca, Echinodermata and Hemichordata upto classes level.

Unit-II

Lower Non-Chordates- Locomotion,Osmoregulation and Reproduction in Protozoa, Canal System in Porifera, Polymorphism in Hydrozoa, Coral reafs, Life history of Obelia & Taenia solium, Larval forms of Coelentrates & Platyhelminthes, Life history of Ascaris lumbricoides and parasitic adaptations in helminthes.

Unit-III

Higher Non-Chordates-1- Locomotion, Digestion, Respiration, Blood Circulation, Reproduction in Neries. Metamerism in Annelida, Vermicomposting, Apiculture, Sericulture, Lac Culture. Metamorphosis in Insects, Larval form of Crustacea.

Unit-IV

Higher Non-Chordates-1- Torsion in Gastropods, Locomotion, Digestion,Respiration, Blood Circulation, Reproduction in Pila, Pearl Culture

Water-vascular system in Asteroidea, Larval forms of Mollusca, Echinodermata and Hemichordata

Sugesistive Reding :

1. Barnes,R.S.K., Calow, P., Olive, P.J.W., Golding, D.W.and Spicer,J.I.(2002).The Invertebrates: A New Synthesis, III Edition, Blackwell Science
2. Barrington,E.J.W.(1979). Invertebrate Structure and Functions.II Edition,E.L.B.S.and Nelson
3. Richard C Brusca,Gonzalo Giribet, Wendy Moore Invertebrates 4th Edition Oxford

University Press
4. Richard Fox , Robert D. Barnes, Edward E. Ruppert, Invertebrate Zoology: A Functional Evolutionary Approach, Brooks/Cole; 7th edition edition 2003
5. Hyman, L.H. Invertebrate Series (Recent edition)
6. Parker JJ and WA Haswel Textbook of Zoology. Vol I and II
7. Kotpal, R.L.2022 Modern text book of Zoology: Invertebrates. Rastogi Publication, Meerut.

24BIZO5104P Practical

1. Microscopic Technique :

1.Organization and working of optical microscopes: dissecting and compound microscope.

2.General methods of microscopical permanent preparations: Narcotization: fixing and preservation: washing: staining: destaining: dehydration: clearing and dealcoholization: mounting. General idea of composition. preparation and use of:

(i) Fixatives : Formalin. Bouin's fluid.

(ii) Stains: Borax carmine. accto-cannine, accto-orcein. haematoxylin, eosin.

(iii) Common reagents: Normal saline, Ringer's solution, acid water. acid alcohol and Mayer's albumin.

3. Collection and Culture Methods.

i. Collection of animals from their natural habitat during field trips. e.g.. Amoeba, Paramecium, Euglena, Planaria, Earthworn. Daphnia, Cyclops. etc. Culture of Paramecium in the laboratory and study of its structure. lifc processes and behaviour in the living state.

2. **Anatomy :**

Earthorm: External features, general viscera and alimentary canal. reproductive system. nervous system.

Cockroach: External features, appendages (wing and leg), mouth parts. alimentary canal. reproductive and n•ervous systems and salivary gland.

Pila: Alimentary Canal, Nervous system, Gill Lamilla, Osphradium

Prawn: Appandages, Alimentary Canal, Nervous system, Statocyst, Hastate Plate

3. Study of Specimen:

Spongilla,Leucosolenia, Sycon ,Euspongia, Euplectella, Hyalonema, Physalia, Porpita, Sea anemone(Metridium), Alcyonium ,Gorgonia, Pennetula, Renilla, Jelly Fish Beroe Cestum Ctenoplana Dugesia/Plannaria Taenia solium Ascaris, Male & Female Ascaris, Aphrodite Arenicola Chaetopterus Sabella Polynoe Eunice Neries Heteroneries Acanthobdella Pantobdella Polygordius, Bonelia, Lingula Apus Balanus Crab Cray Fish Astacus Eupagarus Sacculina with Host Desert Locust Squilla Silk Moth with Development Stage Lac Insect with Development Stage Millipede Peripatus Aplysia Dentallium Chiton Doris

Limex Argonauta Nautilus Neopiliana Solen Mantis White Grub Pearl Oyester Cyprea Pentaceros Echinus Ophiothrix Antedon Cucumaria,Star Fish, Balanoglossus

4. Study of Permanent Slide:

Radiolarian and Forminifera ooze, Euglena, and Paramecium, Binary fission and Conjugation in Paramecium, Monocystis, Nyctotherus Gemmule Sponge spicules,V.S. Sycon, T.S. Sycon, Obelia medusa, Miracidium, Redia and Cercaria larvae of Fasciola, Scolex of Taenia, Mature and gravid proglottids of Taenia solium, Dracanculus Enterobius Wucheria T.S. of Leech through crop pockets, Trochophore larva Daphnia Cyclopus Nauplius, Zoea and Megalopa , Veliger and Glochidium larva of Mollusca, T.S. of arm of star fish, Bipinnaria and Auricularia larva, T.S. Balanoglossus through collar and proboscis, Tornaria larva (Charts and Photographs can be used)

5. Permanent Preparation and Study of the following

Paramecium, Euglena, forminiferous shells, sponge spicules, spongin fibres, gemmul . Hydra, Obelia colony and medusa.

Parapodium of Nereis and heteronereis, ovary, nephridia, nerve ring and setae of earthworm salivary glands and trachea of Cockroach, Cyclops and Daphnia (Any other as per the availability)

6. Visit to local area and study of observed non-chordates,

Suggestive Readings:

1. Verma P. S. A Manual of Practical Zoology: Invertebrates. S Chand Publication
2. Kotpal,R.L.2022 Series From Phylum-Protozoa to Echinodermata, RastogiPublication,Meerut

24BIMH5105T:Calculus and Optimization Techniques

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:WrittenTest as per schedule (at the end of 8th week)
C2:As per class schedule-Written Test/ Assignment/ Essay/ Presentation/ Report/ Seminar /Quiz (at the end of fifteen week).

Learning Objectives

- The objective of the course is to study"instantaneous"changein the fundamental idea of Calculus and apply the concept and principle to connect them with real-world problems.

Learning outcomes

By studying this course students will gain basic knowledge on

- Understand the concept of curvature and padel equations.
- Understand the concept of maxima-minima, double triple integration, and its applications.
- To understand the mathematical formulation of optimization problems and allied theoretical concepts for solution methodologies.

Unit-I

Taylor's theorem. Maclaurin's theorem. Power series expansion of a function. Power series expansion of sin x, cos x, e^x, $\log_e(1+x)$, $(1+x)^n$. Derivative of the length of an arc. Pedal equations. Curvature: Various formulae, Centre of curvature, and Chord of curvature. Partial differentiation. Euler's theorem for homogeneous functions. Chain rule of partial differentiation. Total differentiation, Differentiation of implicit functions.

Unit-II

Envelopes: One parameter family of curves when two parameters are connected by a relation. Maxima and Minima of functions of two variables. Lagrange's method of undetermined multipliers. Asymptotes: Definition, Parallel to coordinate axes. General rational algebraic curves, inspection method, Intersection of a curve and its asymptotes. Multiple points. Curve tracing of standard curves (Cartesian and Polar curves).

Unit-III

Beta and Gamma functions, Reduction formulae (simple standard formulae), Double integrals in Cartesian and Polar Coordinates, Change of order of integration. Triple integrals. Dirichlet's integral, Rectification, Area, Volume, and Surface of solids of revolution.

Linear programming problems. Basic solution. Some basic properties and theorems on convex sets. Simplex algorithm. Duality, Solution of dual problems.

Suggestive Readings:

Shanti Narayan, and P. K. Mittal, Integral Calculus, S. Chand & Co., N. D., 2013.

H. S. Dhami, Differential Calculus, Age Int. Ltd., New Delhi, 2012.

M.J. Strauss, G. L Bradley, and K. J. Smith, Calculus (3rd Edition), Dorl ing Kindersley (India) Pvt. Ltd. (Pearson Education), Delhi , 2007.

H. Anton, I. Bivens and S. Davis, Calculus (7th Edition), John Wiley and Sons (Asia), Pt Ltd., Singapore, 2002.

G.B. Thomas, R. L Finney, M. 13. Weir, Calculus and Analytic Geometry, Pearson Education Ltd, 2003.

G. Hadley, Linear Programming, Narosa Publishing House, New Delhi, 2002.

Hamdy A. Taha, Operations Research, An Introduction (9th edition), Prentice-Hall, 2010.

24BIMH5105P: PRACTICAL

PART- A

1. find the optimum solution of LPP by using the simplex method
2. find the optimum solution of dual LPP by using the simplex method

PART - B

1. find the optimum solution to given transportation problems.
2. find the optimum solution of given assignment problems.

Suggestive Readings:

1. G.Hadley, liner programing , narosa publishing House, New Delhi, 2002.
2. Hamdy A Taha , oprations reaseach, an introduction (9th edition), Prentice-Hall, 2010

24BIPH5106T : Mechanics & Oscillations

Credits:3L+0T+1P
Periods per week: 5
Examination:3hours

Marks:100
C1+C2=30
C3=70Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:WrittenTest as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz(at the end of fifteen week).

Learning Objectives: The objective of the course is to provide students with a comprehensive understanding of Mechanics. The course aims to develop their knowledge and skills in analyzing and solving problems related to these topics, using appropriate mathematical formalism and physical concepts.

Learning outcomes:

By studying this course students will gain basic knowledge of Inertial and non-inertial frames of reference and their applications in rotational frames. They also learn about centre of mass, rigid body dynamics, Motion under central forces. They will understand the effect of damping on oscillatory motion as well as on forced vibration and coupled oscillation

Unit-I

Physical Law and frame of Reference: (a) Inertial and non-inertial frames, Transformation of displacement, velocity, acceleration between different frames of reference involving translation. Galilean transformation and invariance of Newton's laws.

(b) Coriolis Force: Transformation of displacement, velocity and acceleration between rotating frame, Pseudo forces, Coriolis force, Motion relative to earth, Focult's pendulum.

(c) Conservative Forces: Introduction about conservative and non-conservative forces, Rectilinear motion under conservative forces, Discussion of potential energy curve and motion of a particle

Unit-II

Centre of Mass: Introduction about Centre of Mass. Centre of Mass Frame: Collision of two particles in one and two dimensions (elastic and inelastic), Slowing down of neutrons in a moderator, Motion of a system with varying mass, Angular momentum concept, conservation and charge particle scattering by a nucleus.

Rigid body: Equation of a motion of a rotating body. Inertial coefficient. Case of J not parallel to w. The kinetic energy of rotation and the idea of principal axes. The processional motion of the spinning Top.

Unit-III

Motion under Central Forces: Introduction about Central Forces, Motion under central forces, gravitational interaction. Inertia und gravitational mass, General solution under gravitational interaction. Keplers laws, Discussion of trajectories, Cases of elliptical and circular orbits, Rutherford scattering. **Damped Harmonic Oscillations:** Introduction about oscillations in a potential well, Damped force and motion under damping. Damped Simple Harmonic Oscillator, Power dissipation, Anharmonic oscillator and simple pendulum as an example.

Unit-IV

Driven Harmonic Oscillations: Driven harmonic oscillator with damping, Frequency response. Phase factor, Resource, Series and parallel of LCR circuit, Electromechanical Galvanometer.

Coupled Oscillations: Equation of motion of two coupled Simple Harmonic Oscillators, Normal modest motion in mixed modes. Trust behavior, Dynamics of a number of oscillators with neighbor interactions.

Suggestive Readings:

1. Mechanics, Berkeley Physics, Vol-I, Knight,et. Al. 2007, Tata McGraw-Hill
2. An Introduction to Mechanics, D.Kleppner, R.J.Kolenkow,1973, McGraw-Hill.
3. Feynman Lectures, Vol-I Mechanics, L.D.Landau, E.M.Lifshitz, Butterworth-Heinemann.
4. Mechanics, D.S.Mathur, S.Chand and company Limited.
5. Theoretical Mechanics, M.R. Spiegel,2006, Tata Mcgraw-Hill.
6. Mechanics: Keith R.Taylor

24BIPH5106T : Practical

1 Study the variation of the time period with amplitude in large angle oscillations using a compound pendulum

2 To study the damping using a compound pendulum

3 To study the excitation of normal modes and measure frequency splitting into two coupled oscillators

4 To study the frequency of energy transfer as a function of coupling strength using coupled oscillators.

5 To determine Young's modulus by bending of beam.

6 To determine Y, η, σ by searle's method.

7 To determine modulus of rigidity of a wire using Maxwell's needle.

8 To study the electromagnetic damping of a compound pendulum and to find the variation of damping coefficients with the assistance of a conducting lamina

9 Study of Normal mode of a compound pendulum.

10 Study of oscillations in mixed modes.

24BIEC5107T: Micro Economics

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

C1:WrittenTest as per schedule (at the end of 8th week)

C2:As per class schedule-WrittenTest/ Assignment/ Essay/ Presentation/ Report/ Seminar/Quiz (at the end of fifteen week).

Unit-I

Meaning, Nature and Scope of economics, Basic Economic Problems Methodology: Micro and Macro Economics, Static and Dynamic Analysis, Positive and Normative Economics. Law of Demand The Demand Curve, Elasticity of Demand: Price, Income, and Cross Elasticity, Arc and Point Elasticity, Factor affecting Price Elasticity of Demand. Substitute and Complementary Goods. Consumer's Surplus.

Unit-II

Theory of Consumer Behaviour: Utility Analysis: Cardinal and Ordinal Approach, Inferior and Giffen Goods. Production Theory: Meaning and Factors of Production, Production Function: Law of Variable Proportions, Three Stages of Production Function, Law of Return to Scale. Iso-Quant and Iso-Cost Curves, Optimum Factor Combination, Theory of Cost: Short-Run and Long -Run Cost Curves.

Unit-III

Theory of Revenue: TR, AR and MR. Market Structures: Determination of Price and Output in the Short and Long Run under Perfect Competition, Monopoly, Monopolistic Competition. Excess Capacity.

Unit-IV

Theory of Distribution, Marginal Productivity Theory. Factor Pricing under Perfect and Imperfect Competition in Labor Market, Ricardian Theory of Rent, Modern Theory of Rent and Quasi-Rent, Theory of Interest: Classical and Liquidity Preference, Theory of Profit, Risk and Uncertainty.

Suggested Readings:

- Koutsoyiannis, A. (1990), Modern Microeconomics (9th Edition), Oxford University Press, Oxford.
- Lipsey, G.R. and K.A. Chrystal (1999), Principles of Economics (9th Edition), Oxford University Press, Oxford.
- Mansfield, E (1997), Microeconomics (9th Edition), W.W. Norton and Company, New York.
- Ray, N.C. (1975), An Introduction to Microeconomics, MacMillan Company of India Ltd. Delhi.

- Varian H.R. (2000), Intermediate Microeconomics; A Modern Approach (5th Edition), East-West Press, New Delhi.
- H.L. Ahuja, Advanced Economic Theory :- Microeconomic Analysis.
- एच. एल. आहूजा, उच्चत्तर आर्थिक सिद्धान्त :– व्यक्तिपरक आर्थिक विश्लेषण
- लक्ष्मी नारायण नाथूरामका : व्यष्टि अर्थशास्त्र, कॉलेज बुक हाउस, जयपुर
- M.L. Jhingan : Micro economics, Vrinda Publication, New Delhi
- एम. एल. झिंगन : व्यष्टि अर्थशास्त्र, वृन्दापब्लिकेशन, नई दिल्ली।
- Assignment/ Test/ Quiz (MCQ)/ Seminar/ Presentations/ Research orientation of students.
- Suggested Continuous Evaluation Methods:

24BIGE5108T: Physical Geography

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:WrittenTest as per schedule (attheend of 8th week)
C2:As per class schedule-Written Test/Assignment/ Essay/ Presentation/ Report/ Seminar/Quiz (at the end of fifteen week).

Learning Objectives

The course lays foundation of the fundamentals of geomorphology, a sub-branch of Physical Geography. This is important to develop understanding about their immediate surroundings.

Learning outcomes

- To develop understanding of theoretical concepts related to formation of the earth.
- To create strong foundation of various geomorphologic phenomena which are playing important role in shaping the earth surface.
- To extend knowledge of landform dynamics and resulted to pographies.
- To cover basic contents for various competitive examinations such as civil services, UGC NET-JRF, state level PSC exams and so on.

Unit-I

The Nature and Scope of Geomorphology. Theories of Origin of Earth; Kant, Laplace, James Jeans and Big Bang. Geological Time Scale. Interior Structure of Earth. Rocks; Origin and Types.

Unit-II

Origin of Continents and Oceans; Theories of Lowthian Green, Continental Drift and Plate-tectonics. Major Phases of Orogeny. Types of Mountains. Theories of Mountain Building; Kober, Holmes, Taylor, Wagener and Plate-tectonics.

Unit-III

Isostacy; Concept and Views of Airy and Pratt. Endo-genetic and Exo-genetic Forces. Earthquake and Volcanicity. Earth Movements and Related Landforms.

Unit-IV

Denudation; Weathering and Erosion. Erosional cycle of Davis and Penck. Erosional and Depositional Works of River, Wind, Underground Water, Sea Waves and Glacier.

Suggestive Readings:

1. सिंह सविन्द्र(2021): भू आकृति विज्ञान, प्रवालिका प्रकाशन, इलाहाबाद।
2. शर्मा जे. पी.(2016): भू आकृति विज्ञान, रस्तोगी प्रकाशन, मेरठ।
3. प्रसाद गायत्री (2024): भू-आकृति विज्ञान, शारदा पुस्तक भवन, प्रयागराज।
4. खुल्लर डी. आर.(2022): भौतिक भूगोल, कल्याणी प्रकाशन, नई दिल्ली।
5. सिंह सविन्द्र (2018): भौतिक भूगोल का स्वरूप, प्रवालिका प्रकाशन, इलाहाबाद।
6. दयाल पी.(2014):भू-आकृति विज्ञान, राजेश प्रकाशन,नई दिल्ली।
7. Khullar, D.R. (2018): Physical Geography, Kalayani Publishers, New Delhi.
8. Thornbury W. D. (2004): Principles of Geomorphology, CBS Publisher and Distributer, Delhi.
9. Strahler, A.N. and Strahler, A.H.(1989): Elements of Physical Geography. John Wiley & Sons, New York.
10. Hussain, M. (2021): Fundamentals of Physical Geography, Rawat Publication, Jaipur.
11. Dayal, P.1996):A Text Book of Geomorphology,Shukla Book Depot,Patna.

24BIGE5108P: Practical

Unit-I

Scales- Definitions, Types (Statement, R.F. and Graphical). Importance of Scales. Conversion of Scales.

Unit-II

Enlargement and Reduction of Maps. Topographic Maps; Nomenclature and Interpretation. Conventional Signs. Introduction to OSM.

Unit-III

Surveying: Meaning and Classification. Chain and Tape Survey; open and closed traverse.

Reference Books:

1. शर्माजे. पी.(2023): प्रायोगिक भूगोल, रस्तोगी पब्लिकेशन, मेरठ।
2. खुल्लर, डी. आर. (2022): प्रयोगात्मक भूगोल, कल्याणीप्र काशन, नईदिल्ली।
3. भल्ला एल. आर. (2017) : प्रायोगिक भूगोल के मूलतत्व, सलोनी ऑफसेट, जयपुर।
4. Singh, L.R. (2010): Fundamentals of Practical Geography,Sharda Pustak Bhawan, Allahabad.
5. Mishra, R. N. and Sharma, P. K. (2022): Practical Geography, PareekPublication.
6. Singh, R.L. and Singh Rana P.B. 1991: Elements of Practical Geography. Kalyani Publishers, New Delhi.

24BIHI5109T:History of India (From Earliest times to750CE)

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

C1:WrittenTest as per schedule (at the end of 8th week)

C2:As per class schedule-Written Test/ Assignment/ Essay/ Presentation/ Report/ Seminar/ Quiz (at the end of fifteen week).

Learning Objectives

The objective of the paper is to introduce the discipline of the history basic concepts of history

Learning out comes

By studying this course students will gain basic knowledge on history

Unit-I

A. Survey of the Sources: Literary and Archeological,Ceramicevidences (RW, BRW, OCP, PGW, NBPW).
B. Prehistory: Concept, Tools & Techniques.
C. Paleolithic, Mesolithic and Neolithic cultures.

Unit-II

A. Proto history: Concept, Harappa Civilization: Origin, Urban Planning, Political Organization, Religious Beliefs, Economic Organization, Decline.
B. Vedic Culture: Origin, Polity, Economy, Society, Religion and Philosophical developments.
C. 16 Mahajanpadas, Rise of Magadha.

Unit-III

A. Period of Religious Movements:Material Background, Use of Iron Plough, Rise of New Classes,Jainism and Buddhism: Origin and Teachings.
B. The Mauryan Age: Sources; Polity, Economy, Society and Religion; Ashoka's Dhamma; Administration; Decline of the Empire.
C. Post Mauryan Age: Sources, Reign of Pushyamitra Shunga, Gautamiputra Shatakarni, Rudradamana and Kanishka; Trade and Economic Organisation, Society, Religion, Art and Architecture.

Unit-IV

A. A History of the Far South: Megalith Culture, Sangam Age-Literature, Polity, Society and Economy.

B. The Gupta Age: State and Administration, Society and Economy, Art and Architecture, Literature, Science

C. and Technology.

D. Post Gupta kingdomsin North and South India:Vardhanas, Chalukyas, Pallavas and Cholas.

E. Social and Economic Changes in Post Gupta Period.

F. Development of Iconography: Gandhar and Mathura Art.

G. Architectural Development: Stupa, Nagar, Dravid and Besar styles of Temple Architecture.

H. Ancient Universities of India: Takshashila, Nalanda, Vikramshila, Valabhi.

Suggestive Readings:

- MahajanV.D., AncientIndia,S.Chandand Company Limited, Delhi.
- Shrivastav K.C.,Prachin Bharat ka Itihas Evam Sanskriti, United Book Depot, Allahabad (Hindi) Om Prakash, Cultural History of India, New Age International (P) Limited Publications, New Delhi.
- Singh Upinder, A History of Ancient and Early Medieval India (From Stone Age to the 12th Century), Pearson Longman, Delhi.
- R.C. Majumdar, The History and Culture of the Indian People, Bhartiya Vidhya Bhavan, Bombay.
- Koshambi D.D., The Culture and Civilization of Ancient India: An Historical Outline.
- Thapar Romila, The Penguin History of Early India (From the Origins to A.D.1300), Penguin Books, Delhi.
- Sharma R.S., India's Ancient Past, New Oxford India. Delhi
- Sharma R.S., Prachin Bharat ka Itihas, Oxford University Press (Hindi)
- Majumdar R.C.,Bharat ka Itihas Evam Sanskriti, Bhartiya Vidhya Bhavan, Bombay. (Hindi)
- Mahajan V.D., Prachin Bharat, S. Chandand Company Limited, Delhi. (Hindi)
- Om Prakash, Bhartiya Sabhyata ka Itihas, New Age International(P) Limited Publications, New Delhi. (Hindi)
- Koshambi D.D., Prachin Bhartiya Sabhyata Evam Sanskriti: Ek Rooprekha (Hindi)
- Singh Upinder, Prachin Evam Purv Madhyakalin Bharat Ka Itihas (Prarambhse 1300 Isvi Tak),Pearson Longman, Delhi. (Hindi)
- Thapar Romila, Poorva Kalik Bharat (Prarambhse 1300 Isvi Tak), Penguin Books, Delhi. (Hindi)
- Jhaand Shrimali, Prachin Bharat ka Itihas, Hindi Madhyam Karyanvayan Nideshalay, Dilli Vishvavidyalay, New Delhi (Hindi)
- Chakravarti Ranbir, bharatiya Itihas ka Aadikal, Orient Blackswan, New Delhi (Hindi)
- Shrivastav K.C., Prachin Bharat ka Itihas Evam Sanskriti, United Book Depot, Allahabad (Hindi)

24BIHS5110T:Family Resource Management

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**

Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:WrittenTest as per schedule (at the end of 8th week)
C2:As per class schedule-Written Test/Assignment/Essay/Presentation/Report/Seminar/Quiz(at the end of fifteen week).

Learning Objectives

- To achieve goals in life through judicious resource management
- To utilize the available resources effectively.

Learning outcomes

- To develop an understanding of theoretical concepts related with **Family Resource Management.**
- To create strong foundation of various Family Resource Management and its application.
- To extend knowledge of motivating factors in home management.
- To cover basic contents for various competitive examinations such as civil services, state level
- PSC exams, school education exams and so on

Unit-I

Conceptand scope of family resource management Processesin resource Management , Decision Making

Unit-II

Meaning, class ification and characteristics of family resources, factors affecting utilization of resources. Motivating factors in home management: values, standards and goals and their inter- relationship.

Unit-III

Money-Types of income, Supplementing family income Time-Concept, Factors and steps in time management

Unit-IV

Energy- Efforts, Fatigue, Work simplification, Steps in successful event planning—Planning, Budgeting and Evaluating.

Suggested Readings:

1. Rao V.S and Narayana P.S., Principles and practices of management, 2007, konark publishers Pvt Ltd.
2. Nickell, Pand Dorsey, J.M., Management in family living, 2015, CBS Publishers and Distributors Management for Modern Families – I.H.Gross and E.W. Crandall.
3. Home Management - Vergese, Ogale, Srinivasan
4. Home Management for Indian Families. – M.K.Mann
5. Home Management–Education Planning Group, Arya publishing house, Delhi.
6. Text book of Home Science- Premlata Mallick.
7. An Introduction to family Resource management-Premavathy Seetharaman, Sonia Batra & Preeti mehera
8. Koontz H and O'Donnel C, 2005Management- A System and Contingency analysis of Managerial Functions. New York: Mc Graw– Hill Book Company

9. Kretiner, 2009, Management Theory and Applications, Cengage Larning : India

24BIHS5110P: Practical.

PRACTICAL

1. SWOC analysis
2. Building decision making abilities through management games (Any two)
3. Preparation of time plans for one day for self and family. Event planning for family occasion.(Any one).

Suggestive Readings:

1. RaoV.Sand Narayana P.S., Principles and practices of management, 2007, konark publishers Pvt Ltd.
2. Nickell, Pand Dorsey, J.M., Management in family living, 2015, CBS Publishers and Distributors Management for Modern Families – I.H.Gross and E.W. Crandall.
3. Home Management - Vergese, Ogale, Srinivasan
4. Home Management for Indian Families. – M.K.Mann
5. Home Management–Education Planning Group, Arya publishing house, Delhi.
6. Text book of Home Science- Premlata Mallick.
7. An Introduction to family Resource management- Premavathy Seetharaman, Sonia Batra & Preeti mehera
8. Koontz H and O'Donnel C, 2005 Management- A System and Contingency analysis of Managerial Functions. New York: McGraw– Hill Book Company
9. Kretiner, 2009, Management Theory and Applications, Cengage Larning : India

24BIPY5111T:Indian Philosophy

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

C1:WrittenTest as per schedule (attheend of 8th week)

C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/ Quiz (at the end of fifteen week).

- **Learning out comes**

By studying this course students will gain basic knowledge on

Unit-I

Introduction: Common characteristics and classification of Indian philosophical school: Āstikaand Nāstika Cārvāka School: Epistemology, Metaphysics, Ethics Jainism: Concept of sat, dravya, paryāya, Guṇa; Anekāntavāda, Syādvāda and Sapta-bhaṅgi-naya, Theory of Karma,

Bondage and Liberation.

Unit-II

Buddhism: Four noble truths, Theory of dependent origination (Pratīty asamutpāda), Definition of Reality (Artha kriyā kā ritvamsattvam), Doctrine of moment ariness (Kṣhaṇabhangavāda), Theory of no-soul (Nairātmyavāda), Nirvāṇa, Hīnyāna and Mahāyāna

Sāṅkhya: Satkāryavāda, Nature of Prakṛti, its constituents and proofs forits existence, Nature of Puruṣa and proofs for its existence, plurality of the Puruṣas, theory of evolution

Yoga: Citta, Cittavṛtti, Cittabhūmi, Eight fold path of Yoga (AṣṭāṅgaYoga),God

Unit-III

Nyāya: Pramā and Pramāṇa, Pratyakṣa (definition), Sannikarṣa, Classification of Pratyakṣa: Nirvikalpa, Savikalpa, Laukika, Alaukika; Anumiti, Anumāna (definition), Vyāpti, Parāmarśa, Classification of Anumāna: Pūrvavat, Śeṣavat, Sāmānyatodṛṣṭa, Kevalānvayi, Kevalavyatireki, Anvayavyatireki, Svārthanumāna, Parārthanumāna Upmāna, Śabda Pramāṇa. Vaiśeṣika: Padārtha, Dravya, Guṇa, Karma, Sāmānya, Viśeṣa, Samavāya, Abhāva Mīmāṁsā (Prabhākara and Bhatta): Arthāpatti and Anuplabdhias source of knowledge.

Unit-IV

Advaita Vedānta: Śaṅkara's view of Brahman, Saguṇa and Nirguṇa Brahman, Three grades of Sattā: Prātibhāsika, Vyāvahārika, Pāramārthika, Jīva, Jagat, Māyā and Mokṣa. Viśiṣṭādvaita Vedānta: Rāmānuja's view of Brahman, Jīva, Jagat, Refutation of the doctrine of Māyā, Mokṣa.

Suggested Readings:

1. Datta,D.M.&Chatterjee,S.C.,"An Introduction to Indian Philosophy",Rupa Publication India Pvt. Ltd., NewDelhi, 2007.
2. Datta, D.M.& Chatterjee, S.C.,"Bhartiya Darshan",Pustak Mahal, Patna, 2013.
3. Hiriyanna,M.,"Outlines of Indian Philosophy",Motilal Banarasidass Publishers Pvt.Ltd.,Delhi, 2014.
4. Mohanty,J.N.,"Classical Indian Philosophy",Rowmanand Little field Publishers INLMaryland, U.S.A., 1992.
5. Pandey,S.L.,"Bhartiya Darshanka Sarvekshana",Central Publishing House, Allahabad, 2008.
6. Radhakrishnan,S.,"Indian Philosophy(Vol.I&II)",Oxford University Press, NewDelhi, 2008.
7. Raju,P.T.,"The Philosophical Traditions of India",Motilal Banarasidass Publication Pvt.Ltd., NewDelhi, 2009.
8. Sharma,C.D.,"Bhartiya Darshan: Aalochan evam Anusheelan", Motilal Banarasidass Publication Pvt.Ltd., NewDelhi, 2013.
9. Sharma,C.D.,"A Critical Survey of Indian Philosophy",Motilal Banarasidass Publication Pvt.Ltd., NewDelhi, 2016.
10. Suggestive digital platforms web links-

24BIPS5112T:Indian National Movement & Constitution of India

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3 =70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one

question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-Written Test/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning out comes

By studying this course students will gain basic knowledge on

Unit-I

Birth, Growth And The Political Trends In The Indian National Movement Stages Of Constitutional Development, Making Of The Constituent Assembly, Philosophy Of Indian Constitution, Citizenship

Unit-II

Fundamental Rights, Fundamental Duties, Directive Principles Of State Policy. History Of Conflict Between Fundamental Rights & Directive Principles, Process Of Amendment, Concept Of Basic Structure Of Constitution.

Unit-III

Union Executive & Union Legislature. President, Cabinet, Prime Minster Lok Sabha And Rajya Sabha, Speaker, State Executive & Legislature: Powers, Functions And The Relationship Between The Governor & Chief Minister, The Legislative Assembly, The Legislative Council.

Unit-IV

Judiciary: Composition, Powers & Jurisdiction Of Supreme Court, High Court, District Court. Centre-State Relations: Administrative, Legislative & Financial, Special Provisions For Tribal Areas And N-E Composition, Function And Power Of Election Commission

Suggestive Readings:

1. Abbas H, Alam M.A. & Kumar R (2011) 'Indian Government & Politics' Dorling Kindersley Pearson Pvt. Ltd. India
2. Basu D. (2012) 'Introduction to the Constitution of India' Lexis Nexis New Delhi (English & Hindi)
3. Bhargava (ed.) 'Politics & Ethics of the Indian Constitution' Oxford University Press New Delhi
4. Biswal Tapan (2017) 'Bharatiya Shasan Samvaidhanik Loktantra aur Rajneetik Prakriya' Orient Blackswan New Delhi
5. Chaube S. (2009) "The Making & working of the Indian Constitution' National Book Trust, New Delhi
6. Ghosh Peu (2012) 'Indian Government & Politics' PHI Learning Pvt. Ltd. New Delhi
7. Singh M.P. & Sexena Rekha (2008) Indian Politics: Contemporary Issues and Concerns' Prentice Hall of India Pvt. Ltd. New Delhi

This Course Can Be Opted As An Elective By The Student Of Any Subject

24BIPA5113T:Elements of Public Administration

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3+=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:WrittenTest as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives

To provide learning and identifying about the core mechanisms of Public Administration, including the Organization and Management of human resources, to discuss the Political, Economic, Legal, and Social environments of Public Policy and Administration, to Explain the unique challenges and opportunities of providing public goods and services in a diverse society, to define and diagnose decision situations, collect and analyse data, develop and implement effective courses of action, and evaluate results, synthesize and apply decision-making, leadership and management skills, in public agencies or non-profit organizations.

Learning out comes

After the completion of the course, the student will be able to

1. Learn basic concepts of Public Administration.
2. Understanding the cross-cultural context of public and private institutions operating in a global Scenerio.
3. Theoretical dimension with practical aspects of various theories and principles of organizations.
4. Identify major challenges of contemporary public administration.
5. Demonstrate the integrative knowledge, skills, and ethics essential for a responsible administrative, management and leadership positions.
6. Demonstrate the management, legal, ethical, and behavioural skills for effective job performance and career mobility.

Unit-I

Meaning, Nature, Scope and Importance of Public Administration, Role of Public administration in developed and developing societies, Public and Private Administration, Evolution of Public Administration as an Independent discipline. New Public Administration (NPA), New Public Management (NPM). Public Choice Approach (PCA),

Unit-II

Public Administration as a Social Science and its Relationship with Political Science, Economics, Sociology, Law, Psychology and Management. Theories of Public Administration: Scientific Management (F.W. Taylor), Classical theory of Organization (Henri Fayol), The Human Relations theory of organization (Elton Mayo), Max Weber's Ideal Type of Bureaucracy,

Unit-III

Concept of Organisation: Formal and Informal Organisation

Chief Executive: Types and Functions, Line and Staff.

Principles of Organization: Hierarchy, Unity of Command, , Span of Control, Co-ordination, Centralisation and Decentralisation, Delegation, Authority and Responsibility.

Unit-IV

Administrative Behaviour: Leadership, Communication, Decision-Making (Simon's Model), Motivation (Maslow's Hierarchy of Needs theory and Herzberg's Two Factor Theory)

Personnel Administration: Civil Service and its Role in a Developing Society, Classification, Recruitment, Training and Promotion.

Civil Services: Ethics, Integrity, Impartiality and non-partisanship, Relationship between Generalists and Specialists.

Suggested Readings:

1. John M. Pfiffner and Robert Vance Presthus, Public Administration.
2. Dimock and Dimock, Public Administration.
3. Terry, Principles of Management.
4. John D. Millett, Management in the Public Service
5. E.N. Gladden, Essentials of Public Administration.
6. M.P. Sharma, Principles and Practice of Public Administration
7. D.R. Sachdeva and Meena Sogani, Public Administration: Concept and Application
8. A. Awasthi, & S.R. Maheshwari, Public Administration
9. C.P. Bhambri, Public Administration
10. A.R. Tyagi: Public Administration
11. Surendra Kataria, Lok Prashasan ke Tatva (RBSA Publishers, Jaipur)
12. P.D. Sharma, Lok Prashasan: Siddhant Evam Vyavhar
13. C.P. Bhambri, Lok Prashasan (in Hindi)
14. Harish Chandra Sharma, Lok Prashasan Ke Adhaar
15. Vishnu Bhagwan and Vidhya Bhushan, Lok Prashasan
16. Ravindra Sharma, Lok Prashasan Ke Tatva (in Hindi)
17. Surendra Kataria, Karmik Prashasan (in Hindi)
18. Vishnu Bhagwan & Vidya Bushan, Public Administration
19. Avasthi and Maheshwari, Lok Prashasan (in Hindi)
20. B.L. Fadia, Lok Prashasan (in Hindi)

Suggested E-Resources:

E-pgpathashala modules: -

1. www.inflibnet.ac.in
2. www.ignou.ac.in
3. www.sawayam.gov.in

24BISO5114T: Introduction to Sociology

Credits:3L+0T+1P **Marks:100**
Periods pe rweek: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:

C1:WrittenTest as per schedule (at the end of 8th week)

C2:As per class schedule-WrittenTest/ Assignment/ Essay/ Presentation/ Report/ Seminar/ Quiz (at the end of fifteen week).

Course Objectives:

The objective of the paper is to introduce the discipline of sociology and basic concepts of sociology.

Course Outcomes:

- Able to define sociology and demonstrate nature and subject-matter of Sociology.
- Able to demonstrate how sociology differs from and similar to other social sciences subject and their areas of interdependence.
- Understand the basic sociological concepts.

Unit-I

- Origin and development of sociology. The meaning, nature and subject matter of sociology.
- The sociological perspective. Relationship between sociology and other social sciences.

Unit-II

Basic Concepts –1

- Society, Community, Institution, Association. Social Groups.
- Culture, Norms and Values.

Unit-III

Basic Concepts – 2

- Status and Role - Concept and types.
- Socialization - Concept, stages and agencies.
- Social Stratification - Concept and forms.

Unit-IV

- Social Structure - Concept and characteristics.
- Social Change - Concept, factors and patterns.

Reference and Reading Books:

- Alex. 1987. What is Sociology? New Delhi: Prentice Hall of India.
- Bierstedt Robert. 1963. The Social Order: An Introduction to Sociology. New Delhi: Tata- McGraw Hill.
- Bottomore, T.B. 1972 Sociology: A guide to problems and literature. Bombay: George Allen and Unwin (India).
- B.K and S.B. Singh. 2023. Introducing Sociology. Jaipur: Rawat Publications (in Hindi also).
- Davis, Kingsley. 1949. Human Society., Collier Macmillan Ltd. (In Hindi also).
- Doshi, S.L. and P.C. Jain. 2000. Samajshastra Ki Nai Disayen (in Hindi) National Pub.
- Giddens Anthony. 2005. Sociology. London: Polity Press. (In Hindi also).
- Jayaram N. 1988. Introductory Sociology. Madras: Macmillan India.
- J.P. Singh. 1999.Sociology: Concept and Theories. New Delhi: Prentice Hall of India.
- N.K. Singhi and V. Goswami. 2000. Rev. Edition. Samaj Shrastra Vivechan (In Hindi) Jaipur: Raj. Hindi Granth Academi.

• Oommen T.K. and C.N.Venugopal. 1988. Sociology. NLU: Bar Council of India Trust.

24BIEN5115T:Poetry and Drama

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Learning Objectives

- Perceive the various types and kinds of poetry.
- Provide an explanation for the numerous poetic units and strategies employed with the aid of poets.
- Read, analyse and admire poetry critically.
- Understanding texts with specific reference to genres, forms and literary term.
- Develop a deeper understanding of Indian Literary texts.

Learning out comes

- Enable students to attain various perspectives in studying poetry like gender, race, caste, ethnicity, religion, region, surroundings and nation.
- To familiarize the inexperienced persons with different types of poetry from across the world. Helps to create recognition among the beginners about distinct varieties and issues of poetry produced across the globe in the records of literature.

Unit-I

1. History of English Literature from Beginning to Restoration period (1660) [Origin of English as a language, Social and cultural background; Major literary movements, major authors and their major works]

Unit-II

2. William Shakespeare: Not Marble, nor the Gilded Monuments
3. Ben Jonson: The Noble Nature
4. John Donne: Death, not to be proud
5. Milton: On the Late Massacre in Piedmont

Unit-III

The following poems from **The Golden Treasury of Indo- Anglian Poetry, V. K. Gokak**
6. **Henry L. Derozio:** The Harp of India
7. Sri Aurobindo: Transformation
8. Swami Vivekananda: Kali The Mother

9. William Shakespeare: *As you Like It*

10. Literary Forms and Terms: Drama, Poetry, Prose, Novel, Sonnet, Lyric, Ballad, Ode, Simile, Metaphor, Heroic Couplet, Soliloquy, Irony, Blank Verse, Alliteration etc.

Suggestive Readings:

1. *Poet's Pen: An Anthology of English Verses* (Oxford University Press)

2. *History of English Literature* by W. H. Hudson

3. *Glossary of Literary Terms* by M.H. Abrahams

4. *The Golden Treasury of Indo- Anglian Poetry* by V. K. Gokak

5. *As You Like It* by William Shakespeare

24BISA5116T:दृश्य काव्य एवं श्रव्य काव्य

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

अधिगम उद्देश्य

- संस्कृत काव्य का ज्ञान।
- संस्कृत काव्यों का अर्थ ग्रहण एवं आचरण में अनुप्रयोग।
- संस्कृत व्याकरण का अवबोध एवं अनुप्रयोग।
- हिन्दी एवं संस्कृत का अनुवादात्मक ज्ञान।

अधिगम परिणाम

- पद्य काव्यों का अवबोध।
- पद्य काव्यों से नैतिक ज्ञान।
- भाषा शिक्षण एवं अनुवाद ज्ञान।
- व्याकरण अनुप्रयोग।

पाठ्यक्रम

- इकाई प्रथम – स्वप्नवासवदत्तम् (भास)
- इकाई द्वितीय –नीतिशतकम् (भर्तृहरि)
- इकाई तृतीय – रघुवंशम् (द्वितीय सर्ग)
- इकाई चतुर्थ – अनुवाद–कारक संबंधी

सहायक पुस्तकें

- रघुवंश (द्वितीय सर्ग) डॉ. रमाकांत त्रिपाठी, विद्या भवन संस्कृत ग्रंथ माला।
- स्वप्नवासवदत्तम्– आचार्य शेषराज शर्मा रेग्मी।
- नीतिशतक डॉ. शिवबालक द्विवेदी, चौखंभा ओरिएंटलिया।
- रचना अनुवाद कौमुदी– डॉ. कपिल देव द्विवेदी।

24BIHI5117T:हिन्दी साहित्य (प्राचीन एवं मध्यकालीन काव्य)

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

इकाई –I

- हिंदी साहित्य के इतिहास लेखन परम्परा, काल विभाजन और नामकरण।
- आदिकालीन साहित्य की विशेषताएं एवं प्रवृत्तियां।
- भक्ति आंदोलन के उदय के कारण, भक्ति का स्वरूप, भक्ति काव्य की पृष्ठभूमि, भक्ति काव्य के प्रमुख
- संप्रदाय और उनका वैचारिक आधार, निर्गुण–सगुण कवि और उनका काव्य।

इकाई II

- चंदबरदाईः पृथ्वीराज रासो–संपादक हजारी प्रसाद द्विवेदी, नामवर सिंह – कैमास करनाटी प्रसंग पद 1 से 5
- विद्यापतिः विद्यापति पदावली– संपादक – शिवप्रसाद सिंह, पद 1 से 10
- ढोला मारू रा दूहा : संपादक – नरोत्तम दास स्वामी, दोहा संख्या 119 से 130

इकाई III

- कबीर (संपादक हजारी प्रसाद द्विवेदी), पद संख्या 160 से 170
- जायसी ग्रंथावली (संपादक रामचंद्र शुक्ल) – नागमती वियोग खंड, पद संख्या 1 से 10

इकाई IV

- तुलसीदास– कवितावली– उत्तरकांड 1 से 10 पद
- सूरदास – भ्रमरगीत सार (संपादक रामचंद्र शुक्ल) पद संख्या 21 से 30
- मीरा (संपादक – विश्वनाथ त्रिपाठी) पद संख्या 1 से 10

सहायक पुस्तकें –

- 1 हिन्दी साहित्य का इतिहास– आचार्य रामचन्द्र शुक्ल
- 2 विद्यापति पदावली – संपादकः रामवृक्ष बेनीपुरी
- 3 चन्दबरदाई और उनका काव्य – विपिन बिहारी
- 4 संक्षिप्त पृथ्वीराज रासो – संपादकः हजारी प्रसाद द्विवेदी
- 5 कबीर – विजेन्द्र स्नातक
- 6 तुलसीदास (परिवेश और प्रदेय) – संपादकः मदनगोपाल गुप्त
- 7 भक्ति काव्य की परम्परा में मीरां – रमा भार्गव
- 8 महाकवि सूरदास– नन्ददुलारे वाजपेयी
- 9 जायसीः एक नई दृष्टि – रघुवंश
- 10 सूरदास – रामचंद्र शुक्ल
- 11 मीरांबाई – परशुराम चतुर्वेदी

24BIPE5118T: History and Foundation Of Physical Education-I

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/ Assignment/ Essay/ Presentation/ Report/ Seminar/ Quiz (at the end of fifteen week).

Learning outcomes

After successfully completing this course, the student will be able to:

1. Explore the scientific evidence that has been gathered on the contribution and the benefits of physical education in college for students.

2. Understand & differentiate the concept of History, and Principles of physical education.
3. Choose the physical education as are medial tool to inculcate values and ethics.
4. Get acquainted with historical development and its impact on nature of physical education India and abroad.
5. Exploring the Biological, Psychological, physiological, sociological and Philosophical foundation of human being.
6. Knowledge of learning theories.
7. Exploring the physical and mental growth and development in body.
8. Knowledge about Idealism, Pragmatism, Naturalism and Existentialism.

Identify the students with different Issues, challenges and opportunities in Physical education & sports.

Unit I

- Definition of Physical Education and its importance.
- Misconception about Physical Education.
- Aim's & objective of Physical Education.
- Scope of Physical Education.

Place of Physical Education in total Education Process.

Unit II

- Physical Education in Ancient India (Before1947).
- Physical Education in India (after1947).
- Ancient Olympics.
- Impact of Britain & U.S.A.on Physical Education in India.
- Modern Physical Education in India.
- Physical Education and Sports Training in India.
- Rajasthan State sports Council, Function, Aim and Objectives.

Unit III

Philosophical Foundation

- Idealism and Physical Education.
- Pragmatism and Physical Education.
- Naturalism and Physical Education.
- Existentialism and Physical Education

Unit IV

Biological Foundation.

- Heredity & Environment and their effect.
- Stage of Growth & Development.
- Principles of Growth and Development.
- Factor's effecting Growth & Development.
- Differences between Growth & Development.

Psychological Foundation.

- Meaning of Psychology. Importance of Psychology for Teacher.
- Role of Psychological Elements in Physical Education. Motion -mind andbody.
- Psycho-Physical Unity.
- Learning. Learning Theories. Law of Learning.

Suggestive Readings:

1 Bucher C.A.(1983) "Foundation of Physical Education and Sport" the C.V.Mosky Co.St. Louis Toroato- London.
2 Kamlesh & Sangral, (2000)"Principles & History of Physical Education,"Prakash Brothers, Ludhiana.
3 Dr. Suresh Kumar Agarwal etc."Basics of Physical Education, Health & Sports".
4 Singh Ajmer etc. (2000)"Olympic Movement"Kalyani Publishers, Ludhiana.
5 Ajmer singh etc. Essential of physical education."Kalyani Publishers, Ludhiyana
6 Text books of Physical Education For CBSE XI & XII class.
7 Bucher C.A.(1983)"Foundation of Physical Education and Sport"the C.V. Mosky Co.St. Louis Toroato- London.
8 Kamlesh & Sangral, (2000)"Principles & History of Physical Education,"Prakash Brothers, Ludhiana.
9 Dr. Suresh Kumar Agarwal etc."Basics of Physical Education, Health & Sports".
10 Singh Ajmer etc. (2000)"Olympic Movement" Kalyani Publishers, Ludhiana.
11 Ajmer singh etc. Essential of physical education."Kalyani Publishers, Ludhiyana

24BIPE5118T: Practical

Learning Outcomes:

On successful completion of the course,the students will be able to:

1. Assess the individual levels of fitness components.
2. Demonstrate the basic fundamental knowledge and skills of indoor games/sports.

Topicsfor practical:

1. Opted any one Indoor game.

a. TableTennis-

b. Badminton -

(Preparing of practical file on opted indoor game.)

1.Canadian Physical Fitness

24BIGE5119T:Language1 (As per the 8th Schedule of the Constitution of India)

Credits:3L+1T+0P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule WrittenTest/ Assignment/ Essay/ Presentation / Report/ Seminar / Quiz (at the end of fifteen week).

About the Course

Language has undeniable links with all kinds of learning. Language enables an individual to understand new concepts, exchange ideas and communicate thoughts with fellow beings. To appreciate fully the role of language in education, one must begin to develop a holistic perspective on language. Language needs to be examined in a multi-dimensional space, giving due importance to its structural, literary, sociological, cultural, psychological, and aesthetic aspects. The National Education Policy 2020 envisages imparting language skills as part of holistic education. It lays thrust on the need to enhance linguistic skills for better cognitive development and the development of a rounded personality of the learners. This course aims atenabling student teachers to enhance their ability to listen, speak, read, write and demonstrate linguistic skills in an effective manner. Linguistic skills - listening, speaking, reading, writing, speaking effectively - are fundamental to constructing knowledge in all academic disciplines, and. participating effectively in the world of work and creating sense in the everyday life.Through this course, the students will be able to enhance proficiency in reading with comprehension, understanding, thinking and conceptualizing.The course seeks to enhance critical thinking abilities and effective communication skills of student teachers. The courseinvolves hands-on activities and practical sessions that help student teachers develop and use linguistic skills inavariety of situations.

Learning Outcomes

After completing the course, the student teachers will be able to:

- Demonstrate knowledge and capacity for effective listening, speaking, reading, writing and critical thinking.
- recognize the link between language and cognition and using linguistic knowledge and skills for effective communication of ideas and thoughts.
- build inter-personal relationships and enhance social skills.

UNIT-I

Understanding Language, Communication and Cognition

A. Language, communication, and cognition; Definitions and functions of language. Types of communication, Language, culture and society, Bi-/Multilingualism in India, Language learning, translation, formal and informal communication,

verbal and non-verbal communication, gestures language skills (listening, speaking, reading, & writing) and the new-age technologies. Language as a means of communication and language as a medium of cognition.

B. Nature and process of communication: principles, Definition, and types; Language: Definition, characteristics, functions; Language and society: language variation, language and dialect, language policy and language planning, language standardization; Multi lingualismin Indian context, Language as a means of communication and language a same dium of cognition.

C. The process of communication, barriers to communication, written and oral communication, the story of human communication from early times to new age; Language variation, Multi lingualism.

D. Context of communication, the role of decoder, face to face interaction, turn taking, conversation, politeness principles, opening and closing, regional variation, social variation, the standard language.

UNIT-II
Understanding Grammar

A. Classification of speech sounds and letters, stress, pitch, tone, intonation and juncture,parts of speech, identification of morphemes, word formation processes, sentences-simple, complex, and compound, semantics and pragmatics, lexical semantics, speechacts.

B. Production of speech sounds in languages; Suprasegmentals: stress, pitch, tone, intonation; Word formation processes; Sentence formation, semantics, and pragmatics.

C. Identification of morphemes, word formation processes; Sentence formation, vocabulary formation; Pragmatics and speech acts.

D. Sound production in the language; Coining new words, Speech acts.

UNIT-III
Reading Skills

A. Reading comprehension, types of reading, text, meaning and context, reading as an interactive process; strategies for making students active readers and developing criticalreading skills; Understanding denotative and connotative aspects of a text, Vocabulary development through reading.

B. Features that make texts complex, reading as an interactive process; Strategies formaking students active readers and developing critical reading skills; Understanding denotative and connotative aspects of a text, Vocabulary development through hreading.

C. Reading discipline-based texts; vocabulary development

UNIT-IV
Writing Skills

A. Speech versus writing; Types of writing; writing for specific purposes (essays, letters, and reports).

B. Language and style of Writing; Dealing with New Words (Academic Vocabulary Building)

C. Summarizing and Paraphrasing techniques.

UNIT-V

Speakings kills

A. Speaking to learn and learning to speak; situational conversations and role plays; tasks/activities for developing speaking (speech, elocution, discussion, debate, story telling, illustrations).
B. Activities for developing speaking, role play; The impact of culture on speaking.
C. Presentation and speaking skills; Practicing narrative skills; Body language, voice, and pronunciation; Creating interest and establishing relationship with the audience.

UNIT-VI

Listening Skills

A. Why listening isimportant; kinds of listening; Listening strategies.
B. Need formodelling good listening behaviour; Listening a cross the curriculum, note taking.
C. Listening Comprehensions and Recorded speeches/texts; Understanding of various accents.

UNIT-VII

Academic writing

A. Academic writing components; development of academic language; Activities to develop academic writing skills.
B. Developing Critical, analytical, and interpretive thinking skills.
C. Learning to analyze.

UNIT-VIII

Critical thinking

A. Enhancing Critical thinking abilities; Critical Interpretation, Questioning and Challenging your Beliefs and Values; developing ideas and evaluating an argument.
B. Observing aproblem, describing the problem, framing the problem, comparing and evaluating a problem.

Suggestive Practicum

1. How do you interpret everyday and reflect what you read? Prepare a report.
2. Analyze a recorded video from the perspective of voice and pronunciation and write a report.
3. Observing, describing and frame a problem and evaluating it.

Suggestive Mode of Transaction

Teaching this course will involve a mix of interactive lectures, tutorials, and practical involve such as discussion, role plays, projects, simulations, workshops, and language-awareness activities. The teaching intends deeper approaches to learning involving in-class room discussion, developing the critical thinking/ problem solving abilities among the students and will also focus on situations where in our daily lives the one would be performing tasks that involve a natural integration of language skills. The students are expected to read assigned chapters/ articles before the session and the course requires active participation from the students.

Suggestive Mode of Assessment

The assessment of the learner will be primarily based on the assessment of both linguistic and communicative skills using a battery of tests and test types, group work and projects.

Suggestive Reading Materials

Teachers may suggest books/readings as per the need of the learners and learning content.

24BIAE5120T:Art Education (Performing and Visual)

Credits:1L+1T+0P **Marks:50**
Periods per week: 3 **C1+C2=15**
Examination:2hours **C3=35Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Seven (07) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (250 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	10	1hr	06
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	35	2hrs	14
TotalMaxMarks	**50**		**20**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule WrittenTest/Assignment/Essay/ Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

About the Course

Engagement with various forms of art as self-expression and need to develop sensibility toappreciate them has been an important concern in educational theory and practice. This concernis premised on the claim that forms of self-expression contribute immensely to the developmentof cognitive, affective, and psycho-motor dimensions among children, as well as that throughone or another art form, children come to explore ways of expressing themselves. Further, it is also the case tha critical appreciation of art enables children to form judgments of a very special kind, namely, aesthetic judgment. This enables students as they grow into adults to have focused attention on making sense of and appreciating cultural productions.

Children enjoy art work a lot. They explore and find meaning in art work. Their psycho-motor skills get developed through art. The huge element of socialization is acquired through different forms of art. They get to know each other and understand each other and make friends through art. They develop their peer group through getting involved in art forms. Learning to work with others is also achieved through art. It gives them space to think independently, create and reflect. It is one space where all the three are involved-hand, head, and heart. Therefore, educational practitioners that the students of MA Education aim to be, will need tobring an element of art in practices that they engage in. To be able to do this, they need an appreciation of art in general, familiarity with one art form, and basic skills and capabilities to be creative and art ful. Additionally, they should be familiar with some critical debates in art education, even if their working other subject areas.

To this end in the first semester students will done course that aims to help them recognize and appreciate the importance of aesthetic judgment, develop familiarity with an art form and basic skills to be creative and art full in their expressions. Skills develop from practice, there fore hands-on training in doing art will be emphasized in this course.This course aims to help students develop a habit of performing skillful activities that are essentially aesthetic and artful which isexpected to contribute to other educational practices that they develop in other courses in the programme. Therefore, this course will explicitly relate this skill to activities that practitioners of education engage in, like teaching, development of teaching-learning material, and content of other subject are as wherever possible.

Puppetry

Puppetry is an integrated art form, which takes into its fold everything from fine arts to performance. Puppetry is one of the oldest forms of performing art. Puppetry has evolved overthe years into a sophisticated form of art. The journey was very interesting with a lot of ups anddowns. There are thousands of forms of puppetry from simple finger puppets to highly complex puppets played by more than 3 people. Each country has a puppet form, why country, each are in a country has a puppet form. Hence, in India you will find many, many forms of puppetry.

In puppetry there are two main aspects. One the designing and creating of puppets and the other playing or performing puppetry. These two skills are different. Designing will need a lot of thinking, visualization, and technical skills while performance will need high level communication skills. Hence, together they make a consolidated a high range of skills. In this course, students are exposed to different forms of puppets and puppetry. There will be adiscussion around the forms and the aesthetic sense of puppetry. Later the students are encouraged to prepare, design and create puppets. They then prepare script and play the puppets. This creation of the puppets together in small groups with a lot of discussions and give and take helps the students develop working together are skills and conceptual under standing.

Learning Outcomes

After completion of this course, student teachers will be able to:

- articulate the importance of aesthetics and art in elementary education,
- demonstrate their familiarity with and appreciation of puppetry,
- design puppets,
- practice and create a short puppetry show.

UNIT-I

Importance of Aesthetics and Art education (2 Sessions)

In this unit the basic idea of aesthetics and art, and ways in which the aesthetic dimension manifests itself in human life will be discussed. Using various examples of art, students will engage in identifying aesthetic aspects of daily life, develop aesthetic judgment, and gain familiarity with the role of art in education. Students will also be introduced to three aspects ofart in education: The value of art it self and its use as an instrument in education; moral dimensions of works of art and the controversial distinction between the value of Popular art and Highart.

UNIT-II

Designing Puppets (6 Sessions)

In this unit, students will learn about puppetry, its history and specifically about how puppets work. This unit will also discuss the imagination required to design puppets, visualize howpuppets will be used and the technicalities of designing puppets. These will be learnt bydesigning puppets. Students will start with constructing finger puppets and move towards small shapes through papers, like Fish, birds, rat - then they will design masks, flat masks, and masks with dimensions. At the end they will design puppets with old news paper. The puppets aredesigned with old newspapers and colour papers. They decorate it and design it in such a way that it can be played, performed. They prepare costumes and all other accessories.

UNIT-III

Performing the puppets (4 Sessions)

This unit will engagein performance of puppetry and the level of communication skills required to create a good engaging story and perform it with the help of puppets they have created. The performance will be expected to relate to some activity in the educational context. Students willperform the puppets they have designed. Initially each member will play their own puppets.Later they will play in pairs, later they will be formed into a small group and asked to prepare their own skits with the puppets. They conclude by performing in small groups. Their learning is consolidated and reflected.

Discussion is held on how different aspects of puppet making can be in corporated in class room processes of young children. Adapting the individual and group exercises done during the puppetry course will be discussed to be used in the classroom situation.

Pedagogy

The Pedagogy is basically hand-on training. More emphasis is given to experiential learning.They do things and through doing learn about art and its connection to education. The processtakes you through different forms of art- fine arts, playing with colours, costume designing, facial make-up, script writing, music and performance.

Suggestive Mode of Assessment

Details to be determined by the faculty memberas per applicable UGC norms.

Week wise break up of sessions			
Sl.no	**Topics**	**Session flow**	**Remarks**
1	Aesthetics and art, art in every day life.	Based on their experience	
2	Importance of art. Appreciation of art.	Discussion	
3	Art for art sake. Art with social responsibility. Art forsocial change	Debate	
4	The world of puppetry. Different forms of puppetry.	Presentations	
5	History of puppetry	Lecture	
6	Preparation-finger puppets	Handson	
7	Preparation of masks	Handson	
8	Preparing puppets	Handson	
9	Performing individually	Practice	
10	Performing in pairs	Practice	
11	Performing in groups–3,4,5.	Practice	
12	Assignments	Written.	

Suggestive Reading Materials

Teachers may suggest books/readings as per the need of the learners and learning content.

24BIUI5121T:Understanding India (Indian Ethos and Knowledge Systems)

Credits:1L+1T+0P **Marks:50**
Periods per week: 3 **C1+C2=15**
Examination:2hours **C3=35Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Seven (07) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	10	1hr	06
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	35	2hrs	14
TotalMaxMarks	**50**		**20**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

5.4.1 About the Course

At a time when the world finds itself deep in dynamism, led by technological innovations and environmental changes, there is a need for an in ward-looking approach to building the young minds of a country. By looking in wards, one not only find sasociological belongingness but also a spiritual and intellectual rooting in these changing times. The course provides an overview ofIndia's heritage and knowledge traditions across key themes of economy, society, polity, law, environment, culture, ethics, science &technology, and philosophy. It places special emphasis on the application of these knowledge traditions, helping students to noy only know and appreciate India's heritage and knowledge traditions but also to independently evaluate them through a multi disciplinarylens.This evaluation would produce valuable lessons for obtaining transferable and 21st-century skills. The course requires no pre-requisite knowledge or under standing.Spread over two years, the course will establish foundational knowledge and build upon it. It will allow students to have a basic understanding of the traditions of India and how it has evolved over the years.The course is designed to enable student teachers to outline and interpret the processes and events of the formation & evolution of knowledge of India through a multi disciplinary lens; to evaluate the diverse traditions of India to distinguish its achievements and limitations, and to develop and articulate an ethics-based education rootedin Indian thought to their students in the classroom context.

5.4.1 Learning Outcomes

After the completion of the course, students will be able to:

- recognize the vastcorpus of knowledge e traditions of India, while developing an appreciation for it,
- apply their acquired research hand critical thinking skills in multi disciplinary themes,
- summarize and passon their learnings to ther students of different Indian traditions in an easily digestible manner.

UNIT-I

Introduction to the Knowledge of India

A. Definition & scope; Relevance of this knowledge.
B. Need to revisitour ancient knowledge,traditions, and culture.

Dy. Registrar
Pandit Deendayal Upadhyaya
Shekhawati University,
Sikar(Rajasthan)

UNIT-II
Culture-Art and Literature

A. Fine arts (traditional art forms, contemporary arts, arts & spirituality, arts and Identity,and art and globalization);
B. Performing Arts (Indian dancesy stems, traditional Indian pieces of music,visual arts,folk arts,etc.,).
C. Literature (Sanskrit literature, religious literature, Indian poetry, folk literature, Indian fiction,Sangam literature, Kannada, Malayalam literature,Bengali literature, etc.

UNIT-III
Polity and Law

A. Kingship & types of government (oligarchies, republics); Local administration (village administration);
B. Basis of Law: Dharma & its sources; Criminal Justice: police, jails, and punishments;Lessons from Chanakyaniti; Lessons for modern-day India: Towards a tradition- driven quitable and just polity and law system.

UNIT-IV
Economy

A. Overview of the Indian Economy from the Stone Age to the Guptas: The new culture of Urbanization (including castes, guilds, and other economic institutions; Harappan civilization economy; growth of agriculture and proliferation of new occupations; growth of writing);
B. Internal & external trade and commerce, including trade routes, Indo-roman contacts, and mari time trade of South India;Temple economy.
C. Land ownership-land grants& property rights, landre venue systems.
D. Understanding Arthashastra: Ideas & Criticism; Locating relevance of ancient Indian economic thought in modern- day Indian Economy.

UNIT-V
Environment & Health

A. Understanding Equilibrium between Society& Environment: Society'sperceptions of natural resources like forests, land,water, and animals.
B. Sustainable architecture & urban planning; Solving to day'senvironmentalchallenges (best practices fromin digenous knowledge, community-led efforts,etc.).
C. India's Health Tradition: Ayurveda, Siddha, Ashtavaidya, Unani, and other schools of thought; Lessons from Sushruta Samhita and Charaka Samhita;
D. Mental health in ancient India: to wards time-tested concepts of mental wellness (concept of mind,dhyana,mind-bodyrelationship,Ayurveda,yogadarshan,atman,etc.)

Suggestive Practicum

The modes of curriculum transaction will include lectures, Tutorials, and Practicum.

- Practicum will include organization of day trips that help student teachers watchevents relating to visual and performing art; activities that enable student teachers to identify and record through photos, videos, etc. the elements of ancient architecturestill existing in the city around them;organization of Individual and group presentations based on the messuchas Polity, Lawand Economy etc.,organization of a 'Knowledge of India' day in the institution to celebrate the culture (food, clothes,etc.) that they would have been explored in lectures and tutorials; interactions with family members, elders, neighbors, and other members of society about the evolution of local systems and economy etc.

Suggestive Mode of Transaction

- Lectures will include learner-driven participatory sessions, and Guest lectures through experts and practitioners, such as fine arts and performing arts practitioners along with contemporary poets& writers of Indian literature.
- Tutorials will include Screening of documentaries and films followed by adiscussion; Learner-driven discussions in the form of focus group discussions (FGDs), Socratic Discussions, etc.; Debate/discussion can be organized to explain India's Vaadtradition; discuss on how some of the ancient methods of teaching are relevant in today's time; discussions that help Identify ethical dilemmas in daily lives and understanding the importance of ancient ethics and value store solve them.

Suggestive Mode of Assessment

The approaches to learning assessment will include, for example:

- Supporting the curiosity and interest of student teachers in the selected themes through amulti-modal approach, including regularas sessments and actionable feed back that enable learners to outline and interpret the proceses and event softh eformation & evolution of knowledge of India through a multi disciplinarylens.
- Enabling the student teachers to demonstrate critical analysis and independent thinking ofthe processes and events in the formulation & evolution of different traditions that helpstudent teachers evaluate the diverse traditions of India to distinguish its achievements and limitations.
- Use of first-hand or second- hand experiences that enable student-teachers to develop and articulate an ethics-based education rooted in Indian thought to their students in the class room context.

Suggestive Reading Materials

Teachers may suggest books/ readings as per the need of the learners and learning content.

SEMESTER 2

24BIBO5201T:CELL BIOLOGY, GENETICS AND PLANT BREEDING

Credits:3L+0T+1P **Marks:100**
Periodsperweek: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Learning Objectives:

- To provide basic knowledge on the concepts of cell structure, cell organelles, cell cycle, Inheritance, linkage, sex determination and plant breeding.

Expected Course Outcomes:

Upon completion of this course, the students will be able to:

- Understand the concept on the cellular and molecular mechanisms involved in heredity and variation.
- Understand the patterns of inheritance in different organisms.
- Outline basics of linkage of genes, sex determination and quantitative inheritance.
- Understand the inheritance pattern of extranuclear genes.
- Understand the application of principles and modern techniques in plant breeding.
- Explain the procedures of selection and hybridization for improvement of crops.
- Solve problems related to genetics.

Unit I

Cell Structure: Eukaryotic and Prokaryotic cell, a brief account of ultra-structure of a plant cell.
Structure and function of cell organelles: Cell wall, Plasma membrane, Nucleus, Mitochondria, Chloroplast, Ribosome, Peroxisomes, Lysosomes, Golgi bodies and Endoplasmic reticulum.
Chromosomes: structure; euchromatin and heterochromatin, types Lampbrush chromosomes, B chromosomes, polytene chromosomes.
Cell cycle: mitosis and meiosis.

Unit II

Mendelian Genetics: Mendelian Principles of inheritance, deviations (Incomplete dominance, codominance and lethality); Epistasis; Polygenic inheritance; Chloroplast and Mitochondrial inheritance in yeast; Maternal effects-shell coiling in snail; Infective heredity- Kappa particles in Paramecium. Brief introduction to sex determination.
Linkage and crossing over: Linkage and crossing over, three factor crosses.

Unit III

Chromosomal aberrations: Structural chromosomal aberrations: Deletion; Duplication;

inversion; Translocation; Numerical chromosomal aberrations: Euploidy and aneuploidy, Monoploidy and Polyploidy and their role in evolution of plants. **Mutations:** Types of mutation; Molecular basis of mutations; Chemical mutagens (Base analogs, deaminating, hydroxylating, alkylating and intercalating agents) and Physical mutagens (Ionising and Non-ionising radiations).

Unit IV

Plant Breeding: Introduction and objectives. Methods of plant breeding (a) Introduction and acclimatization (b) Selection- Mass, Pure line and Clonal selection (c) Hybridization techniques in self and cross-pollinated crops (d) Male sterility and its significance (e) Mutation breeding
Inbreeding depression and heterosis: History, genetic basis of inbreeding depression and heterosis; Applications.

Suggestive Readings:

1 Karp, G. 2010. Cell and Molecular Biology: Concepts and Experiments. 6th Edition. John Wiley & Sons. Inc
2 Animal Cytology and Evolution- MJD, White Cambridge University Publications
3 Molecular Cell Biology-Daniel, Scientific American Books
4 Celi Biology - Jack D Bruke, The William Twilkins Company
5 Principles of Gene Manipulations- Old & Primrose, Black Well Scientific Publications
6 Ambrose &Dorothy. Cell Biology, N4 Easty, ELBS Publications
7. Sharp L.W. Fundamentals of Cytology, McGraw Hill Company
8. P.K. Gupta. Genetics, Rastogi Publication, Meerut, India
9. Powar C.B. 2010. Cell Biology, Himalaya Publishing House.
10. Shukla, R. S. and P. S. Chandel. 2007. Cytogenetics, Evolution, Biostatistics and Plant Breeding. S.Chand & Company Ltd., New Delhi.
11. Verma, P. S. and V. K. Agrawal. 2004. Cell Biology, Genetics, Molecular Biology, Evolution and Ecology. S. Chand & Company Ltd., New Delhi.
12. Singh, B.D. (2005). Plant Breeding: Principles and Methods. Kalyani Publishers. 7th edition.
13. Chaudhari, H.K. (1984). Elementary Principles of Plant Breeding. Oxford – IBH. 2nd edition.
14. Acquaah, G. (2007). Principles of Plant Genetics & Breeding. Blackwell Publishing.

24BIBO5201P:Practical

Course objective:
The objective of this course is:

- To give practical experience in understanding different cell structures, its organelles and multiplication.
- To learn the laws of heredity with a practical emphasis on inheritance.

Learning outcomes
After successful completion of this practical course, the student shall be able to:

- Show an understanding of techniques for demonstrating Mitosis and Meiosis in the laboratory and identify different stages of cell division.
- Identify and explain with a diagram the cellular parts of a cell from a model or picture and prepare models
- Solve the problems related to crosses and gene interactions.
- Demonstrate plant breeding techniques such as emasculation and bagging.

1.Study of plant cell structure with the help of epidermal peel mount of Onion/*Rhoeo*/*Crinum*.
2. Demonstration of the phenomenon of protoplasmic streaming in *Hydrilla* leaf. Study of ultra structure of plant cell and its organelles using Electron microscopic Photographs/models.
3. Observation of growth and differentiation in single cells (pollen grains) by hanging drop

culture

4. Count the cells per unit volume with the help of haemocytometer. (Yeast/pollen grains).
5. Mounting of polytene chromosomes

1. Isolation of plant cellular DNA
2. Demonstration of Mitosis in *Allium cepa/Aloe vera* roots using squash technique; observation of various stages of mitosis in permanent slides.
3. Demonstration of Meiosis in P.M.C.s of *Alliumcepa* flower buds using squash technique; observation of various stages of meiosis in permanent slides.
4. Study of structure of DNA and RNA molecules using models.
5. Photographs/Permanent Slides showing Translocation Ring, Laggards and Inversion Bridge.

1. Solving problems monohybrid, dihybrid, back and test crosses.
2. Solving problems on gene interactions (at least one problem for each of the gene interactions in the syllabus).
3. Chromosome mapping using 3- point test cross data.

1. Demonstration of emasculation, bagging and artificial pollination techniques for hybridization.
2. Study of self and cross-pollinated plants; vegetative propagation
3. Pollen viability test

Suggestive Readings:

1. Debarati Das. Essential Practical Handbook of Cell Biology & Genetics, Biometry & Microbiology A Laboratory Manual (2017), 1st Edition
2. Laboratory Manual for Molecular Genetic Tests (2014), 1St Edition by Chowdhury, Jaypee Brothers Medical Publishers.

24BICH5202T: Chemistry

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination: 3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:

C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest /Assignment/Essay/Presentation /Report/ Seminar /Quiz (at the end of fifteen week).

Learning Objectives

- To impart in-depth knowledge about the structural patterns and a comparative account of the different organ systems of vertebrates.
- The objective of this course is to provide students with a theoretical understanding of the S and P block elements from periodic table and basic knowledge about thermodynamics. In addition, the laboratory course is designed to provide students with practical experience in basic quantitative analytical techniques including volumetric analysis, qualitative analytical techniques, and the determination of kinetic parameters of reactions.

Learning outcomes

- Upon completion of the course,students should be able to:
- By the end of this course, students will have a clear theoretical understanding of the S and P block elements from periodic table and basic knowledge about thermodynamics. Students will also have practical experience in quantitative analytical techniques including volumetric analysis, identification of organic compounds by determination of functional groups, determination of order and rate constant of various reactions.

Unit I

s-block elements: General characteristics, diagonal relationships and anomalous behavior of first member of each group. Reactions of alkali and alkaline earth metals with oxygen, hydrogen, nitrogen and water, common features of hydrides, oxides, carbonates, nitrates, sulphates of alkali and alkaline earth metal compounds, complex formation tendency and solutions of alkali metals in liquid ammonia.

p-block elements: Periodicity in properties of p-block elements with special reference to atomicand ionicradii, ionizationenergies, electron-affinity, electronegativity, allotropy, inert pair effect, catenation including diagonal relationship. Structure, bonding and properties of hydrides of group 13, oxides of phosphorus and sulphur, oxoacids of phosphorus and sulphur, halides of silicon and phosphorus,borazine, silicates, silicones.

Unit II

Alkanes: Preparation, physical properties and chemical reactions, mechanism of free radical substitution with reference to halogenation, orientation, reactivity and selectivity.

Cycloalkanes: Nomenclature, preparation, chemical reactions, Baeyer strain theory and its limitation, ringstrain in small rings (cyclopropane and cyclobutane), theory of strainless rings, banana bond in cyclopropane.

Alkene: Introduction of alkenes, preparation, physical properties and relative studies of alkenes, their preparation with reference to mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halides, regios electivity in alcohol dehydration, Saytzeff's rule, Hofmann elimination. Chemical reactions of alkenes-mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroboration-oxidation, oxymecuration-demercuration, epoxidation, ozonolysis, hydration, hydroxylation, oxidation with $KMnO_4$, polymerization of alkenes, substitution at the allylic and vinylic positions of alkene, industrial applications of ethylene and propene.

Dienes: Nomenclature, classification, isolated, conjugated and cumulated dienes, structureof allenes and butadiene, preparation, chemical reactions-polymerization, 1, 2-and1, 4-additions, Diels-Alder reaction.

Alkynes: Nomenclature, preparation, physical properties and chemical reactions, mechanism of electrophilic and nucleophilic addition reactions, hydroboration, metal ammonia reductions, oxidation and polymerization.

Unit III

Chemical Energetics-I: Review of thermodynamics and first law of thermodynamics, Joule'slaw, Joule-Thomson coefficient and inversion temperature, important principles and definitions of thermochemistry, concept to standard stateand standard enthalpies of formations,

integral and differential enthalpies of solution and dilution, calculation of bond energy, bond dissociation energy and resonance energy from thermo-chemical data, variation of enthalpy of a reaction with temperature - Kirchhoff's equation. Second law of thermodynamics, different statements of the law, Carnotcycle and its efficiency, Carnottheorem, Conceptofentropy, entropyasastate function, entropy as a function of V & T, entropy as a function of P & T, entropy change in physical processes.

Unit IV

Chemical Energetics-II and Equilibrium: Third law of thermodynamics, calculation of absolute entropies of substances, free energy(G), work function(A), variation of G and A with P,V and T. Thermodynamic derivation of the law of mass action. Le Chatelier's principle. Relationships between KP, KC and KX for reactions involving ideal gases. Reaction isotherm and reaction isochore, Clausius-Claperyron equation and applications.

Ionic Equilibria: Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water,ionization of weak acids and bases, pH scale, common ion effect,salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts,buffer solutions,solubility and solubility product of sparingly soluble salts and its applications.

Reference Books:

1 Lee,J.D.;(2010),**Concise Inorganic Chemistry**, 5th Edition, WileyIndia.

2 Atkins, P. W.; Overton, T. L.; Rourke, J. P.; Weller, M. T.; Armstrong, F. A. (2010), **Shriver and Atkins Inorganic Chemistry**, 5th Edition, Oxford University Press.

3 Miessler, G. L.; Fischer P. J.; Tarr, D. A. (2014), **Inorganic Chemistry**, 5th Edition, Pearson.

4 Housecraft, C. E.; Sharpe, A. G. (2018), **Inorganic Chemistry**, 5thEdition, Pearson.

5 Greenwood,N.N.;Earnsaw,A.(1997),**Chemistry of Elements**,2ndEdition, Elsevier.

6 Douglas,B. E.,McDaniel,D. H.;Alexander,J. J. (2007) **Concepts and Models in Inorganic Chemistry**, 3rd Edition, John Wiley & Sons.

7 Morrison, R. N.; Boyd, R. N.; Bhattacharjee, S.K. (2010), **Organic Chemistry**, 7th Edition, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.

8 Solomons,T.W.G.;Fryhle,C.B.;Snyder,S.A.(2017),**Organic Chemistry**,12th Edition, Wiley.

9 Puri, B.R.; Sharma, L.R.; Pathania M.S. (2020) **Principles of Physical Chemistry**, Vishal Publishing Co.

10 Castellan,G.W.(2004), **Physical Chemistry**,4thEdition,Narosa.

11 McQuarrie,D.A.;Simon,J.D.(2004), **Molecular Thermodynamics**,VivaBooks Pvt. Ltd.

12 Atkins, P.; de Paula, J. (2013), **Elements of PhysicalChemistry**, 6th Edition, Oxford University Press.

13 Alberty, R. A.; (1987), **PhysicalChemistry**, 7th Edition,WileyEasternLtd.,Singapore.

14 Dogra, S.K.; Dogra, S. (2015), **Physical Chemistry Through Problems**, 2nd Edition,New Age International Publication.

24BICH5202P: Practical

1 Inorganic Chemistry

Volumetric Analysis

(a) Determination of acetic acid in commercial vinegar using NaOH.
(b) Determination of alkali content in antacid tablet using HCI.
(c) Estimation of Calcium content in chalk as calcium oxalate by permanganometery.
(d) Estimation of hardness of water by EDTA.
(e) Estimation of ferrous and ferric by by dichromate/permanganate method.
(f) Estimation of copper using thiosulphate by iodometric method.

2 Organic Chemistry

Qualitative Analysis

Identification of organic compound through the functional group analysis, determination of melting point,boiling point and specific test.

3 Physical Chemistry

Chemical Kinetics:

a) To determine the specific reaction rate of the hydrolysis of methyl acetate/ethyl acetate catalyzed by hydrogen ions at room temperature.

b) To study the effect of acid strength on the hydrolysis of an ester.

c) To compare the strengths of HCI and H_2SO_4 by studying the kinetics of hydrolysis of ethyl acetate.

d). To study kinetically the reaction rate of decomposition of iodide by H_2O_2.

4 Viva voce
5 Practical Record

24BIZO5203T:Comparative Anatomy and Development Biology of Vertebrates

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:

C1:Written Test as per schedule (at the end of 8th week)

C2:As per class schedule-Written Test/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives

To impart in-depth knowledge about the structural patterns and a comparative account of the different organ systems of vertebrates.

- To understand the account of the functional and comparative morphology provides a deep understanding of animal diversity and the adaptive changes the vertebrates have gone through during evolution from common ancestors
- To help students identify the body plan types of complex chordates and their systematic organization based on evolutionary relationships, structural and functional affinities.
- To provide an in-depth knowledge on the embryonic and post embryonic developmental processes.
- To apprise the students of the fascinating aspect of the development of a single fertilized egg to mature into a fully developed complex organism.
- To explain the basic principles and concepts the developmental processes from a single cell system to a multi-cellular system.
- To provide the undergraduate students an in-depth knowledge on the embryonic and post embryonic developmental processes.
- By understanding the developmental processes, the students can relate to errors occurring during development leading to congenital disorders and human diseases.
- To familiarize the students with the technique of IVF and pre-diagnostic methods to identify any abnormality arising during development.
- To make the students aware of the areas of great interest including stem cell therapy, tissue engineering and regenerative medicine.

Learning outcomes

Upon completion of the course, students should be able to: Have a better understanding of the evolutionary significance of comparative anatomy.

- Understand the importance of morphology and anatomy of organisms in relation to evolution.
- Appreciate the comparative anatomy among vertebrates that provides evolutionary evidences.
- Enhance collaborative learning and communication skills through practical sessions, teamwork, group discussions, assignments, and projects.
- Appreciate the events that lead to the formation of a multicellular organism from a single fertilized egg.
- Better understand the general patterns and sequential developmental stages during embryogenesis.
- Gain knowledge of the general mechanisms involved in morphogenesis.
- Comprehend the processes of ageing to improve the overall health and quality of life in aged people. Acquire basic knowledge and importance of latest techniques like stem cell therapy, in vitro fertilization and amniocentesis etc

Unit I

Elementry Idea of Chordates:

Classification and Salient feature of phylum Chordata up to orders (up to subclass in mammals), Salient Feature of Herdmania, Branchiostoma and Petromyzon (Sea Lamprey). Ascidian Tadpole Larva and its retrogressive Metamorphosis., Ammocete larva, Pisces:, swim bladder and accessory respiratory organs, parental care in Pisces and Amphibia

Unit II

Comparative anatomy of Vertebrates:
Structure of Integuments, Brief account of Alimentary canal, Evolution of Aortic Arches and Heart, Evolution of kidney and Urinogenital ducts, Difference between venomous and non venomous snakes, flight adaptation in birds, Adaptive radiation in mammals.

Unit III

Historical perspectives and basic concepts of Developmental Biology, Gametogenesis: Oogenesis, Spermatogenesis, Types of egg, Egg envelops, Mechanism of Fertilization, Blocks to polyspermy; Cleavage; Types of Blastula; Fate maps; Gastrulation in frog and chick, Embryonic induction and organizers. Fate of Germ Layers.

Unit IV

Metamorphosis and its hormonal regulation in Amphibians , Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each); Ageing: concepts and theories. Teratogenesis: Teratogenic agents and their effects on embryonic development; IVF, Embryonic stem cell (ESC), Amniocentesis. Stem cell technology. Extra-embryonic membranes in birds; Structure, types, and functions of placenta.

Reference Books:

1 Kotpal RL(2022) Modern Textbook of Zoology –Vertebrates; Rastogi Publications - Meerut; 2022

2 Young, J. Z. (2004). The Life of Vertebrates. III Edition. Oxford University Press.

3 Tiwari SK (2006) Fundamentals of World Zoogeography, Sarup & Sons SUGGESTED

4 Lewis Wolpert (2010). Principles of Development. II Edition, Oxford University Press.

5 Verma PS. and Agarwal V.K (2014) Chordate Embryology, S Chand Publication.

24BIZO5203P:Practical

Anatomy

General viscera, afferent and efferent branchial blood \ vessels, eye.muscles and their innervation, brain, cranial nerves, and internal ear of any edible Fish.

Blood vascular, Urinogenital and Nervous system (brain, cranial nerves, spinal nerves) of rat or any suitable mammal

Permanent preparations and study of the following:(With the help of Chart and Model)

Spicules and pharyngeal wall of Herdmania: Scales of Fish, Stripped muscle fibres.

Osteology:AComparativestudyofarticulatedanddisarticulatedbonesofFrog,Varanus, FowlandRabbit (or any other mammal).

Study of Microscopic slides :

Whole mounts of oral hood velum and pharyngeal wall of Amphioxus, T.S. of Amphioxus through various regions; tadpole larva of Ascidia; whole mounts of Pyrosoma, Salpa, Doliolum and Oikopleura; VS. of skin of fish; T.S. of body of fish through various regions, V.S. of Skin of frog; T.S. of cartilage, bone, testis and ovary of frog; V.S. of skin of bird; V.S. of mammalian skin, TS of Mammalian Bone.

Study of museum specimens

Ascidia, Ciona, Botryllus, Ammocoete, Petromyzon, Myxine, Zygeana (Sphyrna), Torpedo, Chimaera, Acipenser, Amia or Lepidosteus, Labeo, Clarias, Anguilla, Hippocampus, Exocoetus, Echenes, any flat-fish, Protopterus, Ichthyophis or any blind-worm. Proteus, Ambystoma, Axolotl, Siren, Alytes, Hyla, Tastudo, Chelone, and fresh water tortoise, Sphenodon, Hemidactylus, Phrynosoma, Draco, Chameleon, Eryx, Hydrophis, Naja, Viper; Bungarus, Crocodile, Alligator, Archaeopteryx, Running bird, *Pavo cristatus* (peacock), Choriotis (Great Indian bustard), Ornithorhynchus, Tachyglossus, Didelphys, Macropus, Bat, Loris, Scaly Ant Eater.

Study of development of frog/toad with the help of:

i. Preserved materials available: Eggs.cleavage. blastula, gastrula.Nerula.tail-bud hatching mature tadpole larvae. metamorphic stages toad/frog.

ii. Histological slides: Cleavage.blastula.gastrula.ncurulaandtail-bud stage.

Study of development of chick with help of whole mounts:

(i) 18 hrs. 21 hrs. 24 hrs. 36 hrs. 48 hrs 56 hrs 72 hrs and 96 hours of incubation.

(ii) Primitives treak stage in living embryo (if possible) after removal of the blastoderm of the egg.

(iii) Study of the embryo at various stages of in cubationin vivo by making·awindow opening in egg.

(iv) Study of various foetal envelopes in a 12 day old chick embryo.

Suggestive Readings:

1 S. Lal, Practical Zoology Vertebrate , Rastogi Publications.

2 O.P. Jangir, Developmental Biology: A Manual, CBC publishers and distributors pvt ltd, 2002

24BIMH5204T:Discrete Mathematics & Vector Calculus

Credits:3L+0T+1P **Marks:100**

Periods per week: 5 **C1+C2=30**

Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note: Continuous assessment (internal) will be done by the teacher concerned based on test papers, regularity in the class, and performance of the candidate. The maximum marks in continuous assessment of the paper are 100 (Theory 70 Marks + Internal Assessment 30 Marks). Minor paper is offered as an additional subject for bio students.

Learning Objectives

The course aims to introduce concepts and techniques of modern Mathematics which should serve as a preparation form or advanced quantitative courses.

Learning outcomes

Upon completion of the course, students should be able to:

- To understand the ideas in discrete structures viz. partially ordered sets, Lattices, Graphs, etc., and allied conceptual intricacies with applications.
- Understand the concept of vector calculus viz. operators, and vector integration.

Unit I

Relations on a set, Equivalence class, partial order relations, Chains, and Anti-chains. Lattices, Distributive and Complemented Lattices. Boolean algebra, conjunctive normal form, disjunctive normal form. Pigeon hole principle. Principle of inclusion and exclusion. Propositional calculus, Basic logical operations, Truth tables, Tautologies, and contradictions.

Unit II

Discrete numeric functions, Generating functions, Recurrence relations, linear recurrence relation with constant coefficients and their solutions, Total solutions, and Solutions by the method of generating functions. Basic concepts of graph theory, Types of graphs, Planar graphs, Walks, Paths & Circuits, Shortest path problems.

Unit III

Planar graphs, Operations on graphs (union, join, products). Matrix representation of graphs, Adjacency matrices, Incidence matrices. Hamiltonian and Eulerian graphs. Tree, Spanning tree, Minimum spanning tree, Distance between vertices, Center of tree, Binary tree, Rooted tree.

Unit IV

Scalar and Vector point functions. Differentiation of vector point functions Directional derivative. Differential operators. Gradient, Divergence, and Curl. Integration of vector point functions. Line, Surface, and Volume integral, Theorems of Gauss, Green, and Stokes (without proof) and problems based on these theorems.

Suggestive Readings:

1 J. P. Saini, S. K. Sharma & Rakesh Kumar, Discrete Mathematics & Vector Calculus, N.K. Publication Jaipur.

2 V. K. Bala Krishnan, Introductory Discrete Mathematics, Prentice-Hall, 1996.

3 N. Deo, Graph Theory with Applications to Computer Science, Prentice-Hall of India.

4 C.L. Liu, Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, 1986.

5 Kenneth H. Rosen, Discrete Mathematics and Its Applications, Tata Mc-Graw Hills, New Delhi, 2003.

24BIMH5204P: PRACTICAL

NOTE:- The practical / lab work is to be performed by using computer language C& C+.

PART -A

1 Find the vertices,even vertices ,odd verticesa, and number of edges graphs and directed graphs .

2. find the union , intersection, ring sum , product, and cartisian product of two graphs .
3. find the solution to the traveling sales man problem .

NOTE:- The practical / lab work is to be performed by using computer language C& C+.

PART- B

1. Find the shortest path between two vertices using the Dijkstra algorithm .
2. Find the minimum spanning tree using prim's algorithm.
3. Find the minimum spanning tree using kruskal 's algorithm

Suggestive Readings:

1. N. Deo. Graph Therory with Applications to Computer Science, Prentice-Holl of India
2. C. L. Liu, Elements of discrete Mathematics, (Second Edition), McGraw Hill, International Edition, 1986.

24BIPH5205T:Electro magnetism

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report /Seminar/Quiz (at the end of fifteen week).

Learning Objectives: The objective of the course is to provide students with a comprehensive understanding of the fundamental concepts of electromagnetism. The course aims to develop their knowledge and skills in analyzing and solving problems related to Electromagnetism, using appropriate mathematical formalism and physical concepts.

Learning outcomes

Uponcompletionofthecourse,students should be able to understand the concepts of scalar and vector fields with different theorems. They can understand the Concept of electric field, electric field in matter, magnetostatics and magnetic field in matter and also about the electromagnetic wave spectrum with the propogation of electromagnetic waves in different mediums.

Unit I

Scalar and Vector Fields: Concept of Field, Scalar and Vector Fields, Gradient of scalar field, Physical significance and formalism of Gradient, Divergence and Curl of a vector field Cartesian co-ordinates system, Problems based on Gradient, Divergence and curl operators. Concept of Solid angle, Gauss divergence and Stoke's theorem. Gauss law from inverse square law. Differential form of Gauss law.

Electric Field and Potential Energy: Invariance of Charge, Potential energy of system of (i) Discrete N-charges (ii) Continuous charge distribution Energy required to built a uniformly charged sphere, classical radius of electron, Electric field due to a short electric dipole, Interaction of electric dipole with external uniform and non uniform electric field, potential due to a uniformly charged spherical shell.

Poisson's and Laplace equations in Cartesian co-ordinates and their applications to solve the problems of electrostatics.

Unit II

Electric field in matter: Multipole expansion, definition of moments of charge distribution, Dielectrics, Induced dipole moments, polar non polar molecules, Free and bound charges, Polarization, Atomic polarizabilty, electric displacement vector, electric susceptibility, dielectric constant, relation between them.

Electric potential and electric field due to a uniformly polarized sphere (1) outside the sphere (8)

at the surface of the sphere (m) inside the sphere, Electric field due to a dielectric sphere placed in a uniform electric field (a) outside the sphere (b) inside the sphere, Electric field due to a charge placed in dielectric medium and Gauss law, Clausius-Mossotti relation in dielectrics

Unit III

Magnetostatics and Magnetic field in matter: Lorentz force, properties of magnetic field, Ampere's law, field due to a current carrying Solid conducting cylinder (a) outside (b) at the surface and (i) inside the cylinder. Ampere's law in differential form, Introduction of Magnetic Vector potential, Poisson's equation for vector potential, Deduction of Bio-Savart law using Magnetic Vector potentials, Differential form of Ampere's law.

Atomic magnet, Gyromagnetic ratio, Bohr-mgneton Larmor frequency, induced magnetic moment and dia- magnetism, spin magnetic moment, para and ferro magnetism,
Intensity of magnetization, Magnetic permeability and Susceptibility, free and bound current densities, Magnetic field due to a uniformly magnetized material and Non- uniformly magnetized material.

Unit IV

Maxwell's Equations and Electromagnetic Waves Displacement current, Maxwell's Equations, Electromagnetic waves, Electromagnetic waves in an Isotropic and Dispersive medium, Properties of electromagnetic waves, Energy density of Electromagnetic waves, Pointing vector, Radiation pressure of free space, Electromagnetic waves in Dispersive medium, Spectrum of Electromagnetic waves.

Reference Books:

1 Electricity & Magnetism: A.S. Mahajan & Abbas A. Rangwala, Tata McGraw-Hill
2 Introduction to electrodynamics- David J. Griffith, Prentice Hall
3 Berkley Physics Course, Vol-II, Edward M. Purcell
4 Fundamental University Physics Vol II: Fields and waves, M.alonso and E.J. Finn, Addison-Wesley Publishing Company

24BIPH5205P: Practical

1. To study the Faraday's law of electromagnetic induction
2. To Study the variation of power transfer by two different loads by a D.C. source and to verify the maximum power transfer theorem.
3. To study the variation of charge and current in an RC circuit with a different time constant (Using a DC source)
4. To study the behavior of an RC circuit with varying resistance and capacitance AC mains as a power source and also to determine the impendence and phase relations
5. To study the rise and decay of current in an LR circuit with a source of constant emf
6. To study the voltage and current behavior of an LR circuit with an AC power source. Also determine power factor, impedance and phase relations.
7. To study the magnetic field along the axis of a current-carrying circular coil. Plot the necessary graph and hence find the radius of circular coil.
8. To study the frequency response of a series LCR series circuit and to estimate the resonant frequency and to find the radius of the circular coil.
9. To study the frequency response and to find resonant frequencies of LCR parallel circuits. Also to find the quality factor and band width.
10. To determine the specific resistance of a material and determine the difference between two small resistance using carey foster bridge
11. To convert a galvanometer in to an ammeter of a given range.
12. To convert a galvanometer in to voltmeter of a given range

24BIEC5206T:Indian Economics

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3+=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

C1:WrittenTest as per schedule (at the end of 8th week)

C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar /Quiz (at the end of fifteen week).

Learning Objectives:

The objective of the course is to provide students with a comprehensive understanding of the fundamental concepts of electromagnetism. The course aims to develop their knowledge and skills in analyzing and solving problems related to Electromagnetism, using appropriate mathematical formalism and physical concepts.

Learning outcomes

Uponcompletionofthecourse,students shouldbe ableto understand the concepts of scalar and vector fields with different theorems. They can understand the Concept of electric field, electric field in matter, magnetostatics and magnetic field in matter and also about the electromagnetic wave spectrum with the propogation of electromagnetic waves in different mediums.

Unit-I

Basic Features and Present Position of Indian Economy, Natural Resources. Population: Demographical features and Major trends, Concept of Population Dividend, Population Policy, Human Resource Development Indicators. National Income in India: Trends and Composition.

Unit -II

Agriculture: Role and Importance of Agriculture in the Indian Economy, Land Reforms. Growth of Modern Inputs: irrigation, HYP, Fertilizers, Institutional Credits And Microfinance, Concept of Crop Insurance Marketing of Agricultural Goods: Supportive Price, Public Distribution System and Food Security. Services Sectors in India: IT, Health and Education.

Unit -III

Industry: Role Strategy and Challenges. Growth of MSMEs. Public and Private sector Industries. Industrial Finance. Industrial Policy of 1991, New Economic Policy and Disinvestment. Foreign direct Investment.

IVPlanning of India: Objectives and Achievements, NITI Aayog, National Development agenda.

Sectoral Reforms in Infrastructure after 1991. Problems and Solutions: Poverty, Unemployment, Inflation and Regional Inequalities. Rural development Programmes and Policy.

Suggested Readings:

- Economic Survey (Latest Ed), Ministry of Finance, Government of India (Hindi and English).
- Laxmi Narayan Nathuramka: Bhartiya Arthshastra, College Book House (Latest Ed.)
- Mishra and Puri: Indian Economy, Himalaya Publishing House (Latest Ed.) (Hindi and English).
- Rudra Dutt and Sundaram: Indian Economy. S. Chand (Latest Ed.) (Hindi and English).
- Uma Kapila: Indian Economy, Academic Foundation (Latest Ed).

Suggested Continuous Evaluation Methods:
Assignment/Test/Quiz(MCQ)/Seminar/Presentations/Research orientation of students.

24BIGE5207T:Physical Geography-II (Climatology and Oceanography)

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:

C1:Written Test as per schedule (at the end of 8th week)

C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report Seminar/Quiz (at the end of fifteen week).

Learning Objectives

This is a conceptual course which lays Foundation of the fundamentals of Climatology and Oceanography, the two sub-branches of Physical Geography. This paper is important for developing concepts about various climatic patterns and oceanic circulation.

Learning outcomes

- To make students understand the basics of climatic phenomena and ocean characteristics.
- To develop understanding of ocean water dynamics and climatic circulations.
- To develop understanding of the impact of climatic phenomenon on human activities and importance of oceanic resources.
- To make familiar with contemporary climatic issues.
- To cover basic contents for various competitive examinations such as civil services, UGC NET-JRF, state level PSC exams and so on.

Unit I

Composition and Structure of Atmosphere. Insolation and Heat Budget. Distribution of Atmospheric Temperature. Atmospheric Pressure; Pressure belts and Wind Circulation. Planetary, Periodic and Local Winds.

Unit II

Atmospheric moisture: Types of Humidity. Process of Cloud Formation. Types of Clouds. Types of Precipitation. Distribution of Rainfall. Air Masses and Fronts. Cyclones- Tropical and Temperate Cyclones. Climatic Classification by Koppen and Thornthwaite. Contemporary issues; Climate Change, Global Warming, Acid Rain, Urban Heat Island.

Unit III

Nature and scope of Oceanography. Ocean Bottom Reliefs; Indian, Atlantic and Pacific Oceans. Ocean Temperature Distribution. Ocean Salinity; Sources, Controlling Factors and Distribution. Ocean Deposits.

Unit IV

Ocean Currents; Influencing Factors, Types and Impacts. Tides; Factors and Types. Theories of origin of Tides (Equilibrium, Progressive Wave and Stationary Wave Theories). Coral reefs; Conditions of Growth and Types. Theories of Darwin, Murray and Daly. Oceans Resources and Blue Economy.

Reference Books:

1 सिंह सविद्र) 2016 :(जलवायु विज्ञान ,प्रवालिका प्रकाशन ,इलाहाबाद।
2 सिंह सविद्र)2018(: समुद्र विज्ञान ,प्रवालिका प्रकाशन ,इलाहाबाद।
3 लालडी .एस :(2022) .जलवायु विज्ञान ,शारदा पुस्तक भवन ,प्रयागराज।
4 लालडी .एस :(2012)जलवायु विज्ञान एंव समुद्र विज्ञान ,शारदापुस्तकभवन ,प्रयागराज।
5 खुल्लरडी .आर :(2022) .भौतिक भूगोल ,कल्याणीप्रकाशन ,नईदिल्ली।
6 सिंह सविद्र)2018 :(भौतिक भूगोल का स्वरूप ,प्रवालिकाप्रकाशन ,इलाहाबाद।
7 Khullar D.R. (2018): Physical Geography, Kalayani Publishers, New Delhi.
8 Strahler, A.N. and Strahler, A.H. (1989): Elements of Physical Geography. John Wiley & Sons, New York.
9 Hussain, M. (2021): Fundamentals of Physical Geography, Rawat Publication, Jaipur.
10 Critchfield H.J. (2009): General Climatology, Prentice Hall, Landon.
11 Sharma R.C. and Vatal M. (2018): Oceanography for Geographers, Surjeet Publications, New Delhi.

24BIGE5207P:Practical

Unit I

Methods of Relief Representations; Hachure, Hill shading, Spot Height, Bench Mark, Trigonometric Stations, Form Lines and Contour Lines.

Principles of Contouring. Interpolation Method. Composite Methods of Relief Representation.

Unit II

Representation of Relief by Contours; Conical Hill, Concave Slope, Convex Slope, Escarpment, Cliff, Ridge, Gorge, 'U' Shaped Valley, 'V' Shaped Valley, Plateau, Waterfall, Ox-Bow Lake, Ria Coast, Fiord Coast.

Drawing Profiles; Serial, Superimposed, Projected and Composite profiles.

Unit III

Weather Instruments; Thermometers, Barometers, Rain Guage. Introduction to Weather Maps. Weather Symbols.Interpretation of Weather Maps.

Reference Books:

1 शर्माजे .पी :(2023).प्रायोगिकभूगोल ,रस्तोगीपब्लिकेशन ,मेरठ।
2 खुल्लर ,डी .आर :(2022) .प्रयोगात्मकभूगोल ,कल्याणीप्रकाशन ,नईदिल्ली।
3 भल्लाएल .आर : (2017) .प्रायोगिकभूगोलकेमूलतत्व ,सलोनीऑफसेट ,जयपुर।
4 Singh, L.R.)2010(: Fundamentals of Practical Geography,Sharda Pustak Bhawan, Allahabad.
5 Mishra, R. N. and Sharma, P. K.)2022(: Practical Geography, PareekPublication,
6 Singh, R.L. and Singh Rana P.B. 1991: Elements of Practical Geography. Kalyani Publishers, New Delhi.

24BIHI5208T: History of India (From750CEto1707CE)

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives: The objective of the course is to provide students with a comprehensive understanding of the fundamental concepts of electromagnetism. The course aims to develop their knowledge and skills in analyzing and solving problems related to Electromagnetism, using appropriate mathematical formalism and physical concepts.

Learning outcomes

Upon completion of the course, students shouldbe ableto understand the concepts of scalar and vector fields with different theorems. They can understand the Concept of electric field, electric field in matter, magnetostatics and magnetic field in matter and also about the electromagnetic wave spectrum with the propogation of electromagnetic waves in different mediums.

Unit I

A. Sources: Literary, Archaeological, Archival. Foreign Travelers.
B. Concept of Early Medieval India.
C. Gurjara-Pratiharas, Palasand Rashtrakutas: Tripartite Struggle.
D. Arab Invasions and Indian Resistance.
E. Invasions of Mahmood Ghazanavi & Muhammad Gori and their Impact.

Unit II

A. Foundation and Consolidation of the Delhi Sultanate: Aibak, Iltutamish, Razia and Balban.
B. Alauddin Khilji: Conquest, Administrative and Economic reforms.
C. Sultanate Under Mohammad-bin-Tughlaq and Feroz Shah Tughlaq and Ibrahim Lodi
D. Sultanate Administration: Theory of King ship, Iqta System.
E. Society and Economy during Sultanate Period.
Emergence of Regional Empires: Vijaynagar and Bahmani.

Unit III

A. Establishment of the Mughal Empire: Baburand Humayun.
B. The Second Afghan Empire: Administration of Sher Shah Suri.

C. Expansion and Consolidation of the Mughal Empireunder Akbar.
D. Mughal Empire under Jahangir and Shahjahan.
E. Mughal Empire under Aurangzeb: Religious Policy.
Decline and Disintegration of the Mughal Empire.

Unit IV

A. Ruling Dynasties of Rajput Statesand Assam: Special Reference to Maharana Pratap, Maharana Rajsingh, Rao Chandrasen, Lachit Borphukan.
B. Rise of Maratha Power and Maratha Confederacy: Shivaji and his Conquests. Concept of Hindu Pad Padshahi.
C. Resistance of Sikhsand Jats.
D. Nature of Mughal State: Administrative Structure, Land Revenue System, Mansabdari system.
E. Social Classes: Ulema, Nobility, Zamindars. Status of Women.
F. Agriculture, Trade and Commerce.
G. Art, Architecture and Literatureduring Medieval Period.
Composite Culture: Bhakti and Sufi Movement.

Suggestive Readings:

- Mahajan V.D., History of Medieval India, S.Chand & Co, NewDelhi.
- Majumdar R.C., Bharat ka Itihas Evam Sanskriti, Bhartiya Vidya Bhavan, Bombay. (Hindi)
- Mahajan V.D., Madhyakalin Bharat ka Itihas, S.Chand and Company Limited, Delhi. (Hindi)
- Om Prakash, Bhartiya Sabhyata ka Itihas, New Age International(P) Limited Publications, NewDelhi. (Hindi)
- Singh Upinder, A History of Ancient and Early Medieval India, Pearson Longman, Delhi 2009.
- Singh Upinder, Rethinking Early Medieval India: A Reader, Oxford India Paper backs, NewDelhi.
- Chandra Satish, Medieval Indian History: Politics,Society & Culture, Orient Blackswan, NewDelhi.
- Khurana K.L., Medieval Indian History, Laxmi Narayan Agarwal, Agra.
- NandaS.P.,HistoryofMedievalIndia,DominantPublishers,NewDelhi.
- Shrivastava A.L., History of India 1000-1707, Shiv lal Agarwal & Co.Agra
- Singh Upinder, Prachin Evam Pooev Madhyakalin Bharat KaItihas (Prarambh se1300Isvi Tak), Pearson Longman, Delhi. (Hindi)
- Thapar Romila, Poorva Kalik Bharat (Prarambhse1300Isvi Tak), PenguinBooks, Delhi. (Hindi)
- Verma Harishchandra, Madhyakalin Bharat, Hindi Madhyam Karyanvayan Nideshalay, Dilli Vishvavidyalay, New Delhi (Hindi)
- Chandra Satish, Madhyakalin Bharat (1206se1526), Jawahar Publishers and Distributers, NewDelhi (Hindi)
- Chandra Satish, Madhya kalin Bharat(1526se1761), Jawahar Publishers and Distributers, NewDelhi(Hindi)
- Shrivastav A.L., Dilli Saltanat, Shivlal Agrawal and Company, Agra(Hindi)
- Shrivastav A.L., Mughalkalin Bharat, Shivlal Agrawaland Company, Agra(Hindi)
- Sharma L.P., Madhyakalin Bharat, Shrivastav. Lakshminarayan Agrawal and Agra(Hindi)

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

- **Note:**
- C1:Written Test as per schedule (at the end of 8th week)
- C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/ Quiz (attheendoffifteenweek).

Learning Objectives

- To understand basic concepts of food, nutrition and their related terms
- To study the functions, requirement& deficiency of macro & micronutrients in the human body.
- To examine the difference between weights & measures of raw & cooked foods.
  To gain knowledge on nutritional contribution of various foods and principles involved in its cooking

Unit I

Basic terms used in study of food and nutrition. Understanding relationship between food, nutrition and health. Classification of food Functions of food- physiological, psychological and social.

Unit II

Classification, Functions, dietary sources, daily requirement and clinical manifestations in deficiency/excess of the following nutrients: Carbohydrates, Proteins and Lipids Fat soluble vitamins- A, D, E and K Water soluble vitamins-Thiamin, Riboflavin, Niacin, Folate, Vitamin B12 and Vitamin C, Minerals- Calcium, Iron, Zinc and Iodine.

Unit III

Nutritional contribution and changes during cooking of the following food groups:

Cereal, Pulses, Fruits and vegetables, Milk & milk products, Meat, poultry and fish

Unit IV

Methods of cooking-Dry, moist, frying and microwave cooking-their advantages and disadvantages. Enhancing the nutritional quality of foods-Supplementation, germination, fermentation, fortification and GM foods.

Suggestive Readings:

1. Sri lakshmi (2007) .Food science .4thedition. New age international Ltd.
2. Swaminathan,M. -Essentials of Food and Nutrition. Ganesh and Company
3. Bamji MS, Krishna swamy K.Brahman GNV(2009). Textbook of Human Nutrition3rdedition. Oxford and IBH publish Co Pvt Ltd.
4. Wardlawandinsel MGInsel PM (2004).Perspectives in Nutrition's sixth edition Mosby.
5. Chadha R and Mathur P(eds) Nutrition: a life cycle approach. Orient Blackswan, New Delhi. 2015
6. KhannaK, GuptaS, SethR, Mahhna R, RekhiT(2004). The art and science of cooking; a practical manual revised edition elite publishing house pvt Ltd.
7. Raina U.Kashyap S, NarulaV, Thomas S, Suvira,VirS, Chopra S(2010).Basic food preparation -A complete manual, fourth edition. Orient black swan Ltd.

24BIHS5209P:Practical

1. Weights and measures- Raw and Cooked food (Rice, dal, chapatti, egg, seasonal vegetables)
2. Understanding the principles of cooking involved and nutritional quality of following foods

a. Cereals: Boiled rice, pulao, chapatti, paratha, puri, pastas
b. Pulses: whole, dehusked
c. Vegetables: curries, dry preparations
d. Milk and milk products: Kheer, custard

3. Understanding the principles of cooking involved and nutritional quality of the following foods.

a. Baked products: Biscuits, cookies, cakes, tarts and pies
b. Snacks: pakoras, cutlets, samosas, upma, poha, and sandwiches
c. Salads: salads and salad dressings.
d. Fermented products : Idli, dosa, appam, kulcha, dhokla etc.

24BIPY5210T: Western Philosophy

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3 hours **C3 =70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

- Upon completion of the course, students should be able to:

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives:

The objective of the course is to provide students with a comprehensive understanding of the fundamental concepts of electromagnetism. The course aims to develop their knowledge and skills in analyzing and solving problems related to Electromagnetism, using appropriate mathematical formalism and physical concepts.

Learning outcomes

Upon completion of the course,students should be able to understand the concepts of scalar and vector fields with different theorems. They can understand the Concept of electric field, electric field in matter, magnetostatics and magnetic field in matter and also about the electromagnetic wave spectrum with the propogation of electromagnetic waves in different mediums.

Unit I

Platoand Aristotle: Ideas, Substance, Formand Matter, Causation, Actuality and Potentiality Descartes: Cartesian method of doubt, *cogitoergosum*, criterionoftruth, typesofideas, Proofs for the existence of God, Mind-body relation: Interactionism

Unit II

Spinoza: Doctrine of substance, attributes and modes, Existence of God, Pantheism, Parallelism Leibnitz: Monads, Truth of reason, Truth off acts, Innateness of ideas, Doctrine of pre-established harmony

Unit III

Locke: Refutation of innate ideas, the origin and formation of ideas, simple and complex ideas, substance, modes and relations, nature of knowledge and its degrees, limits of knowledge, primary and secondary qualities. Berkeley: Refutation of abstract ideas, criticism of locke's distinction. Between primary and secondary qualities, Immaterialism, *esseestpercipi*, role of God

Unit IV

Hume: Impression and Ideas, distinction between judgements concerning relations of ideas and judgements concerning matters of fact, theory of causality, theory of self and personal identity, Scepticism. Kant: Conception of critical Philosophy, distinction between *a priori* and *aposteriori* judgements, distinction between analytical and synthetic judgements, Possibility of synthetic *apriori* judgements, Copernican revolution. Between primary and secondary qualities, Immaterialism, *esseestpercipi*, role of God

Reference Books:

1. Connor,D.J.O.,"A Critical History of Western Philosophy", Free Press, Parent Company Simonand Schuster, NewYork,1985.
2. Ewing,A.C.,"The Fundamental Question of Philosophy",Routledge and Kegan Paul Ltd., NewYork, 2012.
3. Falckenberg, R., "History of Modern Philosophy", Create Space Independent Publishing Platform, Scotts Valley, Carolina,2015.

4. Kenny, Anthony,"A New History of Western Philosophy", Oxford University Press, Oxford, 1985.
5. Masih,Y.,"A Critical History of Western Philosophy(Greek, Medieval, Modern)",Motilal Banarasidass Publication Pvt.Ltd., NewDelhi, 2017.
6. Russel, Bertrand,"History of Philosophy",Routledge, NewYork, 2004.
7. Scruton,R,"A Short History of Modern Philosophy fromDescartestoWittgenstein",Routledge Publishers,Pustak Mahal,NewDelhi,2001.
8. Srivastava,J.S.,"Adhunik DarshankaVaijñānik Itihas",KitabMahal,Allahabad,2012.
9. Sharma,Chandradhar,"Pashchatya Darshan",Motilal Banarasidass,Delhi,1998.
10. Thilly,F.,"AHistoryofPhilosophy",SBW Publishers, New Delhi,2018.
11. Upadhyaya, Harishankar,"Pashchatya Darshanka Udbhavaur Vikas",Anusheelan Prakashan, Allahabad,2004.
12. Wright,W.K.,"A History of Modern Philosophy",Macmillan Company, Mumbai, 1952.

24BIPO5211T: Political Theory & Concepts

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives: The objective of the course is to provide students with a comprehensive understanding of the fundamental concepts of electromagnetism. The course aims to develop their knowledge and skills in analyzing and solving problems related to Electromagnetism, using appropriate mathematical formalism and physical concepts.

Learning outcomes

Upon completion of the course, students should be able to understand the concepts of scalar and vector fields with different theorems. They can understand the Concept of electric field, electric field in matter, magnetostatics and magnetic field in matter and also about the electromagnetic wave spectrum with the propogation of electromagnetic waves in different mediums.

Unit I

Political Science: Definition, Nature, Scope, Methods And Relations With Other Social Sciences
Traditional approaches: Institutional, Historical, Sociological, Philosophical or Normative.
Modern Approaches: Behaviouralism, Post Behaviouralism.

Unit II

State: Definition and Elements, Origin theories: Divine theory, Force theory, Social Contract, Evolutionary theory and Marxists theory, Functions of state: Idealistic theory, Liberal theory,

Socialist theory and Welfare theory Sovereignty: Monism and Pluralism. Law: Definition: Source, Classification. Punishment: Theories of punishment

Unit III

Liberty, Equality, Justice, Power, Influence, Authority, Legitimacy. Obligation, Rights, Duties, Idealism, Liberalism, Anarchism, Socialism, Capitalism, Imperialism,, Nationalism,, Globalization

Unit IV

Parliamentary vs Presidential System, Federal vs Unitary System Organs of Govt: Executive, Legislature, Judiciary. Constitution, Constitutionalism Democracy. Total itarianism, Public Opinion, Social Justice, Decentralization, Theories of Representation

Suggestive Readings:

1 AC Kapoor, Principles of political science
2 Eddy Ashirwatham, political theory, S Chand Delhi, 2009
3 JC Johari, Modern political theory.
4 CEM Joad, introduction to modern political theory.
5 R.C Aggarwal, Political Theory, S Chand
6 Appadorai, Substance of Politics, OUP, Delhi 2000
7 Bhargav & A. Acharya, Political theory, and introduction, pearson 2008
8 Amal Ray & Mohit Bhattacharya, Political Theory: An introduction, Pearson 2008 New Delhi
9 R.G. Aggarwal, Political Therory, S.Chand 2001 New Delhi..
10 O.P. Gauba, An introduction to political Theory, Macmillan 2001 New Delhi.
11 R.G. Aggarwal, Political Therory, S.Chand 2001 New Delhi..
12 J.C. Johri, AdhunikRajniti VigyankeSiddhant, Sterling Publication Pvt. Ltd. 1992, New Delhi
13 Eddy Ashirvatham, Political theory, S. Chand 2009 New Delhi.
14 RG Gettel. Political Science
15 David Held, Political Theory and the modern state: Essays on state, power and democracy 1989.
16 Andrew Heywood, Politics, Macmillan 2002

24BIPA5212T:Public Administration in India

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives

Modern Indian administration initiates its journey through legacy of British colonialism. In fact, there has been a wider acknowledgement that the practices of Indian

administration date back to Kautilya's era. Hence the paper seeks to introduce to students the historical roots of Indian administration and its relationship with accountability, welfare, and well-being of the society. Secondly it deals with how the commencement of modern bureaucracy and its intersection with political structure must be analysed.

Learning outcomes

After the completion of the course, the student will be able to

1. identify the historical roots of modern Indian bureaucracy and the complexities associated with its functioning as an independent organ of the government.
2. understand working of the Ministries and Other organisations.
3. understand the financial administration and the administrative reforms in India

Unit I

Historical background of Indian Administration with special reference to Govt. of India Acts of 1909, 1919 and 1935, Salient features of Indian Administration. Parliamentary Democracy, Federalism and Democratic Socialism.

- The Union Executive: The President, Prime Minister and Council of Ministers. the Organization and Functions of the following :Central Secretariat, Cabinet Secretariat, Prime Minister's Office (PMO), Ministry of Finance, Ministry of Home Affairs (MoHA), Ministry of Education (MoE)

Unit II

Major Forms of Public Enterprises in India: Departments, Corporations, Companies, Parliamentary Committee on Public Undertakings (COPU), Public Private Partnership(PPP). Control Over Administration: Legislative, Executive & Judicial- Various Means and Limitations

Unit III

Financial Administration: Budget- Formulation, Approval and Execution. Types of Budgets: Performance Budgeting, Zero Base Budgeting and Gender Budgeting.Parliamentary Committees: Public Accounts Committee (PAC), Estimates Committee (EC). The Comptroller and Auditor General (CAG) of India.

Unit IV

Personnel Administration—Classification, Recruitment and Training of All India Services. Redressal of Citizens' Grievances: Lokpal and Lokayukta, Right to Information, Concept of E-Governance Administrative Reforms in India: First Administrative Reforms Commission (ARC-I), Second Administrative Reforms Commission (ARC-II) with special reference to 4th and 10th Report.

Suggestive Readings:

1. D.D. Basu: An Introduction to the Constitution of India
2. Ramesh Arora: Indian Public Administration
3. V.M. Sinha: Personnel Administration
4. P.D. Sharma & B.M. Sharma: Bhartiya Prashashan
5. Surendra Kataria: Bharat mein Lok Prashasan
6. B.L. Fadia: Bharat mein Lok Prashasan
7. Avasthi & Avasthi: Indian Administration (In Hindi also)
8. Surendra Kataria: Karmik Prashasan
9. S.R. Maheshwari: Indian Administration

10. C.P. Bhambhri: Public Administration in India
11. K.V. Rao: Parliamentary Democracy in India
12. Laxmi Narain: Principles and Practice of Public Enterprises Management
13. B.B. Mishra : Administrative History of India

Suggested E-Resources:

E-pgpathashala modules: -
1. www.inflibnet.ac.in
2. www.ignou.ac.in
3. www.sawayam.gov.in

24BISO5213T: Society in India

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3 hours **C3=70Marks**
Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

The objective of the paper is to develop basic understanding of Indian society and different approaches to sociological understanding of India society.

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Course Outcomes:
- Able to explain evolution of and approaches to India society.
- Able to demonstrate the understanding of few basic institutions of Indian society and process of changes.
- Able to be sensitized to the problems of weaker sections.

Unit I

Historical Evolution of Indian Society. Sociological Understanding of Indian Society - Textual View (G.S. Ghurye) & Field-View Tradition (M. N. Srinivas).

Unit II

Basic Institutions of Indian Society - Family, Marriage and Kinship: - Meaning, Forms, Issues, Continuity and Change. Caste and Class: - Meaning, Features, Continuity and Change.

Unit III

Processes of Social Change – Sanskritization, Westernization, Modernization, Globalization.

Unit IV

Weaker Sections of Indian Society – Scheduled Castes, Schedule Tribes and Backward classes - Problems and Remedies.

Suggestive Readings:

- Ahuja, Ram. 1998. Indian Social System. Jaipur: Rawat Publication. (In Hindi also).
- Bose, N.K. 1967. Culture and Society in India. Bombay: Asia Publishing House.
- Bose, N.K. 1975. Structure of Hindu Society. New Delhi.
- Dhanagre, D. N. 2011. Themes and Perspectives in Indian Sociology. Jaipur: Rawat Publications.
- Dube, S.C. 1990. Society in India. New Delhi: National Book Trus.t
- Gupta, Dipankar. (ed.) 2013. Social Stratification. New Delhi: OUP.
- Karve, Irawati. 1961. Hindu Society: An Interpretation. Poona: Deccan College.
- Mandelbaum, D.G. 1970 Society in India, Bombay: Popular Prakashan.
- Sharma,K.L. 1998. Indian Society. NCERT. (In Hindi also).
- Singh, Yogendra. 1973. Modernization of Indian Tradition. Delhi: Thomson Press.
- Srinivas, M.N. (ed.) 1963. India's Villages. Bombay: Asia Publishing House.
- Srinivas, M.N. 1980: India: Social Structure. New Delhi: Hindustan Publishing Corporation.
- Uberoi, Patricia, 1993: Family, kinship and Marriage in India, New Delhi: Oxford University Press.

24BIEN5214T:Prose and Fiction

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

C1:Written Test as per schedule (at the end of 8th week)

C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives

- Analyze the literary elements in selected essays and short stories from a diverse range of writings in English literature.
- Enhance critical thinking through class discussions, readings, and writing assignments focused on essays and short stories.
- Develop effective written communication skills to articulate interpretations, analysis, and insights on various essays and short stories.
- Understanding texts with specific reference to genres, forms and literary genres of poetry, drama, prose and fiction.
- To introduce essays a genre of literature and acquaint with important essayists and their style of writing
- To enhance comprehension through a close study of short stories and their narrative techniques and thematic concerns.

Learning outcomes

- Students will be able to evaluate thematic development, characters, and narrative techniques in essays and short stories from diverse literary periods.
- Students will apply literary theories and contexts to interpret essays and short stories, fostering a deeper appreciation of English literature.
- Students will compose analytical essays that showcase their understanding of literary works and the use of textual evidence to support their arguments.
- Students will participate in peer-to-peer discussions, presentations, and activities to improve their collaborative learning in analyzing essays and short stories from English literature.
- The student will be familiar with prose writing and techniques.
- They will be able to understand and analyse prose in relation to history, culture and theory.
- They will be empowered in conceptualizing and implementing the atrical projects.

Unit I

Francis Bacon: Of Truth; of Travel
Joseph Addition: Meditation in West Minister Abbey
Charles Lamb: Dream Children
R. L. Stevenson: El Dorado

Unit II

O. Henry: The Ransom of Red Chief
H. H. Munro (Saki): The Storyteller
Guy de Maupassant: The Necklace
R. K. Narayan: An Astrologer's Day
Earnest Hemingway: Old Man at the Bridge

Unit III

George Orwell: *Animal Farm*

Unit IV

Prose Appreciation
Report Writing

Suggestive Readings:

1 *English Prose Selections* (O.U. P.) ed. Dr. S. S. Deo
2 *The Art of the Essayist* By Lockiit C. H. (ed.)
3 *Popular Short Stories* ed. By Board of editors (O. U. P.)
4 *Malgudi Days* by R. K. Narayan Indian Thought Publications
5 *Effective English Communication*, Tata McGraw Hill, New Delhi
6 *English at Workplace* eds. Swwhey Pujara and Verma (Macmillan)
7 *Animal Farm* by George Orwell, OUP

24BIHI5215T: कथा साहित्य –हिन्दी कहानी एवं उपन्यास

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

उदेश्य (Objectives)

1 हिन्दी कहानी और उपन्यास के उद्भव एवं विकास के इतिहास की जानकारी प्रदान करना।
2 प्राचीन कहानी कला और आधुनिक कहानी कला के ज्ञान में अभिवृद्धि करना।
3 कथा साहित्य के तत्त्वों एवं उनके महत्त्व की जानकारी प्रदान करना।
4 तत्कालीन परिवेश और संस्कृति की जानकारी प्रदान करना।
5 प्रमुख उपन्यासकार एवं उनके उपन्यासों से परिचित कराना।
6 कहानी के विभिन्न प्रकार एवं उनकी विशिष्टताओं से अवगत कराना।
7 प्रमुख कहानीकार एवं उनकी कहानियों के माध्यम से विभिन्न संवेदनाओं का विकास करना।

अधिगम प्रतिफल (Learning Outcomes)

1 कहानी के विभिन्न प्रकार जैसे – आंचलिक, मनौवैज्ञानिक, सामाजिक, राजनीतिक, धार्मिक एवं पौराणिक कहानियों की पहचान करना सीख सकेंगें।
2 विभिन्न कहानी एवं उपन्यासों के माध्यम से विद्यार्थियों में मानवीय संवेदनाएं एवं मूल्यों का विकास हो सकेगा।
3 विभिन्न उपन्यासकार एवं प्रमुख कहानीकारों के प्रति सम्मान एवं आदर की भावना का विकास हो सकेगा।
4 कहानी कला के क्षेत्र में शोध के नवीन आयाम खुल सकेंगें।
5 कहानी लेखन के प्रति अभिरूचि का विकास हो सकेगा।

पाठ्यक्रम

इकाई I

हिंदी कहानीः हिंदी कहानी का उद्भव एवं विकास, विभिन्न कहानी आंदोलन एवं कहानीकार तथा प्रमुख हिंदी कहानियां।

हिंदी उपन्यासः भारतीय उपन्यास की अवधारणा प्रेमचंद पूर्व उपन्यास, प्रेमचंद एवं उनका युग प्रेमचंदोत्तर उपन्यासकार एवं प्रमुख उपन्यास।

इकाई II कहानियां–

माधव राव सप्रे – एक टोकरी भर मिट्टी
चंद्रधर शर्मा गुलेरी – उसने कहा था
सुदर्शन – हार की जीत
जयशंकर प्रसाद – आकाशदीप
प्रेमचंद – कफन

इकाई III कहानियां–

जैनेन्द्र कुमार – पाजेब
भीष्म साहनी – चीफ की दावत
शेखर जोशी – कोसी का घटवार
उषा प्रियवंदा – वापसी
धर्मवीर भारती – गुल की बन्नो

इकाई IV

उपन्यासः आपका बंटी – मन्नू भंडारी

सहायक पुस्तकें –

1. हिन्दी कहानीः उद्भव और विकास – डॉ. सुरेश सिन्हा, अशोक प्रकाशन, नई सड़क, दिल्ली–6
2. प्रेमचंद और उनका युग – रामविलास शर्मा
3. हिन्दी कहानियों की शिल्प विधि का विकास – लक्ष्मी नारायण लाल
4. कहानीः स्वरूप और संवेदना – राजेन्द्र यादव
5 उपन्यासकार प्रेमचंद – डॉ. सुरेश चंद्र गुप्ता
6 आज का हिन्दी उपन्यास – डॉ. इन्द्रनाथ मदान

24BISA5216T:भारतीय संस्कृति के तत्व, पद्य साहित्य एवं व्याकरण

Credits:3L+0T+1P
Periods per week: 5
Examination:3hours

Marks:100
C1+C2=30
C3=70Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

अधिगम उद्देश्य

- भारत के अतीत एवं संस्कृति का ज्ञान।
- संस्कृत काव्य का ज्ञान।
- संस्कृत काव्यों का अर्थ ग्रहण एवं आचरण में अनुप्रयोग।
- संस्कृत व्याकरण का अवबोध एवं अनुप्रयोग।
- हिन्दी एवं संस्कृत का अनुवादात्मक ज्ञान।

अधिगम परिणाम

- छात्रों की सांस्कृतिक एवं नैतिक समृद्धि।
- प्राचीन मान्यताओं के प्रति अभिरुचि।
- पद्य काव्यों का अवबोध।
- पद्य काव्यों से नैतिक ज्ञान।
- भाषा शिक्षण एवं अनुवाद ज्ञान।
- व्याकरण अनुप्रयोग।

पाठ्यक्रम

- **इकाई प्रथम– भारतीय संस्कृति के तत्त्व**

क– भारतीय संस्कृति विषय, पृष्ठभूमि, विशेषताएँ।
ख– भारतीय संस्कृति के विकास की रूपरेखा–पूर्ववैदिक काल, वैदिकोत्तरकाल मध्यकाल एवं आधुनिक काल।
ग– प्राचीनकाल– राजनैतिक, सामाजिक एवं आर्थिक स्थिति।
घ– वर्ण, आश्रम, एवं संस्कार।
ड– शिक्षा (वैदिककाल से लेकर 7 वी शताब्दी तक)
च– लेखन–कला की उत्पत्ति।
छ– भारतीय दर्शन की प्रमुख विचारधाराएँ।
ज– भारतीय संस्कृति का मानव–कल्याण में योगदान

- **इकाई द्वितीय** – किरातार्जुनीयम् (प्रथम सर्ग) भारविकृत
- **इकाई तृतीय** – लघुसिद्धान्तकौमुदी (संज्ञा एवं संधि प्रकरण)
- **इकाई चतुर्थ** – प्रत्यय –क्त्वा,ल्यप्, तुमुन् क्त, क्तवतु, शतृ, शानच्, तव्यत्, अनीयर्, ण्वुल् तृच्, इनि, मतुप्।

सहायक पुस्तकें

- भारतीय संस्कृति के मूल तत्त्व – डॉ श्रीकृष्ण ओझा।
- किरातार्जुनीयम् – डॉ. सुधाकर मालवीय, चौखंबा कृष्ण दास अकादमी वाराणसी।
- लघुसिद्धान्तकौमुदी – डॉ. अर्कनाथ चौधरी,आयुर्वेद संस्कृत हिंदी भंडार,जयपुर

24BIPE5217T:History and Foundation Of Physical Education-II

Credits:3L+0T+1P
Periods per week: 5
Examination:3 hours
Marks:100
C1+C2=10
C3+C4=90Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning outcomes

After successfully completing this course, the student will be able to:-

1. Knowing the history of games givenig Puraans and Scriptures and experimenting in games.
2. Acquire knowledge of particular historical context.
3. Knowledge about sports awards, sports associations, popular personalities of sports.

Unit I

History of Olympic Games.

Modern Olympic Games.

Objective of Olympic Games, Motoand Flag of Olympic, Charter of opening & Closing.

Indian Olympic Association. Indian Sports Awards:- Arjun Award, Dronacharya Award, Maulana Abdul Kalaam Azad Trophy, Major Dhyan Chandaward, Guru Vashisth award

Unit II

- Contribution of the Growth of Physical Education by leader's movements.
- All India Council of Sports.
- National Physical Efficiency Drive.
- Turnverein Movement.
- Y.M.C.A. and its Contribution.
- Contribution of personalities in the field of sports in India by:- G.D.Sondhi, Rajkumari Amrit Kaur, Dr.P.M.Joseph, Shri H.C.Buck, Prof. Karan Singh, Ajmer Singh
- Sports Tournaments:- Asia Games, S.A.F. Games, National Games, Paralympic games

Unit III

- ***Physiological Foundation- Respiratory System, Circulatory System, Muscles type of Muscles, General benefits of Exercise.***

- Sociological Foundation- Physical Education and sports as a need of the Society, Sociological Implication of Physical Education and sports, Physical activities and sports as a Man's cultural Heritage

Unit IV

Psychological Factor's effecting sports Performance, Benefits of Different type of Exercise to the various system of the body, Role of Social Institutionin development of personality through Publication in games & Sports.

Reference Books:

1 Kamlesh & Sangral,(2000)"Principles & History of Physical Education,"Prakash Brothers, Ludhiana.
2 Singh Ajmeretc.(2000)"Olympic Movement" Kalyani Publishers, Ludhiana.
3 Ajmer singh etc. Essential of physical education."Kalyani Publishers, Ludhiyana
4 Bucher C.A.(1983)"Foundation of Physical Education and Sport" the C.V.Mosky Co.St. Louis Toroato- London.
5 Dr. Suresh KumarAgarwal etc."Basics of Physical Education, Health & Sports".
6 Singh Ajmeretc.(2000)"Olympic Movement" Kalyani Publishers, Ludhiana.
7 Ajmer singh etc.Essential of physical education."Kalyani Publishers, Ludhiyana
8 Textbooks of Physical Education For CBSE XI & XII class.
9 Kamlesh & Sangral,(2000)"Principles & History of Physical Education,"Prakash Brothers, Ludhiana.
10 Singh Ajmer etc.(2000)"OlympicMovement" Kalyani Publishers, Ludhiana.
11 Ajmer singh etc.Essential of physical education."Kalyani Publishers, Ludhiyana

24BIPE5217P:Practical

Learning Outcomes:

On successful completion of the course, the students will be able to:

1. Assess the individual levels of fitness components.
2. Demonstrate the basic fundamental knowledge and skills of out door games/sports.

Topicsfor practical:

1.Opt anyone Out doorgames.

a. Football

b. Hockey

(Preparing of practical file on opted outdoor game.)

2.Cooper Physical Fitness Test (10 minutes run)

24BIGH5218T:Language2 (Other than L1)

Credits:3L+1T+0P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3 hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

उदेश्य

1. विद्यार्थियों में अभिव्यक्ति कौशल विकसित करना।
2. हिन्दी भाषा को अधिक सशक्त और व्यापक बनाना तथा विद्याथियों में भाषा प्रयोग की क्षमता को विकसित करना।
3. साहित्यकारों के विचारों से परिचित होना तथा उनके दृष्टिकोण को भावी पीढी हेतु प्रभावी बनाना।
4.सृजनात्मक लेखन के प्रति आकर्षण और प्रौढता की भावना को अधिक सहज बनाना ।
5.शोध के लिए नवीन शैक्षिक दृष्टि की पृष्ठभूमि तैयार करना।
6. सृजनात्मक लेखन तथा आलोचनात्मक दृष्टि का विकास करना।

अधिगम प्रतिफल

1. भाषायी ज्ञान से अभिव्यक्ति और संप्रेषण कौशल का परियोजना हो सकेगा।

2.हिन्दी व्याकरण का ज्ञान सृजनात्मकता में उपयोगी सिद्ध हो सकेगा।

3.भाषायी क्षमता से वैश्विक परिदृश्य में हिन्दी को उन्नयन कर सकगे।

4.हिन्दी भाषा का व्यावहारिक ज्ञान प्राप्त कर सकगे।

5.हिन्दी लेखक /कवि की मूल भावना का विकास तथा समाजोपयोगी कार्य में गति आ सकती ।

6.यथार्थ अनुभति का समावेश तथा कल्पना का विस्तार संभव हो सकगा।

7.संस्कृति धर्म और आदर्श के नवीन प्रतिमान स्थापित हो पायेगा।

इकाई 1 गद्य भाग :–

1. रेखाचित्र : महादेवी वर्मा –घीसा
2. निबंध :: सरदार पूर्ण सिंह –आचरण की सभ्यता
3. व्यंग्य : शरद जोशी –मेघदूत की पुस्तक समीक्षा

इकाई 2 पद्य भाग–

1. रहीम ग्रथावली –संपादक विद्यानिवास मिश्र रजनीश , दोहा क्रमांक 38,49,87,126,187,212,218 एवं 220
2. मैथिलीशरण गुप्त –मनुष्यता, हम राज्य के लिए मस्ते है (गीत साकेत के नवम सर्ग से)

इकाई–3

1.शब्द निर्माण उपसर्ग प्रत्यय,संधि समास
2.पद के प्रकार संज्ञा ,सर्वनाम ,क्रिया ,क्रिया विशेषण ।
3.संक्षेपण ।

इकाई –4

कार्यालयी हिन्दी की शब्दावली कार्यालय पत्राकार के विविध प्रकार एवं कार्यालय से निर्गत पत्र (ज्ञापन, परिपत्र अनुमारक, पृष्ठाकन आदेश सूचनाए निविदा आदि)

सहायक ग्रंथ–

1. हिंदी व्याकरण –कामता प्रसाद गुरू
2. हिंदी भाषा की संरचना –किशोरी दास वाजवेयी
3. हिंदी भाषा की संरचना –भोलानाथ तिवारी
4. प्रयोजनमूलक हिंदी की नई भूमिका –कैलाश नाथ पांडेय
5. प्रारूपण, शासकीय पत्राचार और टिप्पणी लेखन विधि –राजेन्द्र प्रसाद श्रीवास्तव
6. प्रयोजनमूलक भाषा और कार्यालयी हिंदी –कृष्ण कुमार गोस्वामी

24BIUI5219T:Understanding India (Indian Ethos and Knowledge Systems)

Credits:1L+1T+0P
Periods per week: 3
Examination:2 hours

Marks:50
C1+C2=15
C3=35Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Seven (07) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (250 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	10	1hr	06
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	35	2hrs	14
TotalMaxMarks	**50**		**20**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

AbouttheCourse

At a time when the world finds itself deep in dynamism, led by technological innovations andenvironmental changes, there is a need for an inward-looking approach to building the young minds of a country. By looking in wards, one not only find sasociological belonging nessbutal so a spiritual and intellectual rooting in these changing times. The course provides an overview of India's heritage and knowledge traditions across key themes of economy, society, polity, law, environment, culture, ethics, science & technology and philosophy. It places special emphasis on the application of these knowledge traditions, helping students to not only know and appreciate India's heritage and knowledge traditions but also to independently evaluate them through a multi disciplinarylens. This evaluation would produce valuable lessons for obtaining transferable and 21st-centurys kills. The course requires no pre-requis it e-knowledge or understanding. Spread over two years, the course will establish foundational knowledge and build upon it. It will allow students to have a basic understanding of the traditions of India and how it has evolved over the years. The course is designed to enable student teachers to outline and interpret the processes and events of the formation & evolution of knowledge of India through a multidisciplinary lens; toevaluate the diverse traditions of India to distinguish its achievements and limitations, and to develop and articulate anethics-based education rooted in Indian thought to their students in the classroom context.

LearningOutcomes

After the completion of the course, students will be able to:

- recognize the vastcorpus of knowledge traditions of India, while developing an appreciation for it,
- apply their acquired research hand critical thinking skills inmulti disciplinary themes,
- summarize and pass on their learnings to their students of different Indian traditions in an easily digestible manner.

UNIT-I

Introduction of Knowledge of India

A. Recap of the previous semester's definition and introduction.
B. Recap of previous knowledge.

UNIT-II

Philosophy, Ethics & Values: Schools of Philosophy

A. Vaishesika, Nyaya, Samkhya, Yoga, Purva Mimansa and Vedantaor Uttara Mimansa (theory and the major thinkers)–and Jain, Buddhist and Charvaktraditions.
B. Vedanta: philosophical systems (Advaita, Vishishtadvaita, Dvaita).
C. Ethics, morality and socialdilemma (includingself-leadership) and their relevance in today's time.
D. How do Indians values pirituality? Spirituality and Social Responsibility; Importance of Spirituality in current times.

24BITS5220T:Teacher and Society

Credits:1L+1T+0P
Periods per week: 3
Examination:2 hours

Marks:50
C1+C2=15
C3=35Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Seven (07) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (250 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	10	1hr	06
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	35	2hrs	14
TotalMaxMarks	**50**		**20**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

About the Course

Teacher sunarguably have the key role innurturing young lives and shaping positive and inspired future generations. Emphasizing on the crucial role of teachers NEP 2020 states "teachers truly shape the future of our children-and, there fore, the future of ournation."."The high respect for teachers and the high status of the teaching profession must be restored to inspire the best to enterthe teaching profession. The motivation and empowerment of teachers is required to ensure the best possible future for our children and our nation." (NEP Para 5.1). The NEP in itsintroductory section states, "the teacher must be at the centre of the fundamental reforms in the education system" and highlights the need to"help re-establish teachers, at alllevels, as them ostrespected and essential members of our society, because they truly shape our next generation ofcitizens". (NEP 2020, Introduction). The policy also stresses the need to "do everything to empower teachers and help them to do their jobas effectively as possible."It is recognized that teachers are second to mothers in having the opportunity to work with children during the

most impression able years in their life and shape opinions, formideas about personal and socialgoalsand about society and life, contributing so much to the development of both individuals andsociety.

The focus of the course on 'Teacher & Society' is on developing an understanding amongstudent teachers of the roles of teachers in the emerging Indian society, including the changingroles of teachers in the context of the global flows of people, culture and resources that areshaping society, and the application of technologies that are constantly redefining not only the educational land scape but also the human relationships and social norms which are continuously under going change which entails a recalibration of the teacher roles aligned to the current and future realities and preparing teachers for the volatile, uncertain, complex and ambiguous world. The course enables the students to understand the roles and obligations of teachers as an architect of the society based upon the cultural ethos, traditions, and diversity. The student teachers shall be equipped with the knowledge, capacities and values ystem that enables them to act as anagent for fostering national integration, a feeling of pride in the cultural heritage and achievements ofIndia. This course also aims to ensure that student teachers understand their responsibility forproducing a future generation that undertakes its responsibility as an awakened citizen whoavoids wastage of national resources and takes up a proactive role for the emergence of India as a strong and disciplined nation.

In addition to these, the course also seeks to enable each of the student teachers to respond to the needs of students from diverse cultural, linguistic, social and economic backgrounds; to besensitive to gender issues, promote tolerance and social cohesion, provide special attention tostudents with learning disabilities, learn and apply new pedagogies and technologies, keep pacewith current educational developments and initiatives; and keep oneself professionally engagedto update/upgrade knowledge and practice. Student teachers will be encouraged to comprehendhow societal structures, context and historical patterns shape teacher identities on one hand andhow teacher identities, beliefs, values, convictions and commitment shape the ethics, culture, norms and values on the other; thus, impacting the larger societal thoughts and actions.The course also explores the relationship of the teacher with education development, community and society through different course units that talk of the teacher as a person and as a professional,the socio-cultural and technological contexts of the teacher and how they impact the teaching-learning process, the multiple roles, identities and expectations of a teacher. It invites the student teachers to bereflexive of one's thoughts, beliefs and actions and continuously take a gaze in side out so as to un biasedly engage children in are flective dialogue.
The course explores the agentic role of a teacher, how it gets influenced and how it in fluences the education system. It concludes with there-calibrating of roles of teacher and teaching beyond the curricular boundaries as an architect to fan inclusive, harmonious, and developing India.

Learning Outcomes

After completion of the course, student teachers will be able to:

- examine the relationship between teacher beliefs, values, character, lifehistory, social and cultural context and teaching critically,
- explain the teacher roles and characteristics; the personal and professional self;

theteacher as a communicator, the charismatic influencer, the reflective practitioner, competent, learner and much more and their significant role innurturing the posterity.

- differentiate between the narrow curricular aims of education and the broader educational aims and their role in shaping self, school, and society,
- demonstrate an ability to develop positive classrooms through engaging in the ethic ofcare,
- demonstrate an ability to critically reflect on personal and collective practice so as to improve learning and teaching,
- conceptualize teacher agency, its individual, contextual, and structural dimensions and how it gets impacted and in turn shapes education.

UNIT-I

Understanding the Teacher: Exploring the Personal and Professional Teacher

A. Exploring the wider Personal and General Social Context of Teacher: Life History, Teacher Beliefs, Values and Aspirations, Diverse Identities, Social Contexts and Commitment to Learning and Education.
B. Exploring the Professional Teacher: Qualifications, Education in teaching, Attitude, Aptitude, Experience and Exposure.
C. The Charismatic Teacher, the Communicator Teacher, The Missionary Teacher, The Competent Practitioner, The Reflective Practitioner, The Learning Teacher.
D. Reflexive Practice: Nurturing the Professional Capital through collaborative and/or collective engagement with self, others,the social context.

UNIT-II

Nurturing the Teacher:ADialogue beyond the curricular goals, for Life and Posterity

A. Teaching: One profession, many roles
B. Teaching Character: Nurturing Teachers for Human Flourishing.
C. Holistic Teacher Development: Nurturing the Panchakoshas.
D. Teacher Values,Beliefs, and current Philosophy of Teaching: A Reflective Dialogue.
E. Developing an Ethic of Care in Teacher Education: Nurturing Teachers towards a pedagogy of care.

UNIT-III

Understanding and Fostering Teacher Agency: Role in shaping Education Systems of Tomorrow

A. Teacher Agency: What is it and why does it matter?
B. Individual, Cultural and Structural Dimensions of Teacher Agency.
C. Teacher discourses, Philosophy, Relationships, Networks and Professional Development: Shaping teacher agency and Creative in subordination.
D. Challenges and Issues inffostering Teacher Agency: Performativity, Non-academic engagements, Systemicapathy, Policy and Practice gaps and others.
E. Role of Teacher in shaping the educational policy, practice, and reforms

UNIT-IV

Teacher as an Architect of the New India: Shaping the Society of Tomorrow

A. Engaging in Critical Education: Dialogues on power relations associated with Gender, Ethnicity, Culture, Disability, Class, Poverty, the reproduction of disadvantage and realizing the true human potential.

B. Being a Critical Teacher: Raising debates around rapid technological advancement and impact on individual, family and social life; the growing isolation and impact on mental and social health and well-being, changing relationships between the 'state' and the 'market' and their impact on formal education; the conceptualization of teacher, teaching and teacher roles, 'globalization' and the reconstructed nationalism shaping the socio-political milieuand impact on social psyche, growing materialistic urge, sensory drives and the gradual deterioration of the individual and societal character.

Suggestive Practicum

1. Take up a case study of any one teacher education Institution.
2. Write a biography of any one of your favourite teachers/Educationists.

5.5.3Suggestive Mode of Transaction

Teacher and Society is a reformatory course that invites teachers to re-think teachers andteaching. It awakens and inspires teachers to realize broader educational aims through an actionand reflection cycle.The approach therefore would include a blend of lectures, in-class seminars, thinking exercises, critical reflections, group-work, case-based approaches, and enquiry-based learning.

- Learners would also be exposed to case studies featuring teachers from a representative cross-section of Schools in India and critically analyse their exercise of agentic force in school improvement and the improvement of teaching practice.
- Situating themselves in the geo-political context, the learners will get to critically engage in some of the policy dialogues.
- Learners would reflect on their practice as pre-service interns, knowledge, skills, and understandings—and identify opportunities to apply course learnings to their school context.

Suggestive Mode of Assessment

Being a very thought-provoking course, the assessment would largely include critical thinking kind of assignments. The following are some exemplars.

1. Write your current teaching philosophy based on your beliefs and values.
2. Choose any one area of immediate societal concern like environmental degradation, increasing crime against women, cybercrimes, bullying or any other and draw an action plan that you as at eacher would under take to mobilize self, school and society to wards betterment.
3. Critical Reflections on popular debates around power relations associated with Gender,Ethnicity,Culture,Disability,Class,Poverty,andsuchothers

These are just prototypes and institutes may choose either of these or think of other innovative assignments that would in culcate in the future teachers a sense of belonging for society.

Suggestive Reading Materials

Teachers may suggest books/readings as per the need of the learners and learning content.

SEMESTER 3

24BICE6301T: Child Development & Educational Psychology

Credits:3L+1T+0P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

About the Course

To enable student teachers to understand the interplay of three different processes namely biological processes, cognitive processes, and socio-emotional processes that influence development of a child. Biological, cognitive, and socio-emotional processes are in tricately in terwoven with each other. Each of these processes plays a role in the development of a child whose body and mindare inter dependent.

The course seeks to provide an under standing of the developmental characteristics of a child:

- during in fancy that ranges from birth to 24 months of age,
- during Early Childhood stage which begins around age 3 and usually extend supto 6-7 years of age,
- Middle to Late Childhood stage which begins around 6-7 years to 10-11 years of age, and
- Adolescencest age which begins at approximately the age of 12 years, and which is a period of transition from childhood to early adulthood.

The course will introduce development across domains– physical development, cognitive development, language development, socio-emotional development, aesthetic development, moral development–during each of the above-mentioned developmental stages of a child.

Educational Psychology component of the course:

Informs student teachers about the various theories of learning and motivational states for learning and their implications for pedagogy. It includes the study of how people learn, pedagogical approaches that are required to improve student learning, teaching-learning processes that enable learners to attain the defined learning out comes, and individual differences in learning. It provides opportunities to student teachers to explore the behavioral, cognitive and constructivist approach to facilitating student learning, and the emotional and social factors that influence the learning process.

Learning Outcomes

After completion of this course, student teachers will be able to:

- describe the meaning, concept, characteristics, and factors affecting grow than development,

- use the knowledge of Indian concept of self,
- apply various problem solving and learnings strategies in real classrooms ettings,
- identify the various approaches of the process of learning,
- explain group dynamics and apply strategies to facilitate group learning.

UNIT-I

Child Development

A. Meaning and significance of understanding the process of Child Development
   - Biological, cognitive, socio-emotional and moral.

B. Developmental characteristics of a child during:
   - Infancy stage
   - Early Childhood stage
   - Middleto Late Childhood stage
   - Adolescence stage

C. The Indian concept of self: Mind, Intellect, Memory. Panch-koshIya Vikas.

D. Educational Implications.

UNIT-II

Developmental Process

A. Development across domains:

- Physical Development
- Cognitive Development
- Language Development
- Socio-Emotional Development
- Aesthetic Development
- Moral Development

During each of the above-mentioned developmental stages of a child.

B. Factors affecting development.

C. Individual differences:

- Children with special needs including developmental dis orders.
- Tools and Techniques for Identifying Learner with different abilities.

D. Teachers' role and strategies to address the needs of learners with different learning abilities.

UNIT-III

Process of Learning

A. Conceptual Clarity and significance.

B. Approaches:

- Behaviorist
- Cognitivist
- Constructivist
- Developmental
- Information processing Model of learning
- ShriAurobindo'sIntegral approach

C. Problem Solving and Learning Strategies: Inquiry and problem-based learning, Steps and Strategies in problem solving, Factors hindering problem solving.

D. How to Learn: Significance and Strategies

UNIT-IV
Motivation and Classroom Management

A. Motivation
   - Conceptual clarity, nature,and significance
   - Intrinsic and Extrinsic Motivation
   - Strategies for Motivation

B. Classroom management
   - Creating a positive learning environment
   - Planning space for learning
   - Managing behavioral problems

C. Groupdynamics:
   - Classroom social group
   - Characteristics of group
   - Understanding group interaction- sociometry
   - Strategiest of acilitate group learning.

Suggestive Practicum

1. Spending day with a child and preparing a report based on our observations of children for:
   - A day from different economic status(lowandaffluent)
   - Focus on various factors: Physical, emotional, social, language, cultural an dreligious in fluencing the child on daily basis.
2. Observing children to underst and the styles of children learning process.
3. Identifying the Learning Difficulties of Students in Different learning are as and the Possible Reason for them- Case Study Report.
4. Preparing Personalized Intervention plan for Students with Learning Difficulties.
5. Plan to use advanced technology to encourage talented/ gifted children.
6. Encouraging gifted / talented students beyond the general school curriculum.
7. Familiarization and Reporting of Individual Psychological Tests.

Suggestive Mode of Transaction

The course content transaction will include the following:

- Planned lectures infused with multimedia/ power- point presentations.
- Small group discussion, panel interactions, small theme-based seminars ,group discussions ,cooperative teaching and team teaching ,selections from the oretical readings, case studies, analyses of educational statistics and personal field engagement with educationally marginalized communities and groups, through focus group discussion,surveys,short term project work etc.
- Hands on experience of engaging with diverse communities, children,and schools.

Suggestive Mode of Assessment

The assessment will be based on the tests and assignments.

Suggestive Reading Materials

Teachers may suggest books /readings as per the need of the learners and learning content.

24BIBO6302T: TAXONOMY AND ECONOMIC BOTANY

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note.
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives

- This course will help the student to understand the whole taxonomic description of plants and their economic values.

Learning outcomes

By studying this course,the students will be able to:

- Understand the variety of plants.
- Develop conceptual skill about classifying angiosperms.
- Understand the plant floral diversity, economic importance and systematics.

UNIT-I

Systematics: Identification, classification, nomenclature; Functions of Herbarium; Important herbaria and botanical gardens of the world and India. Important flora,

Botanical Nomenclature: Principles and rules (ICN); Ranks and names; Typification, author citation, valid publication, rejection of names, principle of priority and its limitations.

Classification: artificial, natural and phylogenetic. Bentham and Hooker (up to series) and Hutchinson classification.

UNIT-II

Diversity of flowering plants illustrated by members and economic importance of the following: Ranunculaceae, Papaveraceae, Malvaceae, Brassicaceae, Fabaceae, Apiaceae, Asteraceae, Solanaceae, Apocyanaceae, Asclepidiaceae, Lamiaceae, Euphorbiaceae, Liliaceae, Poaceae.

UNIT-III

Economic Botany: Basic concept of center of origin of cultivated plants.

Cultivation, production and uses of Cereals: Wheat and maize, **Legumes:** Groundnut, Black gram, **Spices and condiments:** Cumin, clove, cardamom and black pepper, **Beverages:** Tea, coffee

(including processing).

Study of the plants with botanical names, family, part used, and economic uses yielding Rubber, Vegetable oil: Mustard; Dyes: Henna; Timber: Sal, Teak, Shisham, Rohida.

UNIT-IV

Fibers: Classification based on the origin of fibers, Cotton and Jute (morphology, extraction and uses).

Medicinal plants - Ocimum, Adhatoda, Turmeric, Ashwgandha, Neem, Giloy, Ghritkumari, Senna, Isabgol, Safed musli. General account on vegetables and fruits.

Ethnobotany: Introduction, scope and significance. Ethnobotany in context of Rajasthan.

Suggestive Readings:

1. Taxonomy of Angiosperms – V.N. Nair (1995) TMH Publishing Company Limited New Delhi.
2. Plant Taxonomy – Sushella M. Das (2003) Dominant Publishers and Distributors, New Delhi.
3. Introduction to the Principles of Plant Taxonomy V.V. Sivarajan (1984) Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
4. Plant systematics. Gurcharan Singh (2001) Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.
5. Trivedi, P.C.: N. Sharma and J.L. Sharma (2003) Structure, Development and Reproduction in Flowering. Plants. Ramesh Book Dept, Jaipur.
6. Essentials of Economic Botany- R.L.Prasad, B P Nautiyal, Medtech Publishers (2018) Ist edition.
7. A Textbook of Modern Economic Botany, CBS Publishers and Distributers, Sammbamurty A.V.S.S.
8. Kochhar, S.L. (2011). Economic Botany in the Tropics, MacMillan Publishers India Ltd., New Delhi. 4th edition.
9. B.P. Pandey (2007). Economic Botany, S. Chand & Company Ltd. New Delhi. 17/e.

24BIBO6302P:Practical

Learning Objectives:

- To develop hands-on skills in identifying, classifying, and documenting plant species using taxonomic principles and tools.
- To explore the economic significance of various plants, understanding their uses in agriculture, medicine, and industry through practical applications and case studies.

Learning outcomes

- Students will learn to carry out practical work in the laboratory and field.
- Students will learn to study and describe the floral features and economic importance of plants.
- To study about Pollination in nature.
-

Topic

1.Taxonomy – Description of specimen from representative, locally available families - Ranunculaceae, Papaveraceae, Malvaceae, Brassicaceae, Fabaceae, Apiaceae, Asteraceae, Solanaceae, Apocyanaceae, Asclepidiaceae, Lamiaceae, Euphorbiaceae, Liliaceae, Poaceae.

Types of inflorescences and fruits.

2. Study of specimens with special reference to Wheat and maize, Groundnut, Black gram, Cumin, clove, cardamom and black pepper, Tea, coffee.
Study of economy of plant with special reference to Rubber, Vegetable oil: Mustard; Dyes: Henna; Timber: Sal, Teak, Shisham, Rohida.

3. Study of Fibers - Cotton and Jute.
Study of Ocimum, Adhatoda, Turmeric, Ashwgandha, Neem, Giloy, Ghritkumari, Senna, Isabgol, Safed musli with special reference to cure.
Prepare 5-5 specimens of vegetables and fruits.
Ethnobotany: Collection of locally used ethnobotanical plant species of the Shekhawati region.

4. Field trips within and around the campus, compilation of field notes and preparation of herbarium sheets of such plants, wild or cultivated as are abundant.

Suggestive Readings:

1. A Textbook of Practical Botany 2, Bendre and Kumar, Rastogi Publications, 7th Edition.
2. Practical Taxonomy of Angiosperms, R.K. Sinha, 2nd Edition, Tech Sar Pvt Ltd.

24BICH6303T: Chemistry

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**
Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives

- The objective of this course is to provide students with a theoretical understanding of the Transition elements and Rare earth elements from periodic table, Aromatic hydrocarbon and basic knowledge about Electrochemistry. In addition, the laboratory course is designed to provide students with practical experience in basic quantitative analytical techniques including volumetric analysis, qualitative analytical techniques, and the determination of kinetic parameters of reactions.

Learningoutcomes

- At completion of the course the student will be able to:
  By the end of this course, students will have a clear theoretical understanding of the the Transition elements and Rare earth elements from periodic table, Aromatic hydrocarbon and basic knowledge about Electrochemistry. Students will also have practical experience in quantitative analytical techniques including volumetric analysys, identification of organic compounds by determination of functional groups, determination of order and rate constant of various reactions.

Unit I

Chemistry of Elements of First Transition Series: Characteristics properties of d-block elements, properties of the elements of the first transition series, their binary compounds and complexes illustrating relative stability of their oxidation states, coordination number and geometry.

Chemistry of Elements of Second and Third Transition Series: General characteristics, comparative treatment with their 3d-analogues in respect to ionic radii, oxidation states, magnetic behaviour, spectral properties and stereochemistry.

Chemistry of Lanthanides: Electronic structure, oxidation states, ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide compounds.

Chemistry of Actinides: General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from U, similarities between the later actinides and later lanthanides.

Unit II

Benzenoid Aromatic Chemistry: Aromatic electrophilic substitution – general pattern of the mechanism, role of σ- and π- complexes. Mechanism of nitration, halogenation, sulphonation, mercuration and Friedel-Crafts reaction.Energy profile diagrams.Activating and deactivating substituents, orientation and ortho/para ratio.Side chain reactions of benzene derivatives.Birch reduction.

Arenes: Nomenclature of benzene derivatives. Aryl group.Aromatic nucleus and side chain.Structure of benzene: molecular formula and Kekule structure.Stability and carbon-carbon bond lengths of benzene, resonance structure, MO picture.

Methods of formation and chemical reactions of alkylbenzenes, Structure, preparation and properties of naphthalene.

Alkyl and Aryl Halides: Nomenclature and classification of alkyl halides, preparation, physical propertiesand chemical reactions, mechanism of nucleophilic substitution (SN1, SN2 and SNi)reactions, hydrolysis, nitrite and nitro formation, nitrile and isonitrile formation. Williamson'sethersynthesis,haloformreaction,freons. Preparation of arylhalides,nuclearand side chain reactions, addition-elimination and elimination-addition reactions, mechanism of nucleophilic aromatic substitution reactions.Relative reactivities of alkyl halides v/s allyl, vinyl, and aryl halides, synthesis and uses of DDT and BHC.

Unit III

Alcohols: Classification and nomenclature. Monohydric alcohols: Nomenclature, method of preparation by reduction of aldehydes, ketones, carboxylic acids and esters. Hydrogen bonding. Acidic nature. Reactions of alcohols.

Dihydric alcohols: Nomenclature, methods of preparation, chemical reaction of vicinal glycols, oxidative cleavage [Pb(OAc)4 and HIO4] and pinacol-pinacolone rearrangement.

Trihydric alcohols: Nomenclature and methods of preparation, chemical reactions of glycerol.

Phenols: Nomenclature, structure and bonding, preparation of phenols, physical properties and acidic character. Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion. Reactions of phenols: electrophylic aromatic substitution, acylation and carboxylation. Mechanism of Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Hauben-Hoesch reaction, Lederer-Manasse reaction and Reimer-Tiemann reaction.

Ethers and Epoxides: Nomenclature of ethers and methods of preparation, physical properties. Chemical reactions: cleavage and autoxidation. Ziesel's method. Synthesis of epoxides. Acid and base catalyzed ring opening of epoxides, orientation of epoxide ring opening. Reactions of Grignard and organolithium reagents with epoxides.

Unit IV

Electrochemistry-I: Charge transport, conductance in metals and electrolyte solutions, specific conductance and equivalent conductance, measurement of equivalent conductance, variation of equivalent and specific conductance with dilution and temperature. Migration of ions and Kohlrausch law, Arrhenius theory of electrolytic dissociation, Ostwald dilution law, Debye-Huckel-Onsager equation for strong electrolytes (elementary treatment only).

Applications of conductivity measurements- determination of degree of dissociation, acid dissociation constant (K_a), solubility product of sparingly soluble salts, conductometric titrations.

Electrochemistry-II: Types of reversible electrodes – gas-metal ion, metal-metal ion, metal insoluble salt-anion and redox electrodes, electrode reactions, Nernst equation-derivation of cell E.M.F, single electrode potential,standard hydrogen electrode, reference electrodes, standard electrode potential, electrochemical chemical series and its significance.

Electrochemical Cells: Electrolytic and Galvanic cells- reversible and irreversible cells, conventional representation of electrochemical cells.EMF of a cell and its measurements, computationofcellEMF, calculation of thermodynamic quantities of cell reactions ($\Delta G, \Delta H$& K), polarization and over potential.

Corrosion: types, theories and methods of combating it.

Suggestive Readings:

1 Lee,J.D.;(2010),**Concise Inorganic Chemistry**, 5th Edition, WileyIndia.

2 Huheey, J. E.; Keiter, E. A.; Keiter; R.L.; Medhi, O.K. (2009), **Inorganic Chemistry-Principles of Structure and Reactivity**, Pearson Education.

3 Atkins, P. W.; Overton, T. L.; Rourke, J. P.; Weller, M. T.; Armstrong, F. A. (2010), **Shriver and Atkins Inorganic Chemistry**, 5th Edition, Oxford University Press.

4 Miessler, G. L.; Fischer P. J.; Tarr, D. A. (2014), **Inorganic Chemistry**, 5th Edition, Pearson.

5 Housecraft, C. E.; Sharpe, A. G. (2018), **Inorganic Chemistry**, 5thEdition, Pearson.

6 Greenwood,N.N.;Earnsaw,A.(1997),**ChemistryofElements**,2ndEdition, Elsevier.

7 Douglas,B. E.,McDaniel,D. H.;Alexander,J. J. (2007) **Concepts and Models in Inorganic Chemistry**, 3rd Edition, John Wiley & Sons.

8 Morrison, R. N.; Boyd, R. N.; Bhattacharjee, S.K. (2010), **Organic Chemistry**, 7th Edition, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.

9 Finar, I.L. (2002), **Organic Chemistry**, Volume 1, 6th Edition, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.

10 Solomons,T.W.G.;Fryhle,C.B.;Snyder,S.A.(2017),**Organic Chemistry**,12th Edition, Wiley.

11 Puri, B.R.; Sharma, L.R.; Pathania M.S. (2020) **Principles of Physical Chemistry**, Vishal Publishing Co.

12 Atkins, P.; de Paula, J. (2013), **Elements of Physical Chemistry**, 6th Edition,OxfordUniversityPress.

13Alberty, R. A.; (1987), **Physical Chemistry**, 7th Edition,WileyEasternLtd.,Singapore.

14Dogra, S.K.; Dogra, S. (2015), **Physical Chemistry Through Problems**, 2nd Edition,New Age International Publication.

24BICH6303P:PRACTICAL

1 Inorganic Chemistry

Gravimetric Analysis

(a) Cu as [Cu(SCN)]

(b) Ni as Ni-dimethylglyoxime

2 Organic Chemistry

(i) Laboratory Techniques

Thin Layer Chromatography

Determination of Rf, values and identification of organic compounds.

(a) Separation of green leaf pigments (spinach leaves may be used).

(b) Preparation and separation of 2,4-dinitrophenylhydrazones of acetone, 2-butanone, hexan-2-one and hexan-3- one using toluene and light petroleum (40-60) solvent System.

(c) Separation of a mixture of dyes using cyclohexane and ethyl acetate (8.5 : 1.5).

(ii) Qualitative Analysis

Identification of two organic compounds (one solid and one liquid) through the functional group analysis, determination of melting point. boiling point and preparation of suitable derivatives.

3 Physical Chemistry

(i) Transition Temperature

a) Determination of the transition temperature of the given substance by thermometric / dialometric method e.g $MnCl_2.4H2O$ / $SrBr_2.2H2O$)

(ii) Thermochemistry

(a) To determine the solubility of benzoic acid at different temperatures and to determine ΔH of the dissolution process.

(b) To determine the enthalpy of neutralization of a weak acid/ weak base versus strong base /strong acid and determine the enthalpy of ionization of the weak acid/ Weak base.

(c) To determine the enthalpy of solution of sold calcium chloride and calculate the lattice energy of calcium chloride from its enthalpy data using Born-Haber cycle

24BIZO6304T: Cell and Molecular Biology

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives

The objective of the course is to help the students to learn and develop an understanding of a cell as a basic unit of life. This course is designed to enable them to understand the functions of cellular organelles and how a cell carries out and regulates cellular functions.

Learning outcomes

Upon completion of the course,students should be able to:

- Understand the fundamental principles of cell biology.
- Explain the structure and functions of cell organelles involved in diverse cellular processes.
- Appreciate how cells grow, divide, survive, die, and regulate these important processes.
- Compreh end the process of cell signaling and its role in cellular functions.
- Have an insight into how defects in the functioning of cell organelles and regulationof cellular processes can develop into diseases. Learn the advances made in the field of cell biology and their applications

Unit I

Overview of Cells , Plasma membrane and Endomembrane System

Microscopic techniques: Phase contrast and Electron microscope (TEM and SEM)
Membrane Biology', Transport across membranes: active and passive transport, facilitated transport; Cell-cell junctions: Tight junctions, adherens junctions, gap junctions.
GERL System: Endoplasmic Reticulum (ER), Golgi apparatus, Signal hypothesis, Vesicular transport from ER to Golgi apparatus, Protein sorting and transport from Golgi apparatus, Coated Vesicles, Lysosomes, Peroxisomes. Structure and function of Mitochondria: Respiratory chain, Chemiosmotic hypothesis, ATP synthesis

Unit II

Cytoskeleton Structure and Functions: Microtubules, Microfilaments and Intermediate filaments.
Structure of Nucleus, Nuclear envelope, Nuclear pore complex, Transport of molecules across nuclear membrane, nucleolus; Chromatin: euchromatin, heterochromatin. Chromosome Structure, Giant Chromosomes. Cell cycle, Mitosis and its regulation. Meiosis Cell Signaling through G-protein coupled receptor (GPCR) and role of secondary messenger: cAMP and protein kinase A.

Unit III

DNA Replication & Transcription (Elementry Idea) DNA replication in prokaryotes and eukaryotes-replication machinery and mechanisms, semi-conservative, bidirectional and semi-discontinuous replication, Replication of circular and linear double stranded DNA, Replication of telomeres.Transcription and Machinery and mechanism of transcription in prokaryotes and eukaryotes, RNA polymerases, Transcription unit, Transcription factors,

Unit IV

Post Transcriptional Modifications ,Translation & Gene Regulation (Elementry Idea)
Capping, Polyadenylation RNA Splicing Mechanism, Genetic code. Process of protein synthesis in prokaryotes,Transcription regulation in prokaryotes: Lac operon & Catabolic repression and Trp operon & attenuation.

Reference Books:

1 Cooper, G.M., Hausman, R.E. (2019) The Cell: A Molecular Approach. VIII Edition, ASM Press and Sinauer Associates.
2 Becker, Kleinsmith, and Hardin (2018) The World of the Cell, IX Edition, Benjamin Cummings Publishing, San Francisco.

3 Karp, G. (2015). Cell and Molecular Biology: Concepts and Experiments, VIII Edition, John Wiley & Sons Inc.
4 Lodish et. al., (2007), Molecular Cell Biology, W.H. Freeman and Company, New York, USA
5 Alberts et. al., (2008), Molecular Biology of the Cell Garland Science, Taylor & Francis Group, New York, USA.

24BIZO6304P:Practical

1. Microscopy: Compound microscope: principle, components and handling; Phase contrast microscope; Electron microscope; Differential Interference Contrast (DIC) Microscope.
2. Principle and types of cell fixation and staining; Cell fractionation.
3. To study prokaryotic cells by Gramstaining and eukaryotic cell (cheekcells) by hematoxylin/ methylene blue.
4. To study the effect of hypotonic,isotonic,and hypertonic solutions on cell permeability.
5. Preparation of a temporary slide of squashed and stained onion root tip to study various stages of mitosis.
6. Study of Meiosis in testis of Grasshopper or Cockroach
7. Study of Polytenechromosomes from *Chironomous /Drosophila*larva.
8. Study of various stages of meiosis through permanent slides.
9. Preparation of stained mount to show the presence of Barrbody in human female blood cells/cheek cells.
10. Isolation of DNA from suitable sample.
11. Cytochemical demonstration of:
    a. DNA by Feulgen reaction
    b. Mucopolysaccharides byPASreaction
c. Proteins byMercuric Bromophenol Blue /Acid Fast Green

Reference Books:

1 Gupta, R., Makhija, S. and Toteja, R. (2018). Cell Biology Practical Manual, Prestige Publishers, New Delhi-110003.
2 Sharma, V. K. (1991). Techniques in Microscopy and Cell Biology, Tata McGraw Hill Publishing Company Limited, New Delhi.

24BIPH6305T: Real Analysis and Numerical Analysis - I

Credits:3L+0T+1P
Periods per week: 5
Examination:3hours

Marks:100
C1+C2=10
C3+C4=90Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives

The course aims to

- Study the fundamental concepts of analysis.
- Introduce the conceptof the sequence and series of real no.and convergence.

Learning outcomes

Upon completion of the course,students should be able to:

- Under stand basic concepts of continuity and important the orems.
- Under stand the concepts of real numbers and analyze their properties.
- Study sequence,series, and their applications.
- Apply Riemann integrals in the evaluation of some integrals.
- Understand the concept to funi form convergence and study their application.

Unit I

Real numbers as a complete ordered field, Limit point, Bolzano-Weierstrass theorem, closed and Open sets. Concept of compactness and connectedness. Heine-Borel theorem. Holder inequality & Minkowski inequality, Real sequences- Limit and Convergence of a sequence, Monotonic sequences. Cauchy's sequences, Subsequences, Cauchy's general principle of convergence.

Unit II

Properties of continuous functions on closed intervals, Properties of derivable functions, Darboux's and Rolle's theorem. Riemann integration - Lower and Upper Riemann integrals, Riemann integrability, Mean value theorem of integral calculus, Fundamental theorem of integral calculus.

Unit III

Sequence and series of functions - Pointwise and Uniform convergence, Cauchy's criterion, Weierstrass M-test, Abel's test, Dirichlet's test for uniform convergence of series of functions, Uniform convergence and Continuity of series of functions, Term by term differentiation and integration. Differences. Relation between differences and derivatives. Differences of a polynomial. Newton's formulae for forward and backward interpolation.

Unit IV

Numerical integration, Trapazoidal rule. Simpson's one-third, Simpson's three-eighth, and Gauss's quadrature formulla. Numerical solution of Algebraic and Transcendental equations, Bisection method, Regula-Falsi method, Newton-Raphson Method (derivation of formulae and rate of convergence only).

Suggestive Readings:

1 K.A. Ross, Elementary Analysis: The Theory of Calculus, Undergraduate Texts in Mathematics, Springer (SIE), Indian reprint, 2004.

2 R.G. Bartle D.R. Sherbert, Introduction to Real Analysis (3rd edition), John Wiley and Sons (Asia) Pvt. Ltd.., Singapore, 2002.

3 Charles G. Denlinger, Elements of Real Analysis, Jones and Bartlett (Student Edition),2011.

24BIPH6305P: Practical

Part-A

1. Find The Numerical integration by Treapezoidal rule. Simpson's one-third, Simpson's three-eighth, and Gauss's quadrature formulae

Part-B

1. Find The Numerical solution of Algebraic and Transcendental equations using the Bisection method, Regula -Falsi method and Newton- Raphson Method.

Suggestive Readings:

1. B. Bradie , A Friendily Introduction to Numerical Analysis Pearson Education , India, 2007.
2. C.F Gerad P.O. Wheatley . Applied Numerical Analysis ,Addison -Wesley, 1998

24BIPH6306T: Optics

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives

The objective of the course is to provide students with a comprehensive understanding of Optics. The course aims to develop their knowledge and skills in analyzing and solving problems related to these to Optics, using appropriate mathematical formalism and physical concepts.

Learning outcomes

Upon completion of the course,students should be able to understand the concepts of Interference and diffraction with their classification and applications. They also learn about the basic concepts of polarization, Laser and Holography.

Unit I

Concept of spatial and Temporal Coherence, Young's double slit experiment Types of interference.

Interference by division of wave fronts: Fresnel's Biprism, Measurement of wavelength and thickness of a thin transparent sheet.

Interference by division of amplitude: Interference in thin films of constant thickness in transmitted and reflected waves. Interference produced by a wedge shaped film. Newton rings. Determination of wavelength and refractive index by Newton's Rings. Fringes of equal inclination (Haidinger Fringes) and equal thickness (Fizzau Friges), Michelson's Interferometer, shape of Fringes. Measurement of wavelength, difference between two spectral lines and thickness of a thin transparent sheet.

Unit II

Fresnel's diffraction, Half period zones. Fresnel's diffraction at a circular aperture, straight edge and rectangular slit. Zone plate, Multiple foci of a Zone plate. Comparison between zone plate and convex lens.

Fraunhofer diffraction by single slit and a circular aperture. Fraunhofer diffraction by N parallel slits with two slits as a special case. Missing orders. Plane diffraction Grating and its use in determining wavelength. Dispersion by Grating. Rayleigh's criterion of resolution. Resolving power of a Telescope and Grating.

Unit III

Polarization: Plane Circular and Elliptically Polarized light. Polarization by reflection. Double refraction and Huygens's explanation of Double refraction. Production and detection of plane, circular and Elliptically polarized light. Quarter wave and Half wave plate. Optical activity. Specific rotation. Bi-quartz and half shade Polarimeters and their comparison.

Unit IV

LASER: Spontaneous and Stimulated emission. Einstein's coefficients. Energy density of radiation as a result of stimulated emission and absorption, population inversion. Method of optical pumping. Energy level schemes. He-Ne, Ruby, CO2 laser

Holo graphy: Basic concept of Holography, Principle. Theory Construction and reconstruction of image. Application of holography.

Suggestive Readings:

1 Optics by Brijlal and Subramanium, S. Chand Publishing
2 Principles of Optics by B.K.Mathur, Gopalal Printing
3 Optics by D.P. Khandelwal, Himalaya Publishing House.
4 Introduction to modern Optics by A.K. Ghatak, Mcgraw Hill.
5 An introduction to modern optics by G.R. Fowels, Dover Publications
6 Fundamentals of Optics by Ashok Kumar, D.R. Gulati & H.R. Gulati, R. Chand & Co.

24BIPH6206P:Practical

1. Using platinum resistance thermometer find the melting point of a given substance
2. Using Newton's ring method find out the wavelength of a monochromatic source
3. To determine dispersive power of a Prism
4. To determine wavelength by Grating.
5. To determine wavelength by Biprism
6. Plot thermos emf versus temperature and find the neutral temperature
7. Determination of Band gap using a Junction Diode

8. To study characteristics of a given transistor PNP/NPN.(Common Base, Common Emitter, Common collector configuration)
9. Measurement of inductance of coil by Anderson's bridge
10. Measurement of capacitance and dielectric constant of a liquid by de- Sauty Bridge.

24BIEC6307T:Macro Economics

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives:

The objective of the course is to provide students with a comprehensive understanding of the fundamental concepts of electromagnetism. The course aims to develop their knowledge and skills in analyzing and solving problems related to Electromagnetism, using appropriate mathematical formalism and physical concepts.

Learning outcomes

Uponcompletionofthecourse,students shouldbe ableto understand the concepts of scalar and vector fields with different theorems. They can understand the Concept of electric field, electric field in matter, magnetostatics and magnetic field in matter and also about the electromagnetic wave spectrum with the propogation of electromagnetic waves in different mediums.

Unit-I

Macroeconomics, Meaning, Subject matter and Importance. microeconomics versus macroeconomics, Macroeconomic Variables, National Income Accounting: Circular flow of National Income in Two and Three Sector Economy; National Income: Concepts, Components and Measurement, Inter-relationship between Three Measures of National Income.

Unit-II

Money function, Demand and Supply of Money, Quantity Theory of Money Transaction Approach, Cash Balance Approach, Keynes reformulation of the Quantity Theory of Money inflation Meaning and Impact, Theories of Inflation :- Demand Pull (Keynesian and modern), Demand Push, Structural Theories of Inflation.

Unit-III

Income and Employment Determination: Classical Modal and Keynesian Model, Consumption Function: Psychological Law of Consumption, Determinants of Consumption, Paradox of Thrift. Investment Function: Determinants of investment, Marginal Efficiency of Capital and Marginal Efficiency of Investment, Concept of Multiplier and Accelerator.

Unit-IV

Central Bank: Organizational set-up and functions of Central Bank (with special reference to RBI). Commercial Bank: Functions, Modern trends of Commercial Banking. Quantitative and Qualitative Credit control by RBI. Money Supply: Meaning & Definition, four measures (M, M, M and M_1) Monetary Policy: Objectives, Targets and Indicators, Transmission Mechanism.

Suggested Readings:

1. Ackley. G (1976) - Macrocconomles; Theory and Policy, MacMillan Publishing Company, New York
2. लक्ष्मीनारायण नाथुराम का, समष्टि अर्थशास्त्र
3. Rana & Verma - Macroeconomics(Hindi & English)
4. M.L. Jhingan - Macroeconomics (Hindi & English)
5. Shapiro, E. 91966)- Macroeconomic Analysis, Galgotia Publications, New Delhi.
6. Ahuja,H.L(2012): Samasti Arthshastra, S.Chand & Company, New Delhi. Lal,S.N(2012): Samastibhavi Visleshan, Shiva Publishing House, Allahabad.
7. Vaish, M.C.Macroeconomies. (Hindi & English).
8. Mier, G.M. & R.E. Baldwin (1955) Economic Development: Theory History and Policy, Willey & Sons Inc, New York
9. Powelson, LP.C. (1960)-National Income and Flow of Funds Analysis McGraw Hill, New York.

24BIGE6308T: Human Geography

Credits:3L+0T+1P
Periods per week: 5
Examination:3hours

Marks:100
C1+C2=10
C3+C4=90Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives

This course covers various dimensions of Human Geography. This is important for developing understanding on changing man-environment relationships, human population and economic activities, human settlements and so on.

Learning outcomes

- To introduce with branches of human geography and different concepts of man –environment relationship.
- To develop familiarity with different races and tribes of the world and interpretation of the world population trends.
- To visualize various patterns of urbanization, migration and settlement.
- To learn about the population resource relationship, concept of development and population problems.
- To cover basic contents for various competitive examinations such as civil services, UGC NET-JRF, state level PSC exams and so on.

Unit I

Definition, Nature and Scope of Human Geography. Paradigms of Man-Environment Relationship; Determinism, Possibilism and Neo-determinism. Fundamental Principles of Human Geography; Principle of Activity, Principle of Areal Differentiation, Principal of Terrestrial Unity.

Unit II

Human Races; Types and Distribution (Classification of G. Taylor). Study of Socio-economic Life of Tribes; Eskimo, Bushmen, Pygmies, Santhal, Nagas and Bhil. World Population; Growth, Density and Distribution. Concept of Optimum Population.

Unit III

Migration; Definition, Causes, Types and Consequences. World Migration Patterns. Population-Resource Regions. Population Dividend and Problems. World Population Policies. Concept of Development.

Unit IV

Human Settlements; Site and Situation. Types and Morphology of Rural Settlements. Classification and Morphology of Urban Settlements. Trends and Patterns Urbanisation in the World. Problems of Urbanization.

Suggestive Readings:

1 कौशिक एस.डी. (2017): मानव भूगोल, रस्तोगी प्रकाशन, मेरठ।
2 हुसैन माजिद (2012): मानव भूगोल, रावत प्रकाशन, जयपुर।
3 भल्ला एल. आर. (2017): मानव भूगोल, कुलदीप पब्लिकेशन, जयपुर।
4 मौर्य एस. डी. (2022): मानव भूगोल,शारदा पुस्तक भवन, इलाहाबाद।
5 Johnston, R.J. (2000): Dictionary of Human Geography. New York: Oxford.
6 Chandna, R.C. (2010): Population Geography, Kalyani Publisher, New Delhi.
7 Leong G. C. and Morgan G. C. (2017): Human and Economic Geography, Masood Books, UP.
8 Singh, L.R. (2005): Fundamentals of Human Geography. Sharda Pustak Bhawan, Allahabad
9 Singh S. and Saroha J. (2021): Human and Economic Geography, Pearson Education.
10 Bhende A.A. and Kanitkar T. (2003): Himalaya Publishing House, Mumbai.

24BIGE6308P:Practical

Unit I

Nature, Scope and History of Cartography. Cartographic Techniques and Tools. Cartographic Symbols. Definition, Basic Concepts. Purpose and Types of Maps

Unit II

Diagrams; Meaning and Classification. One dimensional Diagrams; Line Diagram, Bar Diagram, Pyramid Diagram. Two Dimensional Diagrams; Square, Rectangle and Circle (Pie Diagram). Three Dimensional Diagrams; Cube, Sphere and Block Pile.

Unit III

Prismatic Compass Survey; Details of Instruments. Open and Closed

Traverse Methods, Graphical Method of Eliminating the closing error.

Suggestive Readings:

1 शर्मा जे. पी.(2023): प्रायोगिक भूगोल, रस्तोगी पब्लिकेशन, मेरठ।

2 खुल्लर, डी. आर. (2022): प्रयोगात्मक भूगोल, कल्याणी प्रकाशन, नईदिल्ली।

3 भल्ला एल. आर. (2017) : प्रायोगिक भूगोल के मूलतत्व, सलोनी ऑफसेट, जयपुर।

4 Singh, L.R. (2010): Fundamentals of Practical Geography,Sharda Pustak Bhawan, Allahabad.

5 Mishra, R. N. and Sharma, P. K. (2022): Practical Geography, PareekPublication,

6 Singh, R.L. and Singh Rana P.B. 1991: Elements of Practical Geography. Kalyani Publishers, New Delhi.

24BIHI6309T:HISTORY OF INDIA (From1707CEto1885CE)

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

- **Learning Objectives**

  To impart in-depth knowledge about the structural patterns and a comparative account of the different organ systems of vertebrates.

- **Learning outcomes**

  Upon completion of the course, students should be able to:

Unit I

Decline of Mughal Empire

Decline of Mughal Empire, Rise of New States-Bengal, Awadh, Hyderabad, Battle of Plassey,Battle of Buxar.

Unit II

Maratha Empire

Rule of Peshwas,Maratha Administration,Anglo-Maratha Conflict.

Unit III

Expansion of British Empire

Anglo-Mysore War, Anglo-French Rivalry, Ranjeet Singh and Sikh Empire, Annexation of Punjab and Sindh.

Unit IV

Development of Colonial Administration

Regularity Acts-1773,1784,1813,1833,1853,Administrative Reforms-Revenue, Judicial, Civil, British Policy to wards Princely States.

Indian Response

Revolt of 1857, Govt. Of India Act 1858. Social Reforms. Early Political Associations

Suggestive Readings:

- GrowerB.L.,modern Indian History,S Chand publication,New Delhi
- MahajanV.D,Modern Indian History,S.Chand publication,New Delhi
- MahajanV.D Aadhunik Bharat kaItihas,S.Chand publication New Delhi (Hindi)
- Chandra Bipin,History of Modern India,Orient Blacks won,New Delhi
- Bandho padhayay.Sekhar,From Plassey to Partition and after ,Orient Blacks wan,NewDelhi
- Guha.Ramchandra, Makers of Modern India;Penguin publication,New delhi
- Chand Tara,History of Freedom Movement vol-1-6,Publication Division.Delhi
- Shukla Ajay,The Making of Modern India (From1498 to the modern India),S.Chand Publication NewDelhi (Hindi)
- Shukla R.L,Aadhunik bharat,Hindi Madhyam Karyanvan Nideshalya,Delhi (Hindi)
- Grower.B.L,Aadhunik Bharat ka Itihas, S Chand publication,New Delhi (Hindi)
- Roy Satya ,Bharat me Upniveshwad ,Hindi Madhyam Karyanvan Nideshalya Delhi (Hindi)

24BIHS6310T:Textiles

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives

- To know the manufacturing process of different types of textile fibers,their structures and uses
- To know the manufacturing process of different types of fabrics.
- To impart knowledge on different textile finishes

Learning outcomes

Unit I

Meaning and classification of fibres Production,properties and usage of fibres Natural fibre: cotton, flax, silk and wool Man-made fibers: Rayon(Viscose)

Unit II

Yarn formation Mechanical spinning (cotton system,wool system,worsted system)chemical spinning (wet, dry, melt) Types of yarns: Staple and filament, simple yarn, complex yarns

Unit III

Parts of a loom Operations of a loom Classification of weaves (Plain,Basket,Ribbed,Twill,Satin,Sateen)-Structure, Properties, usages

Unit IV

Finishing-Mechanical finishes-Beetling,Calendaring,Embossing,Glazing,Napping. Chemical Finishes-Mercerization, Ammoniating. Dyeing - Types of dyes

Suggestive Readings:

1. CorbmanP.B.(1985)Textiles-Fibertofabric (6thEdition),Gregg Division/McGraw Hill Book Co, US.Joseph,M.L.(1988) Essentials of Textiles(6thEdition), Holt, Rinehartand WinstonInc, Florida.
2. Vilensky G. (1983) Textile science, CBS Publishers and Distributors, Delhi.
3. Tortora, G. Phyllis, Understanding Textiles, Mc Millanm Co. USA.
4. SekhriS.(2013)Textbook of Fabric Science:Fundamentals to finishing ,PHI Learning, Delhi.

24BIHS6310P:Practical

Fiber identification tests- visuals, burning, microscopic

Yarn identification-single,ply,cord,textured,elastic,monofilament,multifilament and spun yarn.

Thread count and balance, Dimensional stability,

Weaves- Identification and their design interpretation on graph (any three)

Suggestive Readings:

1. CorbmanP.B.(1985)Textiles-Fibertofabric(6thEdition),GreggDivision/McGraw Hill Book Co, US.Joseph,M.L.(1988)EssentialsofTextiles(6thEdition),Holt,RinehartandWinstonInc, Florida.
2. Vilensky G. (1983) Textile science, CBS Publishers and Distributors, Delhi.
3. Tortora, G. Phyllis, Understanding Textiles, Mc Millanm Co. USA.
4. SekhriS.(2013)Textbook of Fabric Science:Fundamentals to finishing,PHI Learning, Delhi.

24BIPY6311T: Ethics (Indian and Western)

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3+=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

- **Learning Objectives**

  To impart in-depth knowledge about the structural patterns and a comparative account of the different organ systems of vertebrates.

- **Learning outcomes**

  Upon completion of the course, students should be able to:

Unit I

The Ethics of Bhagavad gītā: Niṣkāma Karma-yoga, Sthitiprajña,Lokasaṃgraha Puruṣārthās and the irinter-relations

Meaning of Dharma,Classification of Dharma:Sāmānya dharma,Viśeṣa dharma,Sādhāraṇad harma, Concept of ṚṇaandṚta

Unit II

The general features of Jainaand Bauddha Ethics. The ethics of Gandhi: Eleven vows, Sarvodaya, Concept of seven sins, Doctrine of Trusteeship

Unit III

Nature and scope of Ethics,Theories of ethics:Teleological and Deontological.Postulates of morality, problem of free will and determinism Moral and non-moral actions, Object of moral judgement-Motive and intention,ends and means. Value as standard of morality.

Unit IV

Standards of morality: Hedonism- Ethical and Psychological,Utilitarianism: Benthamand Mill. Intuitionism, Butler's Theory of conscience as the ultimate standard of moral judgement.

Kant'sethical theory:Good will,Categorical Imperative,Duty for duty'ssake Crime and the ories of punishment, Issue of Capital punishment.

Suggestive Readings:

1. Dasgupta,Surama,"Development of Moral Philosophy in India",Munshiram Manohar lal Publication,New Delhi,1994.
2. Frankena,W.,"Ethics",Pearson,New Delhi,1998.
3. Maitra,S.K.,"The Ethics of the Hindus",Calcutta University Press, Calcutta,1963.
4. Pandey,S.L.,"Neetishastra ka Sarvekshana",Central Publishing House,Allahabad,1992.
5. Satyanarayana,Y.V.,"Ethics:Theory and Practice",Pearson,New Delhi,2009.
6. Shaida,S.A.,"Problems of Ethics",Spectrum Publications,Delhi,2003.
7. Sharma,I.C.,"Ethical Philosophies of India",Johnsen Publishing,U.S.A.,1965.
8. Tewari,K.N.,"Classical Indian Ethical Thought",Motilal Banarasidass,New Delhi,1998.
9. Verma,Ved Prakash,"Neetishastra ke Mool Siddhanta",Hindi Madhyam Karyanvayan Nideshalaya,New Delhi,1991.

24BIPO6312T:Political Process In India

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

- **Learning Objectives**
  To impart in-depth knowledge about the structural patterns and a comparative account of the different organ systems of vertebrates.
- **Learning outcomes**
  Upon completion of the course, students should be able to:

Unit I

Process of Democratization in Post-colonial India, Dimensions of Democracy: Social, Economic, Political, Factors Shaping the Indian Political System since Independence Quasi-Federalism, Coalition, Political parties & Party System In India

Unit II

Impact of Democratic Decentralization: Urban and Local self government, 73rd& 74th Amendment of Indian Constitution Pressure Groups, Determinants of Voting Behavior, Cast & Politics, Need of Electoral Reforms, The Politics Of Secession And Accommodation.

Unit III

Religion & Politics in India, Debates on Secularism.
Affirmative Action Policies With Respect To Women, Caste And Class

Unit IV

Challenges of Nation Building: Ethnicity, Language, Regionalism, Caste,
Majority and Minority Communalism, Corruption Politics of Defection, Politics of President rule

Suggestive Readings:

1 Basu D.D., An introduction to the Constitution of India', Prentice Hall, New Delhi. (Latest Edition)
2 Frankel Francine, Hasan Zoya, Bhargava Rajeev, Arora Balveer (eds.), Transforming India, Oxford University Press, New Delhi, 2000.
3 Granville Austin 'Working a Democratic Constitution: The Indian Experience', Oxford University Press, New Delhi, 1999 4. Jayal Niraja Gopal (Ed.): Democracy in India' Oxford India Paperbacks, New Delhi 2012
4 Kothari Rajni, Politics in India' Orient Blackswan Hyderabad, 2014
5 Kothari Rajni, 'Bharat mein Rajneeti: Kal aurAaj' Vani Prakashan New Delhi, 2007
6 Narang A.S., Indian Government and Politics, Geetanjali Publishing House, New Delhi, 1996 (Latest edition)
7 Singh,M.P and Sexena Rekha, Indian Politics: Contemporary Issues & Concerns Prentice Hall of India Pvt. Ltd. New Delhi, 1998.
8 Jayal Niraja Gopal (Ed.): Democracy in India' Oxford India Paperbacks, New Delhi 2012

This Course Can Be Opted As An Elective By The Student Of Any Subject.

24BIPA6313T:Administrative Institutions in India

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Objectives of the course:

The objective is to acquaint the students about the functiong and the administrative institutions running under the various ministries of the Government of India.

Course Learning Outcomes:

1. Students will be able to grasp the concept of administrative institutions and its relationship between legislature, executive and judiciary.
2. Students will be able to discuss the working and role of various national level administrative institutions.

Unit I

Administrative Institutions in a Democratic and socialist society. The concepts of Laissez faire, welfare state and administrative state.

Unit II

Organisation of Government: Legislature- Its role in modern government, decline of legislature. Executive- Types and Relationship with legislature, its growing importance. Judiciary- Functions and Role with Special reference to the power of judicial review.

Unit III

Democracy and Administration: Features of a Democratic Administration. Political parties and Pressure groups: their role and interactions in a democratic society. Bureaucracy: Nature and concept, recent trends and types of Bureaucracy. Neutrality, anonymity and representative character of Bureaucracy.

Unit IV

. Organisation and function of following Institutions:

a. Finance Commission of India b. Election Commission of India
c. Union Public Service Commission d. Comptroller and Auditor General of India
e. NITI Aayog f. University Grants Commission
g. Central Social Welfare Board h. Reserve Bank of India.

Suggested Books/ Readings:

Paranjape: Government in Modern society
M.G. Gupta: Modern Government
I.I.P.A.: Organisation of the Govt. of India.
Ernest B. Schulze: Essentials of Govt.
Waldo: Administrative state
Field: Government in Modern Society
Ashok Sharma: Parshashnik Sansthaye
B.L. Fadiya: Parshashnik Sansthaye

Suggested E-Resources:

E-pgpathashala modules: -

1. www.inflibnet.ac.in
2. www.ignou.ac.in
3. www.sawayam.gov.in

24BISO6314T:Social Research Methods

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Course Objectives:

The objective of the paper is to develop an understanding of social research and its methods.

Course Outcomes:

- Able to understand various theoretical aspects of social research.
- Able to understand practically applicable methods and techniques required to collect data.

Unit I

- Social Research - Meaning, Types and Steps of Social Research. Scientific Methods - Objectivity and Empiricism.

Unit II

- Formulation of Research Problem. Hypothesis - Concept, Sources, types and Importance.

Unit III

- Sources of Data - Primary and Secondary. Sampling Methods - Meaning and Types. Methods and Techniques - Survey Method, Case Study, Observation, Questionnaire and Interview Schedule.

Unit IV

- Classification, Tabulation and Interpretation of Data. Measures of Central Tendency- Mean, Median and Mode.

Suggestive Readings:

- Bailey, K. 1978. Methods of Social Research. The Free Press.
- Beteille, A and T. N. Madan. 1975. Encounter and Experience, Personal Accounts of Fieldwork. New Delhi: Vikas Publishing House.
- Bryman, Alan. 1988. Quality and Quantity in Social Research. London: Unwin Hyman.
- Jayaram, N. 1989 Sociology: Methods and Theory. Madras : MacMillian.
- Kothari, C.R. 1989. Research Methodology: Methods and Techniques. Bangalore: Wiley Eastern.
- Punch, Keith. 1996. Introduction to Social Research. London: Sage.
- Sharma, C.L. 1999. Samajik Anusandhan – Survekshana Ki Unveshan Padhatiya (In Hindi)Jaipur: Rajasthan Hindi Granth Acadami.
- Shipman, Martin. 1988. The Limitations of Social Research. London Sage
- Srinivas, M.N. and A.M. Shah. 1979 Fieldworker and the Field. Delhi: Oxford.
- Young, P.V. 1988. Scientific Social Surveys and Research. New Delhi: Prentice Hall.

24BIEN6315T:Poems and Plays

Credits:3L+0T+1P **Marks:100**
Periodsperweek: 5 **C1+C2=30**
Examination:3hours **C3+=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning Objectives

- To recognize the chronological order of poets and recognize the development of English poetry.
- Engage in shut evaluation of narrative and poetic language which helps in making use of technical analytical terms.
- Understanding the literary devices which beautify the splendor of the poem.
- Appreciate a poem aesthetically.

Learning outcomes

- Students will be able to analyze poetic works using technical vocabulary and literary concepts.
- Students will have developed the ability to compare and contrast poems from diverse traditions, movements, and historical periods.
- Students will successfully create original pieces of poetry that reflect their personal style and voice.
- Students will gain confidence in presenting and discussing their own poetry as well as others', fostering a collaborative and engaging learning environment.

Unit I

Thomas Gray: Elegy Written in a Country Churchyard
William Blake: London
William Wordsworth: Daffodils
S. T. Coleridge: Kubla Khan
P. B. Shelly: Ode to the West wind
John Keats: To autumn

Unit II

Byron: There is a pleasure in the pathless woods
Tennyson: Crossing the Bar
Browning: My Last Duchess
Arnold: Dover Beach

Unit III

The following poems from *An Anthology of Commonwealth Poetry* ed. C. D. Narasimhaiah
Nissim Ezekiel: Enterprise
A. K. Ramanujan: Obituary
Arun Kolatkar: The Bus
Kamala Das: An Introduction

Unit IV

Girish Karnad: *Nagamandala*

Suggestive Readings:

1 Strings of Gold Ed. Jasbir Jain (Macmillan
2 Poet's Pen: An Anthology of English Verses (Oxford University Press)
3 An Anthology of Commonwealth Poetry ed. C. D. Narasimhaiah (Macmillan
4 *Nagamandala* by Girish Karnad

24BISA6316T: वैदिक–साहित्य, गद्य–साहित्य एवं व्याकरण

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours
C3=70Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay

type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

अधिगम उद्देश्य

- वैदिक साहित्य के प्रति अभिरुचि निर्माण।
- वैदिक देवतावाद एवं यज्ञवाद का परिचय।
- संस्कृत व्याकरण का अवबोध एवं अनुप्रयोग।
- संस्कृत शब्दों के निर्माण व सृजन प्रक्रिया का ज्ञान।

अधिगम परिणाम

- भारतीय यज्ञ परंपरा एवं यज्ञों के महत्व व अनुप्रयोग का ज्ञान।
- भाषा शिक्षण एवं अनुवाद ज्ञान।
- व्याकरण अनुप्रयोग।
-

पाठ्यक्रम

- **इकाई प्रथम**–वैदिक साहित्य अग्नि सूक्त१.१, वरुण सूक्त१.१२५, क्षेत्रपति सूक्त४.५७, विश्वेदेव सूक्त८.५८, प्रजापति सूक्त१०.१२१, संज्ञान सूक्त१०.१९१,
- **इकाई द्वितीय** – शुकनासोपदेश।
- **इकाई तृतीय** – वैदिक साहित्य का इतिहास–संहिता, ब्राह्मण, आरण्यक, उपनिषद् एवं वेदांग
- **इकाई चतुर्थ**– लघु सिद्धान्त कौमुदी–अजन्त एवं हलन्त प्रकरण

सहायक पुस्तकें

- वैदिक सूक्त संग्रह– डॉ. देवेंद्रनाथ पांडे जगदीश संस्कृत पुस्तकालय जयपुर।
- वैदिक साहित्य का इतिहास– डॉ. कपिल देव द्विवेदी।
- शुकनासोपदेश– डॉ. राकेश शास्त्री, डॉ. प्रतिमा शास्त्री, चौखंभा ओरिएंटालिया
- लघु सिद्दांत कौमुदी–अर्कनाथ चौधरी

24BIHI6317T:रीतिकालीन काव्य तथा काव्यांग विवेचन

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

उदेश्य*(Objectives)*

1. रीतिकाल की प्रमुख प्रवृत्तियों एवं प्रमुख कवियों का परिचय कराना।
2. काव्य गुण एवं काव्य दोषों की जानकारी प्रदान करना।
3. रीतिकालीन कविता की भाषा एवं कविता कला से परिचित कराना।
4. मानवीय मूल्यों के प्रति संवेदनशील बनाना।

अधिगम प्रतिफल *(Learning Outcomes)*

1. रीतिकालीन काव्य कला को समझने की दृष्टि विकसित हो सकेगी।
2. काव्य सौन्दर्य परख करने की कला–कौशल और अभिरूचि का विकास हो सकेगा।
3. दरबारी संस्कृति एवं उसकी मनोवृत्ति को समझ सकेंगें।
4. साहित्य के प्रति अभिरूचि एवं संवेदनाओं का विकास होगा।

इकाई I

रीतिकालः पृष्ठभूमि, रीतिकाल की प्रमुख प्रवृत्तियां (रीतिबद्ध, रीति सिद्ध एवं रीतिमुक्त काव्य धाराएं) एवं प्रमुख कवियों का परिचय।

इकाई II

छंद ज्ञान– दोहा, चौपाई, सोरठा, रोला, उल्लाला, गीतिका, कवित्त, कुण्डलिया, मंदाक्रांता एवं वसंततिलका के लक्षण और उदाहरण।
अलंकार ज्ञान – अनुप्रास, यमक, वक्रोक्ति, उपमा, रूपक, उत्प्रेक्षा, भ्रांतिमान, संदेह, दृष्टांत एवं उदाहरण के लक्षण और उदाहरण।

इकाई III

केशवदास (संक्षिप्त रामचंद्रिकाः संपादक लाला भगवान दीन, नागरी प्रचारिणी सभा काशी)
लंका कांड – 1 से 10
देवः देव ग्रंथावली – संपादक हरि मोहन मालवीय
पद – 1 से 10

Dy. Registrar
Pandit Deendayal Upadhyaya
Shekhawati University,
Sikar(Rajasthan)

भूषण ग्रंथावली – संपादक विश्वनाथ प्रसाद मिश्र
पद–1 से 9

इकाई IV

बिहारी रत्नाकर (संपादक जगन्नाथ दास रत्नाकर)
दोहा संख्या 1 से 25
घनानंद (संपादक – विश्वनाथ मिश्र) कवित्त संख्या 1 से 10

सहायक पुस्तकें –

1 हिन्दी साहित्य का इतिहास – रामचंद्र शुक्ल
2 काव्यांग दर्पण – डॉ. विजयबहादुर अवस्थी
3 रस मीमांसा – रामचंद्र शुक्ल
4 हिन्दी रीति साहित्य – डॉ. भागीरथ मिश्र
5 रीतिकाव्य की भूमिका – डॉ. नगेन्द्र
6 केशवदास – संपादकः विजयपाल सिंह
7 रस मीमांसा – रामचंद्र शुक्ल
8 बिहारी का नया मूल्यांकन – बच्चन सिंह
9 घनानंद का श्रृंगार काव्य – रामदेव शुक्ल
10 रस सिद्धान्त – नगेन्द्र

24BIPE6318T:Anatomy And Physiology Of Exercise

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

Learning outcomes

After successfully completing this course,the student will be able to:

- Understand the basic structure and function of the human body and demonstrate its knowledge for the development of skills and fitness.
- Knowledge of anatomy helps design effective training programs tailored to individual needs and goals,optimizingper formance and minimizing the risk of injuries.

- Demonstrate knowledge and understanding of the effect of exercise on the different systems.
- Classify types of joints and explain the structure and function human joints.

Unit I

Introduction-

Meaning and concept of Anatomy, Meaning of Physiology and Exercise Physiology, Need and importance of Anatomy and Physiology in Physical Education, Definition of cell, Tissue, Organs and Microscopic Structure of cell.

Unit II

Elementary knowledge of skeleton system, Joints and typesat joints,-Terminology of various movement around joints, Types of Muscles, Structure of Muscles, Characteristics of Muscles.
Body System- Cardiovascular System, Digestive System, Respiratory System, Nervous System.

Unit III

Growth and Development– Define Growth and Development, Difference between Growth and Development, Role of Glandsin Growth and Development, Definition and Physiological concept of physical fitnesst raining, Definition and importance of-warming up and conditioning, Physiological aspects of developments of strength,speed, agility.

Unit IV

Effects of exercises on-Respiratory system, Circulatory system, Muscular system. Neuro-musculareo-ordination, Obesity and body weight control, Second wind, Kinesthetic Sense, Oxygen depth, Fatigue, Side stich, Cramp (Exercise-related transient abdominal pain.)

Suggestive Readings:

1 Avelin C.Pearce,(2005)"Anatomy and Physical Education 'Prakash,Brothers,Ludhiana.
2 Pearce,Evelyn-Anatomy and Physiology for Nurse"Oxford University Press,New Delhi.
3 Sears,Gordon–Anatomy and Physiology for Nurses-Orient Long man Ltd.,New
4 Yashoda Saini,"Sharir RachnaTatha Sharir KriyaVigyan (Hindi)"Khel sahitya Kendra
5 Dr.Suresh KumarAgarwal etc."Basics of Physical Education,Health & Sports".
6 Singh Ajmer etc. (2000)"Olympic Movement" Kalyani Publishers, Ludhiana.
7 Ajmer singh etc.Essential of physical education."Kalyani Publishers,Ludhiyana
8 Text books of Physical Education For CBSE XI& XII class.

24BIPE6218T:Practical

Learning Out comes:

On successful completion of the course,the students will be able to:

1. Assess the individual level so ffitness components.
2. Demonstrate the basic fundamental knowledge and skills

Atheletics (Trackand Field).

Topics for practical:

1. Atheletics(Trackand field).

   a. TwoThrowing Events

   b. Two Jumping Events

   (Preparing of practical file onathletics (Track and field)

2. Canadian Physical Fitness

24BIBP6319T:Basics of Pedagogy at Secondary Stage

Credits:3L+1T+0P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

4 C1:Written Test as per schedule (at the end of 8th week)

5 C2:As per class schedule-WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz (at the end of fifteen week).

About the Course

This course deals with diverse range of topics of basics of pedagogy at secondary sage that will equip student teachers with valuable knowledge, capacities and competencies. This course comprises four units and a practicum. This course prepares student teachers to understand secondary-stage learners and design teaching accordingly. This course also aims to equip teachers with the necessary tools, knowledge, and competencies to continuously evolve as professionals and create a positive and transformative impact on their students and society as a whole. In this course a strong foundation will be established by exploring the fundamental principles and concepts that support basics of pedagogy in the light aims and objectives of the curriculum. This course emphasizes understanding learners and their backgrounds comprehensively so that an engaging and supportive learning environment, that fosters a need for learning, can be created for facilitating learner's holistic development.This course is designed to equip student teachers with a wide array of teaching learning strategies. It also focuses on innovative and transformative approaches to education, aiming to create life long learners equipped to thrive in an ever-changing world. Through professional development opportunities, student teachers will be better prepared to meet the ever-changing demands of the educational landscape and inspire the next generation of learners.

Learning Outcomes

After completion of this course,student teachers will be able to:

- build comprehensive understanding of secondary stage learners,
- assess the physical, mental, social, and emotional growth of secondary stage learners,
- develop skills to observe and recognize the unique capabilities and strengths of secondary stage learner,
- discuss the necessary knowledge and skills to implement effective teaching and learning strategies,
- create enriching and inclusive learning environments to foster values- based education,
- develop a deeper understanding of various pedagogical approaches and their impact on learners,
- determine the knowledge to make in formed decisions about instructional practices,
- explain the crucial role of pedagogy in facilitating effective learning experiences for students,
- outline knowledge and skills necessary for continuous professional development.

UNIT-I

Understanding Secondary Stage Learners

A. Understanding the learners and learner background
   i. The physical, mental, social, and emotional growth of learners
   ii. Thought processes and cognitive skills of learners.
   iii. Psychological and social orientations of learners
   iv. Social and academic lives of learners
   v. Conflicts and challenges of secondary learners
   vi. Characteristics of secondary stage learners

B. Observing theunique capabilities of a child

UNIT-II

Strategies of Teaching and Learning

A. Understanding teaching and learning strategies:
   i. Concept, characteristics and functions of teaching
   ii. Making abstract concepts enjoy able by relating them to real-life situations,
   iii. Promoting multi disciplinary learning through integration of different disciplines
   iv. Promoting learner participation and engagement in learning
   v. Building values through art integrated activities,community engagement etc.
   vi. Promoting multi disciplinary learning through integration of different disciplines
   vii. Promoting health and social sensitivities
   viii. Developing respect to ward cultural heritage
   ix. Making classrooms inclusive and joyful learning spaces

B. Relationship between Aims and Values of Education,Curriculum and Pedagogy

UNIT-III

Pedagogical Approaches

A. Pedagogical approaches: constructivist approach; collaborative approach; reflective approach; integrative approach, inquiry- based approach; other contemporary approaches, art-integrated learning, sports-integrated learning.

B. Types of pedagogy: social pedagogy; critical pedagogy; culturally responsive

pedagogy;Socratic pedagogy in inclusive setup.

C. Role of pedagogy in effective learning:how does pedagogy impact the learner?

UNIT-IV

Continuous Professional Development of Teacher

A. Meaning and need, professional and ethical competencies and need for updating content and pedagogical competencies to develop their professional competencies.

B. Professional development activities: seminars, conferences, orientation programmes, workshops,online and offline courses, competitions, publications, development of teaching portfolio, capacity building programmes,and teacher exchange programmes.

C. Development of professional competencies to deal with gender issues, equity and inclusion, ethical issues, environmental issues, human health and well-being, population, human rights, and various issues(emotional,mental,physical issues related to pandemic (for example covid-19).

Suggestive Practicum(Any Three)

1. Analyze NEP2020 with reference to pedagogical aspects of the concerned subject.
2. Analyze and reflect on the qualitie so fan'InnovativeTeacher'in Context of National Professional Standards for Teachers (NPST) and National Mentoring Mission (NMM).
3. Explore different plat forms such as NationalTeacher'sPortal, NISHTHA, DIKSHA ,and SWAYAM for an online course and prepare are port.
4. Participate in a workshop or seminar to explore the concept of Continuous Professional Development (CPD), its significance in lifelong learning and prepare a write up on the findings.
5. Develop teaching learning strategies to address the needs of diverse learner sin context of gender, equity and inclusion and prepare a Power Point presentation.
6. Raise awareness on the ethical and social challenges in education through field trip and createane- portfolio.
7. Any other project assigned by HEI.

Suggestive Mode of Transaction

Lecture cum discussion, project-based method, problem solving method, experiential learning, art integrated learning, sports integrated learning, ICT integrated learning, interactive methods such as group discussions,peertutoring,work shops, observations, and presentations.

Suggestive Mode of Assessment

Portfolio creation, written tests, classroom presentations, seminars, assignments, practicum,sessional, terminal semester examinations (As per UGC norms).

Suggestive Reading Materials

- National Council of Educational Research and Training. (April2022).Mandate documents Guidelines for the development of National Curriculum Frameworks.
- National Education Policy 2020, MoE, Government of India (English and Hindi)
- National Steering Committee for National Curriculum Frameworks, (2023). Draft National Curriculum Frame work for School Education.
- National Policy on Education 1968 ,1986 and 2020.

*Teachers mayal so suggest books/ readings as per the need of the learners and learning content.

SEMESTER 4

24BIPS6401T: Philosophical & Sociological Perspectives of Education–I

Credits:3L+1T+0P **Marks:100**
Periodsperweek: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

About the Course

The course aims at enabling student teachers to explore educational philosophy, including the concept, nature and scope the aims of educational philosophy relationship between philosophy and education; Indian philosophical traditions and their implications for education; some of the key philosophical schools of thought such as idealism, naturalism, pragmatism, progressive is and exist entialism and their implication for educational practices.The course also would provide an analysis of the Western schools of philosophy and their approaches etc.

Learning Outcomes

- To encourage students to explore the nature of knowledge, the nature of human beings, the nature of society and its aims and the educational implications of these understandings.
- To engage the prospective teachers to read and acquaint themselves with the meaning of terms like Vidya, Avidya, Shiksha, Education etc. and to facilitate them to understand and differentiate them through reflections on these terms on the basis of ancient Indian texts.
- To facilitate prospective teachers to engage themselves in peer groups for sharing of their real-life reflective experiences regarding socio-cultural and philosophical living and facilitate them to conceptualize the meaning of terms like philosophical, social and cultural traditions in Indian educational context.
- To orient and engage prospective teachers to read, observe and understand the vision of some great Indian and global educators and categorically reflecton vision /aim, process of education and the contemporary relevance.

UNIT-I
Education and Philosophy

A. Conceptual clarity, nature and relationships.
B. Aims of studying philosophical perspective of education.
C. Branches of Philosophy and their educational implications: Metaphysics, Epistemology,Axiology
D. Understanding Indian Perspective of Education

- Meaning, nature and aims of education with special reference to Vedic, Buddhist, Jain, Sikh and Islamic traditions.
- Understanding the terms Darshana, Para and Apara Vidya, Avidya, Shiksha, Samvaad, Panchkosha, Gurukulam, Acharya, Guru, Shishya, Upadhyaya, Jigyasa, Swadhyaya.

E. Understanding Western Perspective of Education
- Meaning, Nature and aims of education with reference to Cognitive, Behaviorist and Developmental theories of Education.

UNIT-II
Philosophical Schools and Education

A.Conceptual Clarity of the following schools of thoughts with their implications for educational practices:
- **Bharatiya:**Samakhya,Yoga, Nyaya,Vaisheshika, Mimansa,Vedanta
- **Western:**Idealism, Naturalism, Pragmatism, Progressivism.

UNIT-III
EducationalThinkers

A. Deliberations on aims, process and educational institutions developed on thoughts of following thinkers and practitioners:
- **Bharatiya:** Swami Vivekananda, Sri Aurobindo Ghosh, Gurudev Rabindra Nath Tagore, J. Krishnamurti, Mahamana Madan Mohan Malaviya, Mahatma Gandhi,Giju bhai Badheka.
- **Western:** J.Rousse, Maria Montessori, Friedrich Froebel, JohnDewey.

UNIT-IV
Value Education

A. Conceptual Clarity, Significance and Types of Values.
B. IndianTraditional Values.
C. Guru-Shishya-Parampara and Educational Values.
D. Convocation message inTaittiriya Upanishad.
E. Values enshrined in Indian Constitution.
F. NEP, 2020 and Values with special reference to 21st Century.
G. Pedagogical Issues.

Suggestive Practicum

1. Individual/group assignments/tasks in various forms like writing small paragraphs/ brief notes,conceptualizations on specific terms etc.
2. Institutional visits in small groups in coordination to institutions related to different thinkers and preparation of a report followed by individual/ group presentation.
3. Sharing of student experiences (in groups) related to readings on great thinkers help them to reshape their concept and enable them to develop vision, mission and objectives for a school and their plan to accomplish the objectives in form of a group report.
4. Identification and reporting of Indian perspective related to educational aims, student-teacher characteristics, methods, evaluation procedure, convocation etc .based on critical study of life and thoughts of thinkers.

Suggestive Mode of Transaction

The course content transaction will include the following:

- Organized lectures using variety of media.
- Small group discussion, panel interactions, small theme based seminars ,group discussions, cooperative teaching and team teaching, engagement of in reading of primary or secondary sources of literature (Original texts, reference books etc.) related to different aspects of life and education of Great Educators,case studies, short term project work etc.
- Critically examining their experiences to carve out their world and life view and further analyze them from philosophical point of view to reshape their perspective. They will engage prospective teachers in the development tof comparative educational charts related to vision, aims, process, institution etc. They will also lead to reading-based interactions and critical reflections related to process and significance of entry/ admission rituals, convocation system etc.

Suggestive Mode of Assessment

The assessment will be based on the tests and assignments.

Suggestive Reading Materials

Teachers may suggest books/ readings as per the need of the learners and learning content.

24BIBO6402T:PLANT PHYSIOLOGY AND BIOCHEMISTRY

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:

C1:Written Test as per schedule (at the end of 8th week)

C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Course Objectives:

- This course deals with physical, chemical and biological functioning of plants. It is designed to survey current aspects of plant processes, biochemistry and functions with emphasis on recent research progress in related fields.

Learning Outcomes:

- Describe the various physiological aspects in plants.

- Examine the role, structure and importance of biomolecules associated with plant life.
- Preliminary understanding of the basic functions and metabolism in a plant body.
- Evaluate the role of enzymes in plant life.
- To understand the importance of nutrients in plant metabolism and crop yield.

UNIT-I

Plant water relations - Diffusion, imbibition, osmosis, OP, DPD, TP; water potential - concepts and components (pressure potential, gravity potential, osmotic potential and matric potential). Absorption of water - active and passive, pathway of water movement - apoplastic and symplastic pathway.

Ascent of sap: cohesion-tension theory. Transpiration - types, mechanism, theories (Starch-sugar, Proton-K+ ion exchange), significance; anti-transpirants. Guttation.

Mineral nutrition: Role of major and minor elements in plant nutrition, deficiency symptoms of essential nutrients; mineral uptake - passive (ion exchange) and active (carrier concept).

UNIT-II

Translocation of solutes: pathway of phloem transport, mechanism - pressure flow, mass flow hypothesis; phloem loading and unloading.

Photosynthesis: Photosynthetic pigments, Light reaction; red drop and Emerson enhancement effect. Photosystems - components and organization; cyclic and non-cyclic photophosphorylation; carbon assimilation pathways - C3, C4 plants, CAM. Photorespiration. Factors affecting photosynthesis.

Respiration: anaerobic and aerobic; glycolysis, Kreb's cycle, mitochondrial electron transport system - components, oxidative phosphorylation, ATPase. RQ - significance. Factors affecting respiration.

UNIT-III

Nitrogen fixation: Biochemistry of nitrogen fixation, nitrogenase, nitrogen fixation in legumes, nitrate assimilation, ammonium assimilation.

Plant hormones: Biosynthesis, physiological effects of auxins, gibberellins, cytokinins, ABA, and ethylene.

Plant movements: tropic movements - geotropism and phototropism; nastic movements - seismonastic and nyctinastic movements. Physiology of flowering - phytochrome, photoperiodism, vernalization.

UNIT-IV

Carbohydrates: General structure and functions, Classification– mono (glucose and fructose), di (maltose and sucrose) and Polysaccharides (starch and cellulose)

Lipids: Classification and Structure, Fatty acids – saturated and unsaturated; fatty acid derivatives - fats and oils; compound lipids (brief study only).

Proteins: General properties, Classification of Amino Acids, denaturation and renaturation, structural organization of proteins primary, secondary, tertiary and quaternary structures.

Enzymes: Structure and properties; Mechanism of enzyme action, coenzymes, allosteric enzyme, isozymes, enzyme inhibition.

Suggestive Readings:

1. Dayananda B, 1999.Experiments in Plant Physiology. Narosa Publishing House, New Delhi.
2. Hopkins WG, Norman PA, Huner, 2008. Introduction to plant physiology. John Wiley and sons. New York.
3. Jain JL, Sanjay Jain, Nitin Jain, 2005.Fundamentals of Biochemistry. S Chand, New Delhi.
4. Salisbury F B, Ross C W, 1992. Plant Physiology. CBS Publishers and Distributers, Delhi.
5. Pandey S N, Sinha BK, 2006. Plant Physiology. Vikas Publishing House Pvt. Ltd.
6. Srivastava H S, 2005. Plant Physiology. Rastogi Publications, Meerut.
7. Lehninger AL, 1961.Biochemistry. Kalyan publishers, Ludhiana.
8. Verma V, 2007. Text book of Plant Physiology. Ane Books India, New Delhi.

9. Nelson DL, Cox MM, 1993.Principles of Biochemistry. Mac Millan Publications.
10. Taiz L, Zeiger E, 2003. Plant Physiology (III Ed). Panima Publishing Corporation, New Delhi.
11. Sadasivam S, Manickan A, 1996. Biochemical Methods. New Age International Ltd. New Delhi.

24BIPB6402P: Practical

Learning Objective:

- To gain practical experience in investigating and analyzing the physiological processes in plants, including growth, photosynthesis, respiration, and nutrient uptake.
- To apply biochemical techniques to study plant metabolism, enzyme activity, and the roles of biomolecules in plant function and adaptation.

Learning outcomes:

- Understand plant structures in the context of physiological functions of plants.
- They will be able to understand the physiological details of photosynthesis, respiration, growth, enzyme activity etc.

Part-A

1.Experiment to demonstrate osmosis by using potato osmoscope, exosmosis and endosmosis.
2. To determine the osmotic pressure of the cell sap of *Rheo/Tradeschantia* leaf epidermal peeling by plasmolytic method.
3.. Determination of water potential of given tissue (potato tuber) by weight method.
4. Study the effect of organic solvent and temperature on membrane permeability.
5. To compare the rate of transpiration from the two surfaces of leaf by cobalt chloride paper method.
6. Effect of light intensity on transpiration using Ganong's photometer
7. Determination of stomatal frequency using leaf epidermal peelings/impressions.
8. Calculation of stomatal index and stomatal frequency from the two surfaces of leaves of a mesophyte and xerophyte.
9. Demonstration of root pressure by Manometer.
10. Mineral deficiency- Detailed study of Micronutrients and macronutrients.

Part-B

11. To demonstrate that oxygen is liberated in the process of photosynthesis.
12. Identification of C3, C4 and CAM plants
13. To determine the rate of photosynthesis by using Wilmott's bubbler.
14. Effect of carbon di oxide concentration on the rate of photosynthesis
15. Effect of monochromatic light on the rate of photosynthesis
16. Separation of photosynthetic pigments by solvent method and by using paper chromatography and measuring their Rf values
17. Estimation of total chlorophyll content by Arnon method.
18. To isolate and identify the amino acids from a mixture using paper chromatography.
19. To prove that carbon dioxide is released during respiration by using Ganong's respiroscope
20. Measurement of respiration rate using germinating seeds and flower buds with simple respiroscope
21. Demonstration of anaerobic respiration

Part-C

22. To measure the rate of growth of a plant using arc auxanometer.
23. To show that the negative geotropism of shoot is due to unilateral effect of gravity.
24. To study the effect of different concentrations of IAA on *Avena* coleoptile elongation (IAA Bioassay).
25. To Study of Phototrophism.
26. Qualitative test for Starch, Protein, Reducing Sugars and Lipids.

Part-D

27. Qualitative test for Starch, Protein, Reducing Sugars and Lipids.
28. Determination of catalase activity using potato tubers
29. To study the enzymatic activity of amylase

Suggestive Readings:

1. Plummer DT, 1988. An introduction to practical biochemistry. Tata Mc Graw -Hill Publishing Company, New Delhi.
2. Shivkumar R., Bhoominathan P., Chandrasekhar, C.N. (2015): Practical Plant Physiology, Narendra Publishing
3. Pandey B. P. (2023). Botany for B. Sc. Students (Theory/ Practical) S. Chand & Company Ltd. New Delhi.

24BICH6403T:Chemistry

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Learning Objectives

- The objective of this course is to provide students with a theoretical understanding of the coordination bonding between metal and ligand, carbonyl compounds, carboxylic acid and their derivatives, kinetics of chemical reaction. In addition, the laboratory course is designed to provide students with practical experience in basic quantitative analytical techniques including volumetric analysis, qualitative analytical techniques, and the determination of kinetic parameters of reactions.

.Learning outcomes

- At completion of the course the student will be able to:
  By the end of this course, students will have a clear theoretical understanding of the coordination bonding between metal and ligand, carbonyl compounds, carboxylic acid and their derivatives, kinetics of chemical reaction . Students will also have practical experience in quantitative analytical techniques including volumetric analysis, identification of organic compounds by determination of functional groups, determination of order and rate constant of various reactions.

Unit I

Coordination Compounds: Werner's coordination theory and its experimental verification, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, valence bond theory of transition metal complexes.

Metal-Ligand Bonding in Transition Metal Complexes: Limitations of valence bond theory, an elementary idea of crystal field theory, crystal field stabilization energy (CFSE), crystal field splitting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal field parameters, comparison of CFSE for Oh and Td complexes, Jahn-Teller distortions, applications and limitations of crystal field theory.

Magnetic Properties of Transition Metal Complexes: Types of magnetic behaviour, methods of determining magnetic susceptibility, spin only formula, L-S coupling, correlation of ns and neff and values, orbital contribution to magnetic moments, application of magnetic moment data for 3d-metal complexes.

Unit II

Acids and Bases: Arrhenius, Bronsted-Lowry, the Lux-Flood solvent system and Lewis's concept of acids and bases, solvated proton, relative strength of acids, types of acid-base reactions, levelling solvents.

Hard and Soft Acids and Bases (HSAB): Classification of acids and bases as hard and soft. Pearson's HSAB concept, acid-base strength and hardness and softness. Symbiosis, theoretical basis of hardness and softness, electronegativity and hardness and softness.

Non-aqueous Solvents: Physical properties of solvents, type of solvents and their general characteristics, reactions in liquid NH_3, liquid SO_2 and liquid HF.

Oxidation and Reduction: Use of redox potential data-analysis of redox cycle, redox stability in water, Frost, Latimer and Pourbaix diagrams. Principle involved in the extraction of the elements.

Unit III

Aldehydes and Ketones: Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides, synthesis of aldehydes and ketones using 1,3-dithianes, synthesis of ketones from nitriles and from carboxylic acids. Physical properties. Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives. Wittig reaction, Mannich reaction. Use of acetals as protecting group. Oxidation of aldehydes, Baeyer-Villiger oxidation of ketones, Cannizzaro's reaction, Meerwein Pondorf-Verlley,

Clemmensen, Wolff-Kishner, LiAlH4 and NaBH4 reductions. Halogenation of enolizable ketones. An introduction to α,β-unsaturated aldehydes and ketones.

Carboxylic Acids: Nomenclature, structure and bonding, physical properties, acidity of carboxylic acids, effect of substituents on acid strength. Preparation of carboxylic acids. Reactions of carboxylic acids. Hell-Volhard-Zelinsky reaction. Synthesis of acid chlorides, esters and amides. Reductions of carboxylic acids. Mechanism of decarboxylation. Methods of formation, chemical reactions of haloacids. Hydroxyacids: malic, tartaric and citric acids. Methods of formation and chemical reactions of unsaturated monocarboxylic acids.

Dicarboxylic acids: Methods of synthesis and effect of heat and dehydrating agents.

Carboxylic Acid Derivatives: Structure and nomenclature of acid chlorides, esters, amides and acid anhydrides. Relative stability and reactivity of acyl derivatives. Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution. Preparation of carboxylic acid derivatives and chemical reactions. Mechanism of esterification and hydrolysis (acidic and basic).

Unit IV

Chemical Kinetics: Rate, order, molecularity and stoichiomettry of a reaction, Derivation of Integrated rate law and characteristics of zero, first and second order reactions, Pseudo-first order reaction, Determination of the order of reaction, differential method, method of integration (hit and trial method), half-life method and isolation method. First order opposing reactions, consecutive reactions and parallel reactions of first order. Steady state approximation and Chain reactions: $H_2 + Br_2$ reaction.

Theories of Reaction Rate: Dependence of reaction rates on temperature, activation energy, simple collision theory and its limitations, transitionstatetheory (equilibrium hypothesis) and derivation of the rate constant, Thermodynamical formulation of rate constant, Comparison of collision theory and transition state theory.

Catalysis:introduction and type of catalysis, specified and general acid-base catalysis. Surface and enzyme catalysis, Michalis-Menten mechanism.

Solid State: Definition of spacelattice, unitcell, Braviaslattices, laws of crystallography- law ofconstancy of interfacial angles, law ofrationality of indices, Weiss and Miller indices, law of symmetry, symmetry elements in crystals, classification of crystals, X-ray diffraction by crystals, derivation of Bragg equation, determination of crystal structure of NaCl, KCl and CsCl (Laue's method and powder method).

Suggestive Readings:

1 Huheey, J. E.; Keiter, E. A.; Keiter; R.L.; Medhi, O.K. (2009), **Inorganic Chemistry-Principles of Structure and Reactivity**, Pearson Education.

2 Atkins, P. W.; Overton, T. L.; Rourke, J. P.; Weller, M. T.; Armstrong, F. A. (2010), **Shriver and Atkins Inorganic Chemistry**, 5th Edition, Oxford University Press.

3 Miessler, G. L.; Fischer P. J.; Tarr, D. A. (2014), **Inorganic Chemistry**, 5th Edition, Pearson.

4 Housecraft, C. E.; Sharpe, A. G. (2018), **Inorganic Chemistry**, 5thEdition, Pearson.

5 Greenwood,N.N.;Earnsaw,A.(1997),**Chemistry of Elements**,2ndEdition, Elsevier.

6 Douglas,B. E.,McDaniel,D. H.;Alexander,J. J. (2007) **Concepts and Models in Inorganic Chemistry**, 3rd Edition, John Wiley & Sons.

7 Morrison, R. N.; Boyd, R. N.; Bhattacharjee, S.K. (2010), **Organic Chemistry**, 7th Edition, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.

8 Finar, I.L. (2002), **Organic Chemistry**, Volume 1, 6th Edition, Dorling Kindersley (India) Pvt. Ltd., Pearson Education.

9 Solomons,T.W.G.;Fryhle,C.B.;Snyder,S.A.(2017),**Organic Chemistry**,12th Edition, Wiley.

10 Puri, B.R.; Sharma, L.R.; Pathania M.S. (2020) **Principles of Physical Chemistry**, Vishal Publishing Co.

11 Castellan,G.W.(2004),**Physical Chemistry**,4thEdition,Narosa.

12 Atkins, P.; de Paula, J. (2013), **Elements of Physical Chemistry**, 6th Edition, Oxford University Press.

13 Alberty, R. A.; (1987), **Physical Chemistry**, 7th Edition,WileyEasternLtd.,Singapore.

14 Dogra, S.K.; Dogra, S. (2015), **Physical Chemistry Through Problems**, 2nd Edition,New Age International Publication

24BICH6403P:Practical

1 Inorganic chemistry

Synthesis and Analysis of:

(a) Preparation of sodium tri oxalate ferrate (III), $Na_3[Fe(C_2O_4)]$ and determination of its composition by permanganometry.

(b) Preparation of Ni-DMG complex, $[Ni(DMG)_2]$

(c) Preparation of Tetra amine copper complex. $[Cu(NH_3)_4]SO_4$.

(d) Preparation of cis- and trans- di oxalate di aqua chromate(III) ion.

2 ORGANIC CHEMISTRY

(I) Paper Chromatography: Ascending and Circular

Determination of Rf values and identification of organic compounds.

(A) Separation of mixture of phenylalanine and glycine. Ananine and aspartic acid. Leucine and glutamic acid. Spray reagent- ninhydrin.

(B) Separation of a mixture of D.L - alanine, glycine and L-Leucine using n-butanol: acetic acid: water (4:1:5). Spray reagent-ninhydrin.

(C) Separation of monosaccharides- a mixture of D- galactose and D-Fructose Using n-butanol :acetone :water (4:5:1) Spray reagent-aniline hydrogen phthalate.

(II) Synthesis of Organic Compounds

(a)Acetylation of salicylic acid, aniline, glucose and hydroquinone.

Benzoylation of aniline and phenol.

(b)Aliphatic electrophilic substitution.

Preparation of iodoform from ethanol and acetone.

(c) Aromatic electrophilic substitution

Nitration: Preparation of m-dinitrobenzene

Preparation of p-nitroacetanilide

Halogenation: Preparation of p-bromoacetanilide

Preparation of 2, 4, 6-tribromophenol

3 PHYSICAL CHEMISTRY

(I) Phase Equilibrium

(a) To study the effect of a solute (e.g. Nacl, succinic acid) on the critical solution tempreture of two partially miscible liquids (e.g. phenol- water system) and to determine the concentration of that solute in the given phenol water system.

(b) To construct the phase diagram of two component (e.g. diphenylamine benzophenone) system by cooling curve method.

(II) Distribution law

(a) To study the distribution of iodine between water and ccl_4.

(b) To study the distribution of Benzoic acid between benzene and water.

24BIZO6404T:Mammalian Physiology and Biochemistry

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:

C1:Written Test as per schedule (at the end of 8th week)

C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Learning Objectives

Students will learn about the chemical properties of molecules, determine the ways in which they interact and react with each other and understand how body works at system level.

Learning outcomes

At completion of the course the student will be able to:

- Explain human anatomy and physiology: describe cellular levels of organization, and the basics of biochemistry and cell biology.
- Discuss system physiology and their control and regulation mechanisms.
- Explain and examine histological samples and basic laboratory practice in cell culture
- Discover the interaction between body systems and the outside environment for the exchange of materials, the capture of energy, the release of waste, and the overall maintenance of the

internal systems that regulate the exchange.

- Will be able to undertake investigations and perform analyses that provide information about biochemistry and solve related problems.

Unit I

Role of enzymes in Digestion, Water and Fat soluble Vitamines Respiration: Mechanism of gas exchange in lungs, Transportation of Carbon dioxide and oxygen via blood and control of breathing. Blood Composition, Mechanism of Blood Clotting Heart: Conduction and regulation of heart beat; nervous and chemical regulation of heart rate, Cardiac cycle and ECG.

Unit II

Structure of Nephron, Physiology of urine formation, osmoregulators and osmoconformers. Muscle: Types of muscles, ultrastructure of skeletal muscle, Types of Muscles, Chemical and Physiological basis of skeletal muscle contraction, Sliding filament theory of muscle contraction.

Unit III

Types of Neurons, structure of Neuron , Conduction of nerve impulse, Action Potential, Ultrastructure of striated muscle, Mechanism of Hormone action, Structure ,function and disorders of different Endocrine gland (Hypothalamus, Pineal gland,Pituitary gland, Thyroid gland, Parathyroid, Adrenal, and Pancreas) Functions and Regulation of Ovary and Testis

Unit IV

Enzyme Kinetics : Derivation of Michaelis-Menten equation, Concept of Km and Vmax, Lineweaver-Burk plot, Enzyme inhibition; Allosteric enzymes and their kinetics

Carbohydrate Metabolism : Sequence of reactions and regulation of glycolysis, Citric acid cycle, Pentose Phosphate pathway, Gluconeogenesis, Glycogenolysis and Glycogenesis.

Lipid Metabolism : β-oxidation of saturated fatty acids ,Biosynthesis of Fatty acid and triglycerides

Protein Metabolism : Catabolism of amino acids: Transamination, Deamination, and Decarboxylation, Urea cycle; Fate of C-skeleton of, Glucogenic and Ketogenic amino acids.

Suggestive Readings:

1 Marieb E.N. and Hoehn K.N. (2009) Human Physiology. Pearson Education Publication , 9th edition

2 Tortora, G.J. & Grabowski, S. (2006). Principles of Anatomy & Physiology. XI Edition John Wiley & sons.

3 Guyton & Hall, (2016) Textbook of Medical Physiology. Elsevier, 12th edition.

4 Botham, K.M., Kennelly, P.J., Rodwell, V.W. and Well,P.A. (2022). Harper's Illustrated Biochemistry, 32nd Edition, International Edition, The McGraw-Hill Companies Inc.

5 Hames, B.D. and Hooper, N.M. (2000). Instant Notes in Biochemistry, II Edition, BIOS Scientific Publishers Ltd., U.K.

24BIZO6404P:Practical

1. Determination of ABO Blood group, study of blood smear
2. Enumeration of red blood cells and white blood cells using haemocytometer
3. Estimation of haemoglobin using Sahli'shaemoglobinometer
4. Preparation of haemin and haemochromogen crystals
5. Recording of blood pressure using a sphygmomanometer
6. Examination of sections of mammalian slides: Oesophagus, Stomach, Duodenum,Ileum,Rectum, Liver, trachea, lung, kidney, Pineal gland, Pituitary gland, Thyroid gland, Parathyroid, Adrenal,

Pancreas, Testis and Ovary).
7. Estimation of total protein in given solutions
8. Detection of SGOT and SGPT or GST and GSH in serum/ tissue
9. To study the enzymatic activity of Trypsin/ Lipase.
10. To perform the Acid and Alkaline phosphatase assay from serum/ tissue.
11. Test for Reducing and Non-reducing Sugar(Carbohydrates), Protein and Lipid
12. Seperation of Amino Acids by TLC / Paper chromatography method.

Suggestive Readings:

1 Victor P. Eroschenko. (2008). diFiore's Atlas of Histology with Functional correlations. XII Edition. Lippincott W. & Wilkins.
2 S.P. Singh (2018) Practical Manual of Biochemistry 8th Edition, , CBS Publishers

24BIMH6405T:Differential Equations and Numerical Analysis-II

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Learning Objectives

The course aims to

- Introduce the exciting world of differential equations.
- Familiarize with the concept of Differential Equations which is essential for higher order Differential Equations and its applications in Mathematics and other subjects.

Learning outcomes

- Understand the concept of differential equation and their types and analyze their applications.
- Understand the concept of exact, simultaneous, and total differential equations andanalyzetheirapplications.
- Solve linear differential equations with variable coefficients by various approaches.Classify the partial differential equation and evaluate their solution using

different approaches.

Unit I

First-order but higher degree differential equations solvable for x, y, and p. Clairaut's form and singular solutions with Extraneous Loci. Linear differential equations with constant coefficients, Complimentary functions, and Particular integrals.

Unit II

Homogeneous linear differential equations.Simultaneous differential equations. Exact linear differential equations of nth order. Existence and uniqueness theorem. Linear differential equations of second order. Linear independence of solutions. Solution by transformation of the equation by changing the dependent variable/the independent variable.

Unit III

Partial differential equations of the first order. Lagrange's linear equation. Charpit's general method of solution. Homogeneous and non-homogeneous linear partial differential equations with constant coefficients.

Unit IV

Gauss elimination and Iterative methods (Jacobi and Gauss-Seidel) for solving systems of linear algebraic equations. Partial Pivoting method, Numerical solutions of ordinary differential equations of first order with initial condition using Picard's, Euler, and modified Euler's method.

Reference Books:

1 R.S. Senger, Ordinary Differential Equations with Integration, Prayal Publ. 2000.

2 D.A. Murray, Introductory Course in Differential Equations, Orient Longman (India), 1967.

3 B. Bradie, A Friendly Introduction to Numerical Analysis, Pearson Education, India, 2007.

4 C. F. Gerald and P. O. Wheatley, Applied Numerical Analysis, Pearson Education, India,7th edition,2008.

5 C.F. Gerald, P.O. Wheatley, Applied Numerical Analysis, Addison-Wesley, 1998.

24BIMH6405T: Practical

1. **Part -A**

Find the solution by Gauss elimination and Iterative methods (Jacobi and Gauss- Seidel) to Sovle the systems of linear algebratic equations , Partial Pivoting method.

2Part -B

Find the Numerical Soluations of ordinary differential equations of first order with initial condition using Picard's Euler's Modified Euler's and Rungs kutta methods (up to fourth order)

Suggestive Readings:

1.C.F Gerald and P.O. Wheatly appled Numerical Analysis, Pearson Education , India ,7 th edition ,2008.

2.C.F Gerald P.O Wheatley , Applied Numerical Analysis, Addision -Wesley 1998.

24BIPH6406T:Thermodynamics and statistical Physics

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
Total Max Marks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Learning Objectives: The objective of the course is to provide students with a comprehensive understanding of Thermodynamics and Statistical Physics. The course aims to develop their knowledge and skills in analyzing and solving problems related to these to Thermodynamics and Statistical Physics , using appropriate mathematical formalism and physical concepts.

Learning outcomes

Upon completion of the course,students shouldbe ableto understand the concepts of Thermal and adiabatic interactions, Cryogenics and about different velocities followed by gaseous particles. They also able to understand the transport phenomena, Statistics with their classifications.

Unit I

Thermal and a diabatic interactions: Thermal interactions: Zeroth law of thermodynamics. System in thermal contact with a heat reservoir (canonical distribution): Energy fluctuations, Entropy of a system in a heat bath: Helmholtz free energy: Adiabatic interaction and Enthalpy. General interaction and first law of thermodynamics. Infinitesimal general interaction. Gibb's free energy. Phase transitions. Clausius Clapeyron equation. Vapor pressure curve. Maxwell relations and their applications. Heat engine and efficiency of engine. Carnot's Cycle. Thermodynamic scale as an absolute scale.

Unit II

Production of low temperature and applications: Joule Thomson expansion and Joule Thomson expansion coefficient for Ideal as well as Vander Wall's gas, porous plug experiment, temperature inversion. Regenerative cooling. Cooling by adiabatic expansion and demagnetization. Liquid Helium, He I and He II, super fluidity. Quest for absolute zero. Nernst heat theorem.

The distribution of molecular velocities: Distribution law of molecular velocities most probable, average and rms velocities. Energy distribution function, effusion and molecular beam. Experimental

verification of the Maxwell velocity distribution. The principle of equipartition of energy.

Unit III

Transport phenomena: Mean free path, distribution of free paths: coefficients of viscosity thermal conductivity, diffusion and their inter-relation.

Classical Statistics: Validity of classical approximation: Phase space, micro and macro states. Thermodynamical probability; relation between entropy and thermodynamical probability: Monatomic ideal gas Barometric equation. Specific heat capacity of diatomic gas. Heat capacity of solids.

Unit IV

Quantum Statistics: Black body radiation and failure of classical statistics. Postulates of quantum statistics. Indistinguishability, wave function exchange degeneracy, a priori-probability, Bose-Einstein statistics and its distribution function; Planck distribution function and radiation formula. Fermi-Dirac statistics and its distribution function, contact potential. Thermionic emission, Specific heat anomaly of metals: Nuclear spin statistics (para and ortho hydrogen).

Reference Books:

1 Thermal Physics by Kittel, San Francisco, W.H. Freeman Publisher.
2 An Introduction to thermodynamics by Y.V.C.Rao, Universities Press.
3 Thermodynamics: A Completer Undergraduate course by Andrew M.Steane, OUP Oxford.
4 Statistical and Thermal Physics by S.Loknathan, R.S.Gambhir, PHI learning Publisher.
5 Statistical Physics by Berkeley Series Vol.V, McGraw Hill India.

24BIPH6406P: Practical

1. To determine thermal conductivity of a bad conductor by Lee's method.
2. Determine the thermodynamical constant using Clement and Dsorme's method)
3. Determination of ballistic constant of a Ballistic Galvanometer.
4. Study of high resistance by leakage method.
5. Study of variance of total thermal radiation with temperature.
6. To determine e/m by Thomson's method
7. Study of Half wave rectification using single Diode and application of L and pi section filters
8. Study of Full wave rectification using single Diode and application of L and pi section filters
9. Determination of power factor of a given coil using CRO
10. Study of single stage transistor audio amplifier.

24BIEC6407T:Economy of Rajasthan

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3+=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	

End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Unit-I

Position of Rajasthan in Indian Economy: Population, Area, Agriculture, Industry and Infrastructure. Population: Size and Growth, District Wise Distribution of Rural and Urban Population, Demographic Features, Occupational Structure and Human Resource Development (Literacy, Health and Nutrition Indicators). Natural Resources Endowments: Land, Water, Livestock and Wild Life, Minerals and Mineral Policy of the State.

Unit-II

State Domestic Product: trends and Composition. Agriculture: land Reforms, Land Utilization, Cropping Pattern, Production and Productivity, Agriculture Finance, Marketing and Insurance, Importance of Livestock and Animal Husbandry, Dairy Development Programmes, Famines and Droughts in Rajasthan. Infrastructure in the State (Irrigation, Power, Road), Industrial Development of the State (Agricultural and Mineral Based Industries, Small Scale and Cottage Industries, Export Based Units, Rajasthan Handicrafts).

Unit-III

Growth Centres and Development of Industrial areas.Enterprises in Rajasthan. Role of Different Corporations in Industrial Development (RIICO, RFC & RAJSICO), Industrial Finance, Service Sector: Education, Health, Tourism Development in Rajasthan. Economic Planning and Development in Rajasthan.

Unit-IV

Constraints in The Economic Development of Rajasthan. Special Area Development Programmes in Rajasthan. Woman Empowerment and Child Development.Problems of Poverty and Unemployment in Rajasthan. Panchayati Raj and Rural Development in Rajasthan. Budgetary Trends in Rajasthan. Centre State Financial Relations.

Suggested Readings:

- Economic Review, Directorate of Economics And Statistics, Department of Planning, Rajasthan Jaipur. (Hindi &English.)
- Statistical Abstract Directorate Of Economics And Statistics. Department of Planning, Rajasthan Jaipur.
- लक्ष्मीनारायण नाथूराम का राजस्थान की अर्थव्यवस्था, रमेश बुक डिपो, जयपुर।

Suggested Continuous Evaluation Methods:
Assignment/test/Quiz(MCQ)/Seminar/Presentations/Research orientation of students

24BIPH6408T:Economic and Resource Geography

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Learning Objectives

This course will develop understanding of key concepts related to natural resources and their conservation, agricultural and industrial activities and transport patterns.

Learning outcomes

- To make familiar with the meaning, approaches and concepts of economic geography.
- To develop understanding about types of economies and economic activities.
- To make them understand about the major natural resources, their conservation and principal crops of the world.
- To examine the patterns of world industrialization and transport patterns.
- To cover basic contents for various competitive examinations such as civil services, UGC NET-JRF, state level PSC exams and so on.

Unit I

Definition, Nature and Scope of Economic Geography. Approaches in Economic Geography. Economic Geography and its relation with Allied Subjects. Classification of Economies. Classification of Economic Activities; Primary, Secondary, Tertiary and Quaternary Activities.

Unit II

Concept and Classification of Resources. Mineral Resources; Iron, Manganese, Bauxite, Lime Stone, Dolomite. Energy Resources: Coal, Petroleum and Hydroelectricity. Resource Conservation. World Energy Crisis.

Unit III

Types of Agriculture and Agricultural Regions of the World. Major Crops; Rice, Wheat, Tea, Coffee, Cotton and Sugarcane. Livestock. World Agricultural Problems and Food Security.

Unit IV

Classification of Industries. Major Industries; Iron and Steel, Cotton Textile and Automobile. Industrial Regions of the World. Special Economic Zones and Technology Parks. World Transport Patterns; Land, Water, and Air.

Suggestive Readings:

1 सक्सेना एच.एम :(2019) .आर्थिक भूगोल ,राजस्थान हिन्दी ग्रंथ अकादमी ,जयपुर।

2 गौतम अल्का :(2022) आर्थिक भूगोल के मूलतत्व , शारदा पुस्तक भवन,प्रयागराज।

3 कौशिक एस.डी. :(2017) आर्थिक भूगोल के सरल सिद्धांत ,रस्तोगी प्रकाशन ,मेरठ।

4 हारूनएम :(2015) .संसाधन भूगोल ,वसुंधरा प्रकाशन ,गोरखपुर।

5 कौशिक एस.डी. :(2018) संसाधन भूगोल ,रस्तोगी प्रकाशन ,मेरठ।

6 Singh K. N. and Siddiqui Ar. (2000) :Economic Geography. Pragay Pustak Bhawan.

7 Leong G. C. and Morgan G. C. (2017): Human and Economic Geography, Masood Books, UP.

8 Siddhrath K. (2016): Economic geography ,Kitab mahal publication ,Delhi.

9 Singh S. and Saroha J. (2021): Human and Economic Geography, Pearson Education.

10 Roy P. (2014): Economic Geography- A Study of Resources, New Central Books agency.

11 Knowles R. and Wareing J. (1990): Economic and Social Geography, Rupa Publication.

24BIPH6408T: Practical

Unit I

Distribution Maps; General Rules and Methods. Qualitative Methods; Chorochromatic and Choroschematic. Quantitative Methods; Choropleth, Isopleth, Dot, Diagrammatic, Sten-de-Geer's and Stilgen-Bauer's Methods.

Unit II

Graphs; Simple and Poly Linear Graphs, Band Graph.
Representation of Transport Data; Cartograms and Traffic Flow Diagram.
Climatic Graphs; Climograph, Hythergraph and Climatograph.

Unit III

Data; Meaning and Types. Measures of Central Tendency; Mean, Mode, and Median. Measures of Dispersion; Range, Quartile, Mean Deviation, Variance and Standard Deviation.

Suggestive Readings:

1 शर्मा जे .पी :(2023).प्रायोगिक भूगोल ,रस्तोगी पब्लिकेशन ,मेरठ।

2 खुल्लर ,डी .आर :(2022) .प्रयोगात्मक भूगोल ,कल्याणी प्रकाशन ,नईदिल्ली।

3 भल्ला एल .आर : (2017) .प्रायोगिक भूगोल के मूलतत्व ,सलोनी ऑफसेट ,जयपुर।

4 शर्मापी.एम :(2009) .भूगोल में सांख्यिकीय विधियाँ ,राजस्थान हिन्दी ग्रंथ अकादमी ,जयपुर।

5 Singh, L.R.)2010(Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.

6 Mishra, R. N. and Sharma, P. K.)2022(: Practical Geography, Pareek Publication,

7 Singh, R.L. and Singh Rana P.B. 1991: Elements of Practical Geography. Kalyani Publishers, New Delhi.

8 Mahmood Aslam (2020): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.

24BIHI6409T:Bharat ka Itihas (HISTORY OF INDIA) (From 1885 CE to 1964 CE)

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Unit I

Rise of Nationalism Indian National Congress, Swadeshi Movement, Surat Split, Lucknow Pact, Home Rule League, The Revolutionary Movement in India.

Unit II

Gandhian Era Non-Cooperation Movement, Khilafat Movement, Civil Disobedience Movement, Round Table Conference, Communal Award 1932, PoonaPact, Quit India Movement.

Unit III

Constitutional Development Indian Council Act1909, Government of India Act 1919, Government of India Act1935, Simon Commission, Nehru Report (1928)

Unit IV

Independence of India Cripps Mission, Royal Indian NavyMutiny,Cabinet Mission,Subhash Chandra Bose and the Indian National Army,Mountbatten Plan, Independence of India Act 1947

India after Independence

Constitution of India, Accession and Integration of Indian states, Non Alignment Movement

Suggestive Readings:

1. Grower B.L.modern Indian History,S.Chand Publication, New Delhi
2. MahajanV.D, Modern Indian History; S.Chand Publication, New Delhi
3. Grower. B.L, Aadhunik Bharat ka Itihas, S Chand Publication, New Delhi
4. Chandra Bipin, History of Modern India; Oriental Blackswon, New Delhi
5. Bandh opadhayay. Sekhar, From Plassey to Partition and after Oriental Blackswon, NewDelhi
6. Guha.Ramchandra,Makers of Modern India,Pengu in Publication, NewDelhi
7. Sukla Ajay, The Making of Modern India (From1498 to the modern India),S.Chand Publication,New Delhi
8. Sarkar, Sumit, Modern India, Pearson Publication, India
9. Chandra.Bipin,India Since Independence,Pengu in Publication
10. SuklR.L,Aadhunik Bharat,Hindimadhyam Karyanvan Nideshalya, Delhi
11. Roy Satya,Bharat me Upniveshwad,Hindi Madhyam Karyanvan Nideshalya, New Delhi

24BIHS6410T:Nutrition: A Life Cycle Approach

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Learning Objectives

- To know the importance of nutrition in different stages of life cycle.
- To study the nutritional need in special conditions.

Learning outcomes

- Become familiar with the meaning, approaches, and concepts of economic geography.
- Understand the major industries, natural and mineral resources, and principal crops of the world.
- Examine the patterns of world transportation and international trade.

Unit I

Food groups and food exchange list

Factors affecting meal planning.

Dietary guidelines for Indians-2017

Unit II

RDA, Nutritional guidelines, and healthy food choices Infants Preschool children, School children, Adolescents

Unit III

RDA, nutritional guidelines, healthy food choices.
Adult Pregnant woman Lactating mother Elderly

Unit IV

Nutrition for physical fitness and sports Feeding problems in fussy eaters. (children) Food Consideration during natural disasters e.g. floods,

Suggestive Readings:

1. Human Nutrition-B. Srilaxmi , New age publication.
2. Principles of Nutrition and Dietetics-Swaminathan M.

3. Gopalan C, Rama Sastri BV, Balasubramanian SC (1989)
4. Nutritive Value of Indian Foods. National Institute of Nutrition, ICMR, Hyderabad.
5. Seth V and Singh K (2006). Diet Planning through the Life Cycle: Part 1
6. Bamji MS,Krishna swamy,K.BrahmanGNV(2009),Textbook of Human Nutition3rdEdition, Oxford and IBH Publishing Co. Pvt. Ltd
7. Khanna K,GuptaS,Seth R,Passi SJ,Mahna R,Puri S(2013).Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd.
8. Ward law GM,Hampi JS,DiSilvestroRA(2004).Perspectives in Nutrition,6th edition. Mc Graw Hill.
9. Chadha R and Mathur Peds.Nutrition:ALifecycleApproach.Orient Blackswan, New Delhi. 2015

24BIHS6410P:Practical

Prepare a table on rich sources of different nutrients

Prepare a of food exchange list

Planning and preparation of diets for – Preschooler

Pregnant and Lactating woman Elderly

Suggestive Readings:

1. Human Nutrition-B. Srilaxmi , New age publication.
2. Principles of Nutrition and Dietetics-Swaminathan M.
3. Gopalan C, Rama Sastri BV, Balasubramanian SC (1989)
4. Nutritive Value of Indian Foods. National Institute of Nutrition, ICMR, Hyderabad.
5. Seth V and Singh K (2006). Diet Planning through the Life Cycle: Part 1
6. Bamji MS, Krishna swamy,K.Brahman GNV(2009),Textbook ofHuman Nutition3rdEdition, Oxford and IBH Publishing Co. Pvt. Ltd
7. KhannaK,Gupta S,SethR,Passi SJ,Mahna R,Puri S (2013).Text book of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd.
8. Wardlaw GM, Hampi JS, DiSil vestro RA (2004). Perspectives in Nutrition,6th edition. McGraw Hill.
9. Chadha R and Mathur Peds.Nutrition:A Life cycle Approach.Orient Blackswan, New Delhi. 2015

24BIPY6411T:Indian Logic

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Unit I

Indian Logic:Definition, nature and scope. Nature of Knowledge

Unit II

Pramāand Apramā Pramāṇa:Nature and Its different kind. Perception according to Nyāya

Unit III

Inference: according to Nyāya,Buddhism,Jainism. VerbalTestimony,Upmāna,Arthāpatti,Anuplab

Unit IV

Prāmāṇyavāda:Svataḥ and Parataḥ Prāmāṇyavāda Khyātivāda:Theory of error

Suggestive Readings:

1. Bandishtey,Dr.D.D.& Sharma, Dr.Ramashankar, "Bhartiya Darshnik Nibandh" (ed.), Madhya Pradesh Hindi Grantha Academy, Bhopal, 2008.
2. Barlingay,S.S.,"A Modern Introduction to Indian Logic", Orient Book Distributers, New Delhi, 1976.
3. Bijalvan, C.D.,"Bhartiya Nyayashastra", Uttar Pradesh Hindi Sansthana,Lucknow,1983.
4. Chatterjee,S.C.,"The NyayaTheory of Knowledge",Rupa Publication,New Delhi, 2015.
5. Ganeri, Jonardon,"Indian Logic:A Reader"(ed.),Routledge,NewYork,2017.
6. Maitra, S.K., "Fundamental Questions of Indian Metaphysics &Logic",Chakraverty,Chatterjee &Co.Ltd., Calcutta, 1956.
7. Pandey,S.L.,"Jñāna, MulyaevamSat",Central Publishing House,Allahabad,1988.
8. Shastri,S.Kuppuswami,"A Primer of Indian Logic",KSRI My lapore, Madras,1951.
9. Tiwari,Kedarnath,"BhartiyaTarkshastra Parichaya (An Introduction to Indian Logic)",Motilal Banarasidass, Delhi, 2014.
10. Tiwari, N.P., "Bhartiya tarkshastra (Indian Logic)", PHI Learning Private Limited, Delhi, 2009.

24BIPO6412T:Western Political Thought

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Unit I
Plato, Aristotle,Thomas Aquinas and St Augustine, Renaissance & Reformation

Unit II
Machiavelli Thomas Hobbes, John Locke J.J Rousseau

Unit III
Jeremy Bentham, JS Mill, Harold Laski T.H Green, GW Hegel, Karl Marx

Unit IV
Mary Wollstonecraft, Karl Popper, Rosa Luxemburg. John Rawls, Michael J.Oakeshott and Hannah Arendt.

Suggestive Readings:

1 E. Baker, The Political Thought of Plato and Aristotle, Metheun, 1906.
2 J. Coleman. A History of Political Thought: From Ancient Greece to Early Christianity, Oxford: Blackwell Publishers, 2000.
3 K. Nelson, Brian, Western Political Thought: From Socrates to the Age of Ideology, Pearson. 1996
4 Jha, Shefali, Western Political Thought (From Plato to Marx), Pearson.
5 C. Macpherson, The Political Theory of Possessive Individualism: Hobbes to Locke. Oxford University Press, Ontario,
6 Kolakowski, Leszek, Main Currents of Marxism, Oxford University Press, 1978.
7 Okin, Susan Moller, Women in Western Political Thought, Princeton University Press,
8 H. R. Mukhi: A Simple History of Political thought. (Hindi & English) Surjeet Book Depot.

24BIPA6413T:State Administration in India

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1: Written Test as per schedule (at the end of 8th week)
C2: As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Objectives of the course:

The students will be able to learn about historical context and present state administration; organisation and functions of various bodies of state government.

Course Learning Outcomes:

1. Students will be able to describe the evolution and constitutional aspects of state administration in India.
2. Students will be able to assess the roles and responsibilities of state administrative and executive bodies.

Unit I

General Background of State administration in india with special reference to state of Rajasthan. Growing importance of State Administration. Governor, Chief Minister, Council of Ministers and their inter -relationship.

Unit II

Organisation and Function of State Secretariat: Chief Secretary- Role & position. Administrative organisation of a department, organisation & working of the Department of Home, Finance in Rajasthan. Secretariat-Directorate Relationship in Rajasthan.

Unit III

Organisation and working of following Boards, Commissions, Directorates in the state of Rajasthan: (a) Revenue Board (b) HCM RIPA (Rajasthan Institute of Public Administration) (c)Directorate/CCE of College Education (d). State Election Commission, (e) State Information Commission

Unit IV

Role of the state civil services in State Administration. Recruitment, Training and Promotion of state civil services in Rajasthan. Rajasthan Public Service commission (RPSC). Rajasthan Staff Selection Board (RSSB). Institute of Lokayukta. Administrative Reforms in state Administration.Powers and position of Divisional Commissioner, District Collector, SDO/SDM, Tehsildar and Patawari.

Suggestive Readings:

A.P. Padhi: State Administration in India (Two Volume)
S.R. Maheshwari: State Government in India
S.S. Khera: District Administration
Mohan Mukherjee: Administrative Innovations in (Ed.) Rajasthan
B. Mehta: Dynamics of state Administration.
G.D. Shukla: State and District Administration
Ravindra Sharma: Rajya Parshsan
Singh, Sharma, Goyal: Rajasthan me Rajya Parshsan
Surendra Katariya: Rajya Parshsan
Ramesh Arora, Geeta Chaturvedi: Rajya Parshsan

Suggested E Resources:

E-pgpathashala modules: -
1. www.inflibnet.ac.in
2. www.ignou.ac.in
3.www.sawayam.gov.in

24BISO6414T:Issues and Problems in Indian Society

Credits:3L+0T+1P
Periods per week: 5
Examination:3hours
Marks:100
C1+C2=30
C3=70Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Course Objectives:

The objective of the paper is to acquaint the student with issues and challenges faced by Indian society.

Course Outcomes:

- Able to gain an understanding of social problems at conceptual level.
- Able to gain an understanding of prevalent social issues affecting different segments of Indian society.
- Able to engage in deeper discussions and generate new insights regarding the issues.

Unit I
Social Problem - Concept and Causes.

Unit II
Structural - Poverty, Unemployment, and Corruption.

Unit III
Structural – Communalism, Inequality of Caste and Gender.

Unit IV
Familial Issues – Dowry and Domestic Violence.

Suggestive Readings:

- Beteille, Andre. 1974 Social Inequality. New Delhi : OUP
- Berreman, G.D. 1979. Caste and Other Inequalities: Essays in Inequality. Meerut: Folklore Institute.
- Gil,l S.S. 1998. The Pathology of Corruption. New Delhi. Harper Collin Publishers.
- Ministry Of Home Affairs. 1998. Crime in India. New Delhi: Government of India.
- Mahajan and Mahajan, 2003. Issues and Problems in Indian Society (Hindi). Vivek Prakashan.
- Satya Murty. T.V. 1996. Region, Religion, Caste, Gender and Culture in Contemporary India. New Delhi : OUP
- Mehta, S.R. (ed.) 1997. Population, Poverty and Sustainable Development. Jaipur: Rawat Publications
- Sharma, Ursula, 1983. Women, Work and Property in North West India. London:Tavistock
- Ahuja Ram, 1998. Social Problem. Jaipur: Rawat Pub. (In Hindi also).

24BIEN6415T: Essays and Novel

Credits:3L+0T+1P
Periods per week: 5
Examination:3hours

Marks:100
C1+C2=30
C3+=70Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Learning Objectives

- The students will be able to analyze the literary elements in selected essays and short stories from the most famous literary men.
- Understanding texts with specific reference to genres, forms and literary genres of poetry, drama, prose and fiction.
- To introduce essays a genre of literature and acquaint with important essayists and their style of writing
- To enhance comprehension through a close study of short stories and their narrative techniques and thematic concerns.
- Develop effective written communication skills to articulate interpretations, analysis, and insights on various essays and short stories.
- To inspire the students from the lives of great sports persons like Milkha Singh and also to introduce with great novelist like Ernest Hemingway.

Learning outcomes

- The student will be familiar with the modern prose writing and techniques.
- Students will compose analytical essays that showcase their understanding of literary works and the use of textual evidence to support their arguments.
- Students will be able to evaluate thematic development, characters, and narrative techniques in essays and short stories from diverse literary periods.
- Students will apply literary theories and contexts to interpret essays and short stories, fostering a deeper appreciation of English literature.
- They will be able to understand the hardship of a sports person.

Unit I

Hilaire Belloc: "A Conversation with a Reader"
Aldous Huxley: "Non Violence"
Ralph Waldo Emerson: "Self -Reliance "

Unit II

The following short Stories from *Spectrum - An Anthology of Short Stories* ed. By J. Sasikumar and Paul Gunashekhar (Orient Longman) :

K.A. Abbas: "Sparrows"
Maxim Gorky: "The Mother of a Traitor"
W. Somerset Maugham: "The Verger"

Unit III

Milkha Singh *The Race of My Life: An Autobiography*

Unit IV

Ernest Hemmingway: *The Old Man and the Sea*

Suggestive Readings:

1 *An Anthology of Short Stories* ed. By J. Sasikumar and Paul Gunashekhar (Orient Longman
Henry David Thoreau, 'Battle of the Ants' excerpt from 'Brute Neighbours', in Walden (Oxford: OUP, 1997) chap. 12.

2. Ralph Waldo Emerson, 'Self Reliance', in The Selected Writings of Ralph Waldo Emerson, ed. with a biographical introduction by Brooks Atkinson (New York: The Modern Library, 1964).

3 Ernest Hemmingway: *The Old Man and the Sea*

4 Milkha Singh *The Race of My Life: An Autobiography*

24BISA6416T: नाटक, छंद, अलंकार एवं संस्कृत साहित्य

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

अधिगम उद्देश्य

- संस्कृत रूपक परंपरा का ज्ञान।
- नाटक एवं रसनिष्पत्ति का अवबोध।
- छंद एवं अलंकार ज्ञान, निर्माण एवं अनुप्रयोग।

अधिगम परिणाम

- रसनिष्पत्ति को अनुभव कर नाटकों के प्रति अभिरुचि।
- छंद एवं अलंकारों का परिचय, निर्माण एवं अनुप्रयोग।
- व्याकरणात्मक ज्ञान।

पाठ्यक्रम

- **इकाई प्रथम** – अभिज्ञान शाकुन्तलम् नाटक।
- **इकाई द्वितीय** – अभिज्ञान शाकुन्तलम् नाटक के आधार पर छंद एवं अलंकार। छंद– आर्या , अनुष्टुप, इन्द्रवज्रा, उपेन्द्रवज्रा, उपजाति, भुजंगप्रयात, वंशस्थ, वसन्ततिलका, मालिनी, मंदाक्रांता, शिखरिणी,

शार्दूलविक्रीड़ित एवं स्रग्धरा, अलंकार–अनुप्रास, यमक, श्लेष, रूपक, उपमा, उत्प्रेक्षा, संदेह, भ्रांतिमान, स्वभावोक्ति, निदर्शना, दृष्टांत, विभावना, विशेषोक्ति, समासोक्ति एवं अतिशयोक्ति।

- **इकाई तृतीय** – संस्कृत साहित्य का इतिहास–रामायण, महाभारत तथा कालिदास, अश्वघोष, भारवि, माघ, श्रीहर्ष, दण्डी, बाणभट्ट, सुबंधु, अम्बिकादत्त व्यास, शूद्रक, भास, विशाखदत्त एवं भर्तृहरि की रचनाएं।
- **इकाई चतुर्थ** – अनुवाद–हिंदी से संस्कृत में।

सहायक पुस्तकें

- संस्कृत साहित्य का इतिहास– डॉ. उमाशंकर शर्मा ऋषि।
- संस्कृत साहित्य का इतिहास– डॉ. कपिलदेव द्विवेदी।
- संस्कृत साहित्य का इतिहास– डॉ. बलदेव उपाध्याय।
- रचना अनुवाद कौमुदी– डॉ. कपिलदेव द्विवेदी।
- अभिज्ञाशाकुंतलम् – डॉ. श्रीकृष्ण शर्मा।

24BIHI6417T: हिंदी गद्य – हिन्दी नाटक और रंगमंच

Credits:3L+0T+1P
Periods per week: 5
Examination:3hours

Marks:100
C1+C2=10
C3+C4=90Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

उदेश्य *(Objectives)*

1. हिंदी नाटक एवं एकांकी का उद्भव एवं विकास की जानकारी से अवगत कराना।
2. एकांकी एवं नाटक के अंतर्सम्बन्ध की जानकारी प्रदान करना।
3. प्रमुख एकांकी और एकांकीकारों से परिचित कराना।
4. मानवीय मूल्यों के प्रति संवेदनशील बनाना।

अधिगम प्रतिफल *(Learning Outcomes)*

1. नाटक एवं एकांकी के इतिहास का ज्ञान मिल सकेगा।
2. मानवीय मूल्यों एवं संवदेनाओं का विकास हो सकेगा।
3. विद्यार्थी नाटक एवं एकांकी की समीक्षा करने में समर्थ हो सकेंगें।

इकाई I

हिंदी नाटक और रंगमंच का परिचय (भारतीय रंगमंच एवं पाश्चात्य रंगमंच), हिंदी नाटक एवं एकांकी का उद्भव एवं विकास।

इकाई II

नाटकः लहरों का राजहंस – मोहन राकेश

इकाई III

एकांकी –
ऊसर – भुवनेश्वर
औरंगजेब की आखिरी रात – डॉ. रामकुमार वर्मा
मकड़ी का जाला – जगदीश चंद्र माथुर

इकाई IV

एकांकी –
हरी घास पर घंटे भर – सुरेंद्र वर्मा
अंधकार और प्रकाश – उदय शंकर भट्ट
लक्ष्मी का स्वागत – उपेन्द्रनाथ अश्क

सहायक पुस्तकें –
1. हिन्दी एकांकी – सिद्धनाथ कुमार
2. आधुनिक हिन्दी नाटक – गिरीश रस्तोगी
3. हिन्दी नाटक उद्भव और विकास – दशरथ ओझा
4. आधुनिक नाटक के मसीहाः मोहन राकेश – गोविन्द चातक
5. हिन्दी एकांकी – डॉ. सिद्धार्थ कुमार
6. हिन्दी नाटक और रंगमंच – लक्ष्मी नारायण लाल

24BIPE6418T: Management And Methods Of Physical Education

Credits:3L+0T+1P **Marks:100**
Periods per week: 5 **C1+C2=10**
Examination:3hours **C3+C4=90Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A ten (10) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	05	1hr	04
Internal Test(C2)	05	1hr	
End Semester Theory Examination(C3)	65	3hrs	25
End Semester Practical Examination(C4)	25	3hrs	13
TotalMaxMarks	**100**		**42**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

Learning outcomes

- Describe the fundamentals of Sports Management,Organization and Administration in Sports Industry.
- Organize competitions at different levels.
- Prepare and execute the in tramural program for their school and college.

Unit I

Teaching- Meaningand importance of Teaching methods, Types of teaching method, Principle of teaching.

Organizations- Organization of sports for educational institutes: -National level, State level, District level, Village level.

Unit II

Tournaments- Meaning of tournament,Types of tournaments, Method of drawing fixtures, Merit and demerits of different types of tournaments.

facilities and equipment's- Need and importance of equipment for physical education, An Ideal list of equipment's for physical education and Role of equipment in physical education.

Unit III

Purchasing and Maintaining- Realistic approach in purchase procedure of equipment, Maintenance of equipment and Development of improvised equipment and store keeping.

Unit IV

Budget and office Management-Physical education budget and its preparation, Maintenance of records, and office correspondence and Maintenance of accounts,in come sources& expenditure

Suggestive Readings:

1 Dr.Khailash K.Pawar"Sharirik Shiksha me Sangathantatha Prashasan" Sports publication, New Delhi

2 Kamlesh,M.L.(2005)."Methods in physical education"Friends publication.

3 Thomas,J.P.(1967).Organization and A dministration of Physical Education. Madras: Gyanodayal Press.

4 Voltmer, E.F.& Esslinger,A.A.(1979)."The Organization and Administration of Physical Education". New York: Prentice Hall Inc.

5 Dr.Suresh Kumar Agarwal etc."Basics of Physical Education, Health & Sports".

6 Singh Ajmeretc.(2000)" Olympic Movement" Kalyani Publishers, Ludhiana.

7 Ajmer singh etc.Essential of physical education."Kalyani Publishers, Ludhiyana

8 Textbooks of Physical Education For CBSE XI& XII class.

9 Dr.Khailash K.Pawar" Sharirik Shiksha me Sangathantatha Prashasan" Sports publication, New Delhi

24BIPE6418T:Practical

LearningOutcomes:

On successful completion of the course, the students will be able to:

1. Assess the individual levels of fitness components.

2. Demonstrate the basic fundamental knowledge and skills of Indian originated Games/ sports.

Topicsfor practical:

1. Opted any one Indian originated game.
   - Kabaddi
   - Kho-Kho -

(Preparing of practica l file on opted Indian originated game.)

2.Cooper Physical Fitness Test (10minutes run)

24BIPD6419T:Content cum Pedagogy of Language1/ Language 2 at Secondary Stage

Credits:3L+1T+0P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

C1:Written Test as per schedule (at the end of 8th week)

C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

About the Course

Interventions from quality teachers are vital in view of the objectives of NEP 2020. Sound pedagogical content knowledge and teaching methods are the determinants of a teacher's quality and professionalism.Teacher education programme strongly emphasizes pedagogy, its principles, and the practices of teaching and learning. Research clearly shows that children pickup language very quickly. It is also a well-known fact that students learn and grasp abstract concepts more quickly through their mother tongue or local language. Therefore, for teaching-learning any language, maximum exposure of the language needs to be given. This course comprises of three units emphasizing the knowledge of developing the teaching skills of language for the student-teacher. The course also focuses on the understanding of nature, scope, importance, and functions of a language. It also deals with the historical/policy perspectives along with the approaches, methods of teaching the language for development to language skills among the children.

Learning Outcomes

After completion of this course, student teachers will be able to:

- outline the aims and objectives of teaching Language at the secondary level,
- identify and relate values of the Language with other disciplines,
- summarize the historical perspective of the Language,

- discuss methods, approaches, and materials for teaching Language at the secondary stage in the Indian context,
- appraise the Language diversity of the surroundings.

UNIT-I

Nature,Scope,and Historical Perspective of Language

A. Nature, scope, and importance of the Language; Linguistic features of the Language.
B. Functions of Language, Language learning, and Language acquisition.
C. Historical perspective of the Language with a special focus on inclusiveity in class rooms to learn the Language, evolution of Language with the power dynamics.
D. Language as discourse: Language-Identity and Gender.
E. Recommendations/ suggestions of various committees, commissions, and policies on teaching- learning the Language in school education.
F. Universality of Languages.

UNIT-II

A. Aims and objectives of teaching the Language (L1 and L2).
B. Linkages of the Language with other school subjects.
C. Linkages between literature and society.
D. Place of the Language in school curriculum at the national and international scenario.
E. Values of Language: functionality, fluency, coherence.

UNIT-III

PedagogicalAspects of Language

A. Approaches of teaching Language – inductive deductive, constructivist, experiential learning, art-integrated learning, blended learning, interdisciplinary and multi disciplinary approaches.
B. Critical and analytical pedagogical concerns related to teaching Language with special focus on Higher-Order Thinking skills (HOTs).
C. Methods of teaching Language: learner-centricand group-centric, lecture-cum-demonstration, grammar-cum-translation method, direct method, audio-lingual method, task- based learning, lexical approach, activity- based discussion, problem-solving, hands-on activity, concept-mapping, collaborative and cooperative learning.
D. Capabilities of students in Language skills and reflection.

Suggestive Practicum (Any Three)

1. Prepare are port on any one Language of your neighborhood focusing on ho with as evolved.
2. Enumerate values of the Language and prepare a write up.
3. Write an article on the recommendations of NEP 2020 in context to Language development.
4. Preparere levanter source materials of the Language at the secondary level.
5. Prepare are porton various pedagogical activities to teach the Language.
6. Any other project assigned by the HEI.

Suggestive Mode of Transaction

Lecture-cum-discussion, project-based method, problem-solving method, experiential learning,inquiry approach, ICT integrated learning, interactive methods such as group discussions, peertutoring, workshops, observations, and presentations.

Suggestive Mode of Assessment

Written tests, classroom presentations, seminars, assignments, practicum, sessional, and terminal semester examinations (As per UGC norms).

Suggestive Reading Materials

- NationalCurriculumFramework for School Education,Government of India
- National Education Policy 2020 (NEP 2020). Government of India. (English/Hindi).
- National Policy on Education (With Modifications Undertaken In 1992).Ministry of Human Resource Development: New Delhi.
- The Right of Children to Free and Compulsory Education Act-2009,The Gazette of India, 2009.

24BIPD6420T:Content cum Pedagogy of Mathematics at Secondary Stage

Credits:3L+1T+0P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

C1:Written Test as per schedule (at the end of 8th week)

C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

About the Course

Mathematics is an important school subject and students are expected to master computational and problem-solving skills with the help of mathematical concepts and reasoning during study.Teaching of Mathematics is not only concerned with the computational know-how of the subject but is also concerned with pedagogical content knowledge and communication leading to its meaningful learning amongst students. This course enables the student-teachers tounderstand the nature of mathematical knowledge and the mathematics curriculum atsecondary stage. The objectives of teaching Mathematics should not be limited to the development of computational skills but to enable mathematical reasoning to solve problems of life. Student teachers will develop skills to formulate classroom objectives as well as plan for development of the values through Mathematics. Student teachers will have a thorough understanding of Mathematics content and their relevant specific pedagogy for the effective learning of Mathematics.They would beexposed to various pedagogical approaches, methods, and technique so that they will be able to create a learner friendly classroom environment.

Learning Outcomes

After completion of this course,student teachers will be able to:

- appraise the contribution of Indian Knowledge Systems in development of Mathematics,
- explain the nature of Mathematicsas an important subject for human development,
- interpret the recommendation of the various policy documents in reference to Mathematics education,
- classify the aims and objectives of teaching Mathematics,
- formulate objectives based on learning outcomes for Mathematics teaching,
- select and demonstrate various approaches and methods of teaching Mathematics,
- plan strategies to in culcate values through teaching Mathematics.

UNIT-I

Nature, Scope and Historical Perspective of Mathematics

A. Development of Mathematics froma historical perspective.
B. Nature of Mathematical Knowledge–Axioms and Postulates, Conjectures, Proofs in Mathematics:inductive-deductive reasoning, theorems, mathematical modeling.
C. Importance of Mathematics knowledge in every day life.
D. Recommendations of various committees, commissions and policies related to Mathematics education at Secondary stage (especially in National Education Policies and National Curriculum Frameworks).

UNIT-II

Aims and Objectives of Teaching Mathematics

A. Aims and objectives of teaching Mathematics at secondary stage.
B. Learning outcomes and competencies of teaching Mathematics at secondary stage.
C. Linkages of Mathematics with other school subjects and place in school curriculum.
D. In culcation of values through teaching of Mathematics.

UNIT-III

Pedagogical Aspects of Mathematics

A. Implication of various approaches of teaching Mathematics–inductive deductive, analytical synthetical, constructivist, blended learning, experiential learning, transdisciplinary, interdisciplinary, and multidisciplinary.
B. Learner-centric and participative methods of teaching of Mathematics:lecture cumdemonstration,problem-solving,laboratory,project based.
C. Analytical pedagogical concerns in teaching of Mathematics for higher order thinking skills such as critical, creative, decision making,reflective,collaborative,and cooperative.
D. Techniques of teaching learning Mathematics: oral, written, drill work, homework, self-study, group study, supervised study, concept-mapping, learning, art and sports integrated learning.

Suggestive Practicum(Any Three)

1. Prepare a collage/biographics ketch on the contribution of Indian mathematician.

2. Present apaper on comparison of nature of mathematical knowledge with other school subjects.
3. Formulate objectives based on learnin go utcomes and experiential learning for any one unit of secondary Mathematics.
4. Develop strategy to connect any three topics for value in culcation in teaching of Mathematics.
5. Analyze the content of one chapter of Mathematics textbook and develop concept secondary stage.
6. Select and list approaches and methods for teaching various topics of secondary stage Mathematics.
7. Any other project assigned by HEI.

Suggestive Mode of Transaction

Demonstration, field-based experience, library visits, classroom discussions, self-study, field observations, assignment preparation, classroom presentations,discussion forums, observation, research report, engaging in dialogue, flipped classroom.

Suggestive Mode of Assessment

Written test, classroom presentation,workshop, assignments, practicum, sessional and terminal semester examination (As per UGC norms).

Suggestive Reading Material

- MESE001(2003)Teaching and Learning Mathematics.IGNOU series
- NCERT Publications: Pedagogy of Mathematics(Code-13074)

24BIPD6421T:Content cum Pedagogy of Physical Sciences at Secondary Stage

Credits:3L+1T+0P
Periods per week: 5
Examination:3hours
Marks:100
C1+C2=30
C3=70Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

About the Course

The focus of the National Education Policy (NEP) 2020 is on the holistic development of students. To achieve the objectives, interventions from quality teachers are vital. Sound pedagogical content knowledge and teaching methods arethe determinants of a teacher's quality and

professionalism. Teacher education programme strongly emphasizes pedagogy, its principles,and the practices of teaching and learning.Pedagogical knowledge and approaches refer to the specialized knowledge of the teacher for creating an active, child-centered, and in clusive teaching-learning environment for the students and need to bed eveloped among the student teachers. This pedagogical course in Physical Sciences is intended to enhance the pedagogical content knowledge of student teachers through different learning approaches and methods.This course comprises three units and apracticum.The course is devoted to developing anunder standing of the nature and scope of Physical Sciences and the aims and objectives of teaching Physical Sciences and its linkages with other disciplines. Historical/policy perspectives of Physical Sciences are discussed in unit second.Physical Sciences is conceptualized in very broad terms by relating it to technology,society,humans, and sustainable development. Italso focuses on the place of Physical Sciences in school curriculum including an emphasis on how to build inclusive classrooms.It focuses on pedagogical concerns of Physical Sciences.Critical, creative, and analytical pedagogical concerns in teaching Physical Sciences with special reference to higher-order thinking are also placed in unit third.

Learning Outcomes

After completion of this course, student teachers will be able to:

- explain nature, scope and importance of Physical Sciences,
- illustrate aims and objectives of teaching Physical Sciences for sustainable development of society,
- outlinelinkages between Physical Sciences and other subjects,
- identify the values and importance of Physical Sciences and alternative knowledge systems,
- summarize the historical/policies perspective of Physical Sciences,
- examine pedagogical concerns of Physical Sciences,
- categorize approaches and methods of teaching learning Physical Sciences,
- apply appropriate pedagogy in teaching learning the concepts of Physical Sciences.

UNIT-I
Nature,Scope and Historical Perspective of Physical Sciences

A. Nature, scope, and importance of Physical Sciences.
B. Historical perspective of Physical Sciences.
C. Contributions of Indian(ancient and modern) and other scientists.
D. Physical Sciences, society and human and sustainable development.
E. Recommendations/suggestions of various committees, commissions, and policiesin reference to Physical Sciences.

UNIT-II
Aims and Objectives of Physical Sciences

A. Aims and objectives of teaching Physical Sciences.
B. Learning out comes and competencies of teaching Physical Sciences at secondary stage.
C. Linkages of Physical Sciences with other school subjects and place of the Physical Sciences in school curriculum.
D. Values of Physical Sciences: scientific attitude and appreciating other systems of knowledge/ alternative knowledge systems.

UNIT-III
Pedagogical As pects of Physical Sciences

A. Implication of various approaches - inductive deductive, constructivist, experiential learning, art integrated learning, sports integrated learning, blended learning,

interdisciplinary and multidisciplinary approaches in Physical Sciences.

B. Analytical pedagogical concerns in teaching of Physical Sciences for higher order thinking skills such as critical, creative, communication, decision making, reflective.
C. Methods of teaching learning Physical Sciences: learner-centric and group-centric, lecture cum demonstration, activity based, discussion, problem-solving, laboratory, stem and steam,project based, scientificinquiry, handsonactivity, discovery, experimentation, concept-mapping, collaborative and cooperative learning.

Suggestive Practicum (Any Three)

1. Explore contributions of Indian scientists in the development of Physical Sciences and make presentationson historical development of Physical Sciences.
2. Analyze recommendations of policies/commissions in context of Physical Sciences.
3. Develop conceptmapson different concepts of Physical Sciences.
4. Identify and integrate values in Physical Sciences concepts.
5. Demonstrate different pedagogical approache sandstrategies for trans acting concepts of Physical Sciences.
6. Prepare write-upson the teaching of science using interdisciplinary and multidisciplinary approaches as recommended in NEP 2020.
7. Any other project assigned by HEI.

Suggestive Mode of Transaction

Lecture cumdiscussion/demonstration,hands-on activities, experiential learning,art and environment integrated learning, sports integrated learning.

Suggestive Mode of Assessment

Written tests, classroom presentations, workshops, seminars, assignments, practicums, sessional and terminal semester examinations (as per UGC norms).

Suggestive Reading Material

- National Council of Educational Research and Training.(April2022).Mandate documents Guidelines for the development of National Curriculum Frameworks.
- National Education Policy 2020, MoE, Government of India.

24BIPD6422T: Content cum Pedagogy of Biological Sciences at Secondary Stage–Course(I)

Credits:3L+1T+0P
Periods per week: 5
Examination:3hours

Marks:100
C1+C2=30
C3=70Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)

C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

About the Course

Biology is an in separable part of human life and is hence learning biological concepts and principles is given ample importance in school curricula. Knowledge of Biological Sciences enables students to recognize and value the diverse living forms, their structure and method of functioning, co-existence and how they harmoniouslyblend with other natural/ physical factors that constitutes the complex environment.To enable school students adequately learn these aspects, teachers must design and adopt appropriate teaching-learning methods for teaching Biological Sciences. Biological Sciences of ferus the unique facility of seeing,touching and observing materials. This course aims to educate the student teachers to learn the various methods and strategies in teaching Biological Sciences.The course comprises of three units describing the aims and scope of Biological Sciences in Secondary level. Aglimpse of the history of Biological Sciences is dealt with ancient and modern Indian and international contributions in the study of biological methods and practices in building the modern-day Biological Sciences. Salient features of selected earlier curricular exercises with special reference to biology at secondary level are also emphasized.

Learning Outcomes

After completion of thi scourse, Student teachers will be able to:

- explainnature, scope, and importance of Biological Sciences,
- illustrate aims and objectives of teaching Biological Sciences for sustainable development of society,
- outline linkages between Biological Sciences and other subjects,
- identify the values and importance of Biological Sciences and alternative knowledge systems,
- summarize the historical/policies perspective of Biological Sciences,
- examine pedagogical concerns of Biological Sciences,
- categorize approaches and methods of teaching learning Biological Sciences,
- apply proper pedagogy in teaching learning the concepts of Biological Sciences,
- realize the importance of studying Biological Sciences as part of the school curriculum,
- identify the values and significance of Biological Sciences in School curricula,
- apply appropriate methods in teaching concepts of Biological Sciences.

UNIT-I
Nature, Scope and Historical Perspective of Biological Sciences

A. Nature, scope, and importance of Biological Sciences.
B. Historical perspective of Biological Sciences.
C. Contributions of Indian (ancient and modern)and other scientists.
D. Biological science for sustaining self,society,environment,and world.
E. Recommendations/ suggestions of various committees, commissions, and policiesin reference to Biological Sciences.

UNIT-II
Aims and Objectives of Biological Sciences

A. Aims and objectives of teaching biological science as a component of multidisciplinary science.
B. Learning out comes and competenciesof teaching Biological Sciences at secondary stage.
C. Linkages of Biological Sciences with other school subjects and place of the Biological

Sciences in school curriculum.

D. Values of Biological Sciences; ethical, environmental and sustainability concerns.

UNIT-III
Pedagogical As pects of Biological Sciences

A. Implication of various approaches – inductive deductive, constructivist, experiential, art-integrated, blended learning, interdisciplinary and multidisciplinary approaches, stimulating thes pirit of investigation and enquiry.

B. Analytical pedagogical concerns in teaching of physical sciences for higher order thinking skills such as critical,creative,communication,decision making, reflective.

C. Methods of teaching learning Biological Sciences:learner-centricand group-centric, lecture cum demonstration, activity based, discussion, problem-solving, laboratory and hands on activity based, sports- integrated, project based, inquiry, discovery, experimentation,concept-mapping,collaborative and cooperative learning; stem and steam concept.

4.4.2.1 Suggestive Practicum (AnyThree)

1. Plot a timeline of development of BiologicalSciences from ancient to modern times mentioning the important developments.
2. Analyze and prepare a report on pedagogy of Biological Sciences with reference to NEP 2020.
3. Prepare a write upon ancient Indian contributions and practices in Ayurveda /Herbal medicines.
4. Develop concept maps on different concepts of Biological Sciences.
5. Demonstrate different pedagogical approaches and strategies for transacting concepts of Biological Sciences.
6. Any other project assigned by HEI.

4.4.2.2 Suggestive Mode of Transaction

Lecture cumdiscussion, demonstration,hands-on activities, experiential learning,inquiry, Group work, Presentations, multimedia.

4.4.2.3 SuggestiveModeofAssessment

Written tests, classroom presentations, workshops, seminars, assignments, practicums, sessional and terminal semester examinations (as per UGC norms).

4.4.2.4 Suggestive Reading Material

- National Council of Educational Research and Training.(April2022).Mandate documents Guidelines for the development of National Curriculum Frameworks.
- National Education Policy 2020 MoE, Government of India.
- National Steering Committee for National Curriculum Frameworks, (2023). Draft National Curriculum Frame work for School Education.
- NCERT,Textbooks of Biological Sciences at Secondary Stage.
- National Steering Committee for National Curriculum Frameworks, (2023). Draft National Curriculum Framework for School Education.
- NCERT, Textbooks of Physical Sciences at Secondary Stage.

24BIPD6423T: Content cum Pedagogy of Social Sciences at Secondary Stage

Credits:3L+1T+0P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

About the Course:

The focus of the National Education Policy (NEP) 2020 is on the holistic development of students. To achieve the objectives, interventions from quality teachers are vital. Teacher education program me strongly emphasizes pedagogy,its principles,and the practices of teaching and learning. Sound pedagogical content knowledge and teaching methods are the determinants of a teacher's quality and professionalism. Pedagogical knowledge and approaches refer to the specialized knowledge of the teacher for creating an active, child-centered, and inclusive teaching-learning environment for the students and need to be developed among the student teachers.This pedagogical course in Social Sciences is intended to enhance the pedagogical content knowledge of student teachers through different learning approaches and methods. This course comprises three units and a practicum. The course is devoted to developing an understanding of the nature and scope of Social Sciences and the aims and objectives of teaching Social Sciences and its linkages with other disciplines. Historical/policy perspectives of Social Sciences are discussed in unit second.Critical,creative,and analytical pedagogical concerns in teaching Social Sciences with special referencetohigher-order thinking are also placed in unit third.

Learning Outcomes

After completion of this course, student teacher will be able to:

- explain the nature and scope of Social Sciences,
- examine the pedagogical aspects of the Social Sciences,
- elaborate the aims and objectives of the Social Sciences,
- analyze the historical perspective and in herent values in Social Sciences,
- identify the importance/ significance of Social Sciences in daily life,
- develop learning objectives and outcomes,
- differentiate between Social Sciences and social studies,
- determine the suitability of the methods for teaching learning Social Sciences,
- apply approaches and strategies of teaching learning Social Sciences at the secondary stage.

UNIT-I
Nature, Scope, and Historical Perspective of Social Sciences

A. Nature of Social Sciences.
B. Historical development of Social Sciences, scope, and role of Social Sciencesindaily life.
C. Disciplines of Social Sciences and their inter relationship.
D. Concept of Social Sciences and Social Studies.
E. Recommendations and suggestions of various committees, commissions, and policies in reference to Social Sciences.

UNIT-II
Aims and Objectives of Teaching Social Sciences

A. Aims and objectives of teaching Social Sciences at secondary stage.
B. Learning out comes and competencies of teaching Social Science at secondary stage.
C. Linkages of Social Sciences with other subjects and its place in school curriculum.
D. Values of Social Sciences such as in tellectual, utilitarian, moral and aesthetic and environmental.

UNIT-III
Pedagogical Aspects of Social Sciences

A. Implication of various approaches- inductive deductive, constructivist, experiential learning, art-integrated learning, sports integrated learning, field visit,discovery, project methods for learning of the selected chapters/ concepts in SocialSciences textbooks.
B. Moving to wards more holistic,inter disciplinary,and multi disciplinary approaches of learning Social Sciences, learning exclusive of pre-conceptions and misconceptions, blended learning.
C. Methods of teaching Social Sciences:learner-centric and group-centric,activity based, discussion, problem-solving, role play, inquiry approach, problem-solving, concept mapping, collaborative & cooperative learning approach, field based experiential learning and applications of suitable methods for learning the selected chapters/concepts in Social Sciences textbooks.
D. Critical,creative and analytical pedagogical concerns in teaching the Social Sciences with special reference to higher-order thinking.

Suggestive Practicum (AnyThree)

1. Develop write-ups on the teaching of Social Sciences using inter disciplinary and multi disciplinary approaches as suggested in NEP 2020.
2. Develop learning objectives and learning out comes for the concepts of Social Sciences at the secondary stage.
3. Design an excursion activity to trans act concepts of Social Sciences.
4. Prepare a detailed project on the curricular integration of skills,capacities,and values in Social Sciences.
5. Demonstrate different pedagogical approaches and strategies for transacting concepts of Social Sciences
6. Analyze the different recommendations of policies / commissions in context to Social Sciences.
7. Any other project assigned by HEI.

Mode of Transactions

Lectures with discussion, Hands-on activities, project approach, problem-solving, concept

mapping, collaborative & cooperative approach, experiential learning, and toy/art/sports integrated learning.

Suggestive Mode of Assessment

Written tests, classroom presentations, workshops, seminars, assignments, practicums, sessional and terminal semester examinations (asper UGC norms).

Suggestive Reading Material:

- NCERT Textbooks of Social Sciences for Classes IX-XII
- Epistemology of Social Sciences, the scientific status,values and Institutionalisation, Vol. XXXVI,UNESCO publications,(1984)
- National Policy on Education1968, 1986 and 2020

24BIPD6424T: Content cum Pedagogy of Commerceat Secondary Stage

Credits:3L+1T+0P
Periods per week: 5
Examination:3hours

Marks:100
C1+C2=30
C3=70Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:

C1:Written Test as per schedule (at the end of 8th week)

C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

About the Course:

Commerce is an important school subject and students are expected to master knowledge and skills related to business, accounts, Finance, and allied are as during study.Commerce subject deals with economic issues and concerns of a society thus this course focuses on the real-life situations and primary sources of information so that the student-teachers can grasp concepts and develop thinking skills.'Teaching of Commerce'at school level has agreat relevance to acquaint prospective school teachers with various pedagogical aspects and interventions in commerce.This course en compasses three units focusses on the scope of Commerce (Business studies and accountancy) and allied subjects and the purpose of teaching Commerce in schools, nature,scope and importance of Commerce teaching, its historical perspective.The course emphasizes the aims, objectives and learning outcomes of teaching Commerce at the secondary level.

Learning Outcomes

After completion of this course, student teachers will be able to:

- discuss contribution of Indian (ancient and modern) and other expert in development of commerce,

- explain the nature and scope of Commerce as an important subject for civil society,
- interpret the recommendation of the various policy documents about Commerce education,
- outline linkages between Commerce and other subjects,
- classify the aims and objectives of teaching commerce,
- examine pedagogical concerns of Commerce,
- demonstrate various approaches and methods of teaching commerce,
- apply properpe dagogy in teaching learning the concepts of Commerce,
- plans trategies to in culcate values through teaching of Commerce.

UNIT-I

Nature, Scope, and Historical Perspective of Commerce

A. Nature, scope, and importance of Commerce as a school subject.
B. Historical perspective of development of Commerce as a subject.
C. Contributions of Indian (ancient and modern) and other experts.
D. Commerce, society and human and sustainable development.
E. Recommendations and suggestions of various committees, commissions, and policies in reference to Commerce education.

UNIT-II

Aims and Objectives of Teaching Commerce

A. Aims and objectives of teaching Commerce at secondary stage.
B. Learning outcomes and competencies of teaching Commerce at secondary stage.

24BIPD6425T:Content cum Pedagogy of Computer Scienceat Secondary Stage

Credits:3L+1T+0P
Periods per week: 5
Examination:3hours
Marks:100
C1+C2=30
C3=70Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

About the Course

Computer Science is a rapidly evolving discipline that lies at the core of the modern technological era. It is the study of algorithms, data structures, and the principles of computation, encompassing a widerange of topics related to computing and information technology.Asa discipline, it blends theory and practice,fostering innovation and problem-solvingindiverse fields. This course on the pedagogy of Computer Science comprises of three units and a practicum. It aims to provide student teachers with a comprehensive understanding of the Computer Science discipline's nature, historical context,evolving trends, and its correlation with other school subjects. It focuses on defining the aims and objectives of teaching Computer Science, along with the development of learning outcomes and competencies for student teachers.The course also explores different pedagogical approaches and teaching methods to foster higher-order thinking skills and prepare student teachers for the practical, social, disciplinary, and cultural aspects of Computer Science. By the end of the course, student teachers will be equipped with effective strategies to engage learners and facilitate their learning in the field of Computer Science.

Learning Outcomes

After completion of this course, student teachers will be able to:

- identify the nature, scope, and Importance of Computer Science,
- explain aims and objectives of teaching Computer Science,
- recognize the multidisciplinary nature of Computer Science and its linkages with other school subject,
- summarize the historical and policy perspective of Computer Science,
- demonstrate the practical, social, disciplinary,and cultural values of teaching learning Computer Science,
- discuss the policy recommendations and suggestions inregard to Computer Science,
- examine the implications of different pedagogical approaches of teaching Computer Science,
- analyze different methods of teaching Computer Science.

UNIT-I

Nature, Scope and Historical Perspective of Computer Science

A. Nature,scope and importance of Computer Science.
B. Historical perspective of Computer Science.
C. Computer Science as an evolving discipline.
D. Recommendations/ suggestions of various committees,commissions, and policies in reference to Computer Science.

UNIT-II

Aims and Objectives of Teaching Computer Science

A. Aims and objectives of teaching Computer Science.
B. Learning outcomes and competencies of teaching Computer Scienceat secondary stage.
C. Linkages of Computer Science with other school subjects and its place in school curriculum.
D. Values of teaching Computer Science: practical, social, disciplinary, and culturalvalues.

UNIT-III

Pedagogical Aspects of Computer Science

A. Implication of various approaches - inductive deductive, constructivist, experiential learning, computer/ web supported pedagogical approaches such as personalized adaptive

learning and Computer Managed Learning (CML), multimedia approach, interdisciplinary and multidisciplinary approaches in Computer Science.

B. Analytical pedagogical aspects in teaching of Computer Science for higher order thinking skills such a scritical, creative, communication, decision making and reflective.
C. Methods of teaching the Computer Science: learner-centric and group-centric,lecture cum demonstration, problem-solving, laboratory, and project based, analytic and synthetic, flipped classrooms, Computer Assisted Instructions (CAI), mobile learning and online learning.

Suggestive Practicum (AnyThree)

1. Analyze recommendations of policies/commissionsinc on text to Computer Sciences.
2. Prepare a write-upon any two topics of Computer Science regarding their learning outcomes and competencies at Secondary Stage.
3. Create an inter active multimedia presentation, including videos, animations, and simulations, to explain complex Computer Science concepts.
4. Prepare a report on inter disciplinary and multi disciplinary approaches used in the practices of Computer Sciences.
5. Identify the challenges and benefits of implementing CAI in educational settings and prepare a report.
6. Identify and integrate values in Computer Science concepts and preparea Power Point presentation.
7. Any other project assigned by HEI.

Suggestive Mode of Transaction

Lecture cum demonstration method, discussion method, laboratory method,project method, inquiry approach, problem solving,experiential learning approach, flipped classrooms, mobile apps and inter active methods such as group discussions, peer tutoring, workshops, observations and presentations.

Suggestive Mode of Assessment

Seminars, demo lessons, case studies, practical tasks, hands-on activities in laboratories, written tests, classroom presentations, workshops, assignments, practicums, sessional and terminal semester examinations (as per UGC norms).

Suggestive Reading Materials:

- National Council of Educational Research and Training.(April2022).Mandate documents Guidelines for the development of National Curriculum Frame works.
- National Education Policy 2020, MoE, Government of India
- National Steering Committee for National Curriculum Frameworks, (2023). Draft National Curriculum Framework for School Education.
- NCERT(2019).Computer Science: Textbook for class XI–XII.
- NCERT (2019). Information and Communication Technology: AText book for Class IX-X.

*Teachers may also suggest books /readings as per the need of the learners and learning content.

C. inter relationships within Commerce and allied subject knowledge (accountancy, business studies, management, finance, economics)
D. Linkages of Commerce with ot her disciplines and place of Commerce in school curriculum.
E. Inculcation of values through teaching of commerce.

UNIT-III

Pedagogical Aspects of Commerce

A. Implication of various approaches- inductivedeductive, constructivist, art integrated learning, sports integrated learning, blended learning, interdisciplinary and multidisciplinary approaches in commerce.
B. Analytical pedagogical concerns in teaching of Commerce for higher order thinking skills suchascritical, creative,communication, decisionmaking, reflective.
C. Methods of teaching learning commerce: learner-centric and participative, demonstration, casestudy,discussion,problem-solving, laboratory, project based, scientific inquiry, discovery,experimentation, concept-mapping, seminar, collaborative and cooperative learning.
D. Experiential learning in Commerce–industry trips, real field experiences, Dalton method, simulations, role play.

Suggestive Practicum (Any Three)

1. Participate in the discussion (class level) on any recent development in the field of Commerce and prepare a report.
2. Make a report on activities performed by any one company regarding its social responsibility.
3. Prepare learning outcomes for any two units of Commerce at secondary stage.
4. Explore contributions of Indian experts in the development of Commerce and make presentations on historical development of commerce.
5. Analyze recommendations of policies/ commissions in context to commerce.
6. Develop Concept mapson different topics of commerce.
7. Demonstrate different pedagogical approaches and strategies for trans acting concepts of commerce.
8. Prepare write-ups on the teaching of Commerce using interdisciplinary and multidisciplinary approaches as recommended in NEP 2020.
9. Any other project assigned by HEI.

Suggestive Mode of Transaction

Lecture cum discussion/ demonstration, hands-on activities, experiential learning, art and environment integrated learning, sports integrated learning.

Suggestive Mode of Assessment

Written tests, classroom presentations, workshops, seminars, assignments, practicums, sessional and terminal semester examinations (as per UGC norms).

Suggestive Reading Material

- National Education Policy 2020,MoE,Government of India
- National Steering Committee for National Curriculum Frameworks,(2023).
- Draft National CurriculumFramework for School Education,
- NCERT Textbooks, Business Studies for Class XIandXII
- NCERT Textbooks Accountancy for ClassXIandXII

*Teachers may also suggestbooks /readings as per the need of the learners and learning content.

24BIPD6426T:Content cum Pedagogy of Arts Education at Secondary Stage

Credits:3L+1T+0P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule- WrittenTest/Assignment/ Essay/Presentation/Report/ Seminar/Quiz (at the end of fifteen week).

About the Course

The term 'Art'refers to a wide range of human endeavors and the resulting works that reflect technical mastery, aesthetic beauty, emotional heft, ormental concepts.Through the involvement of the hearts, mind, and hand, the education of Arts, craft, and design plays a special role in the holistic development of human beings, empowering them to construct their own world with wisdom and to comprehend and value the work of others.This course comprises three units related to the nature, scope and historical perspective of Arts Education, aims and objectives of Arts Education teaching and pedagogical aspects of Arts Education. The course deals with knowledge of Indian Arts which will enable the students to appreciate the diversity and richness of artistic traditions, as well as to become liberal,original thinkers, and responsible citizens of the country, provisions in NEP 2020 in reference to Arts Education, learning outcomes and competencies of teaching arts at the secondary stage and the in culcation of associated values.It emphasizes implication of various approaches to teaching arts, the development of high order thinking skills ,to adapt different methods and techniques for effective teaching and develop skills for providing varied student-centric, participatory quality learning experiences to the students.

Learning Outcomes

After completion of this course, student teachers will be able to:

- discuss the modern meaning of arts and design,
- reflect on Indian arts and its relevance in secondary school,
- interpret the need of arts education in nation development,
- explain arts education as a curricular discipline and its evolution as a subject,
- discuss significance of arts educationin school and its relationship with other school subjects,
- outline aims, objectives and learning outcomes of teaching arts at school level,
- select objectives and competencies for teaching of Arts,
- adapt various methods for teaching of Arts,
- maximize there flection on values in culcation.

UNIT-I

Nature, Scope, and Historical Perspective of Arts Education

A. Appreciation of arts, the modern concept of Arts, interdependence of arts, craft, and design, forms of Arts.
B. The scope of arts and its importance in the development of nation and as a profession.
C. Knowledge of Indian arts–from earliest to the contemporary as a subject, historical perspective,and major land marks in the evolution of arts (visual and performing arts) as a subject.
D. Recommendations/ suggestions of various committees, commissions and policies, provisions in NEP 2020 in reference to Arts Education.

UNIT-II

Aims and Objectives of Arts Teaching

A. Aims and objectives of teaching Arts at secondary stage.
B. Learning outcomes and competencies of teaching Arts at secondary stage.
C. Understanding arts/craft (visual and performing) traditions of India and its relevance in secondary school, traditional crafts as a pedagogy assimilating with other school subjects.
D. Inculcation of different values through teaching of Arts.

UNIT-III

Pedagogical Aspects of Arts Education

A. Implication of various approaches such as inductive-deductive, constructivist, experiential learning, blended learning, interdisciplinary and multidisciplinary approaches in teaching of Arts.
B. Analytical pedagogical aspects in teaching of arts for the development of high order thinking skills such as critical, creative, communication, decision making, collaborative and reflective.
C. Methods of teaching arts: learner-centric and participatory methods. lecture cum demonstration, activity based, discussion, problem-solving, project based, hands on activity, field-based observations, assignments, brains as a thinking strategy, design thinking skills, divergent thinking, meta-cognition, artisticexpression, exploration and creation, experimentation, collaborative and cooperative learning, peer learning.

Suggestive Practicum (Any Three)

1. Organize a workshop on howArt forms can be integrated in teaching and learning of other school subjects and prepare a report.
2. Report on how the Artist design their products, manage their resources, including raw materials,its marketing and other challenges they face.
3. Explore traditional Art formsin the community or neighborhood and prepare a report.
4. Makep up pets and their costumes and prepare a write up of the entire process.
5. Applied Arts activities: Design the school magazine and bullet in boards, make posters, and greeting/ invitation cards, stages cenes for music, dance, and drama performances.
6. Analyze NEP2020with reference to emphasis on Arts Education.
7. Write learning outcomes and competencies for two topics of Arts Education at Secondary Stage.
8. Visit any monumental place and observe its aesthetics. Prepare a report based on your

observations relating it to different forms of Art.

9. Any other project assigned by HEI.

Suggestive Mode of Transaction

Lecture cum demonstration, Experimental method, Field-based experiences, Project method, Laboratory method, Hands on Activity, Problem solving method, Inquiry method, Success stories, Discussions, Self-study, Brains to rming and Experiential method.

4.4.2.5 Suggestive Mode of Assessment

Written test, classroom presentations, discussion for ums, observation, research/ study report, assignments, practicum, performance based, sessional and terminal examination (As per UGC Norms).

Suggestive Reading Materials

- Draft National Curriculum Framework for School Education,
- National Education Policy 2020, MoE, Government of India
- National Steering Committee for National Curriculum Frameworks, (2023).
- NCERT Textbooks for Art Education
- UNESCO, (2006), Appeals for the Promotion of Arts Education and Creativity at School to help Construct a Culture of Pace, Paris, November3{No.99-241}UNESCO PRESSE. http://www.://www.unesco.org/education/ecp/Arts_edu.htm,19.09.2019, 20:20.9.
- UNESCO, (2006), Road Map for Arts Education. The World Conference on Arts Education:Building Creative Capacities for the 21stCentury,Lisbon,6-9March2006, http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CLT/CLT/pdf/Arts_Edu_Road Map_en.pdf,13.08.2019,09(PDF)3.

24BIPD6427T:Content cum Pedagogy of Physical Education and Yogaat Secondary Stage

Credits:3L+1T+0P
Periodsperweek: 5
Examination:3hours

Marks:100
C1+C2=30
C3=70Marks

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:WrittenTestasper schedule(attheend of8th week)
C2:Asperclassschedule-

WrittenTest/Assignment/Essay/Presentation/Report/Seminar/Quiz(attheendoffiftee nweek).

AbouttheCourse

The focus of the National Education Policy (NEP) 2020 is on the holistic development of students. To achieve the objectives, interventions from quality teachers are vital. Sound pedagogical content knowledge and teaching methods arethe determinants of a teacher's quality and professionalism. Teacher education programme strongly emphasizes pedagogy, its principles, and the practices of teaching and learning. Pedagogical knowledge and approaches refer to the specialized knowledge of the teacher for creating an active, child-centered, and inclusive teaching-learning environment for the students and need to be developed among the student teachers. This pedagogical course in Physical Education and Yoga is intended to enhance the pedagogical content knowledge of student teachers through different learning approaches and methods . This course comprises three units .The course is devoted to developing an understanding of the nature and scope of Physical Education and Yoga ,aims, and objectives Yoga and its link ages with other disciplines. Historical/policy perspectives of Physical Education and Yoga are discussed in uni tsecond. Physical Education and Yoga is conceptualized in very broad terms by relating it to technology, society, humans, and sustainable development. It also focuses on the place of Physical Education and Yoga in school curriculum including an emphasis on how to build inclusive classrooms. It focuses on pedagogical concerns of Physical Education and Yoga. Critical, creative, and analytical pedagogical concerns in teaching Physical Education and Yoga with special reference to higher- order thinking are also place din unit third.

LearningOutcomes

After completion of this course, student teachers will be able to :

- explain nature, scope and importance of Physical Education and Yoga ,
- discuss aims and objectives of teaching Physical Education and Yoga at secondary stage ,
- outline linkages between Physical Education and Yoga with other school subjects ,
- appraise the values in culcation for Physical Education and Yoga ,
- summarize the historical perspective of Physical Education and Yoga in policies/commissions,
- make use of pedagogical aspects of Physical Education and Yoga ,
- categorize approaches and methods of teaching learning Physical Education and Yoga ,
- apply appropriate pedagogy in teaching learning the concepts of Physical Education and Yoga.

UNIT-I

Nature, Scope and Historical Perspective of Physical Education and Yoga

A. Nature, scope, and importance of Physical Education and Yoga.
B. Historical perspective of Physical Education and Yoga .
C. Contributions of Indian (ancient and modern) and other personalities.
D. Role of Physical Education & Yoga in society and sustainable development .
E. Recommendations/suggestions of various committees, commissions, and policies .

UNIT-II

Aims and Objectives of Teaching Physical Education and Yoga

A. Aims and objectives of teaching Physical Education and Yoga.
B. Learning outcomes and competencies of teaching Physical Education and Yoga at secondary stage.
C. Linkages of Physical Education and Yoga with other school subjects and place of the Physical Education and Yoga in school curriculum.

D. Inculcation of values through teaching of Physical Education and Yoga.

UNIT-III
Pedagogical Aspects of Physical Education and Yoga

A. Implication of various approaches- inductive-deductive, constructivist, experiential learning, art integrated learning, interdisciplinary and multidisciplinary approaches in Physical Education and Yoga.
B. Analytical pedagogical concerns in teaching of Physical Education and Yoga for high order thinking skills such as critical, creative, communication, decision making.
C. Methods of teaching learning Physical Education and Yoga: learner-centric and group-centric, lecture cum demonstration, activity based, imitation, drill and practice, discussion, problem-solving, project based, hands on activity, discovery, experimentation, field activities, collaborative, cooperative and peer learning.

Suggestive Practicum(Any Three)

1. Explore and prepare a write upon the contributions of Indian personalities in the development of Physical Education and Yoga.
2. Make a presentation on the historical development of Physical Education and Yoga.
3. Analyze recommendations of policies/commissions in context of Physical Education and Yoga.
4. Identify and analyze the types of values inculcated through teaching of Physical Education and Yoga concepts and prepare are port.
5. Prepare write-up sontheteaching of Physical Education and Yoga using interdisciplinary and multi disciplinary approaches as recommended in NEP 2020.
6. Any other project as signed by HEI.

Suggestive Mode of Transaction

Lecture cum discussion, demonstration, hands-on activities, experiential learning, art integrated learning,field activities.

Suggestive Mode of Assessment

Written tests, classroom presentations, workshops, seminars, assignments, practicums, sessional and terminal semester examinations (as per UGC norms).

Suggestive Reading Material:

- National Council of Educational Research and Training . (April2022). Mandate documents Guidelines for the development of National Curriculum Frameworks.
- National Education Policy 2020, MoE, Government of India.
- National Steering Committee for National Curriculum Frameworks , (2023).Draft National Curriculum Framework for School Education.
- NCERT, Health and Physical Education. Textbook for IX-XII class New Delhi.

24BIPD6428T:Content cum Pedagogy of Home Science at Secondary Stage

Credits:3L+1T+0P **Marks:100**
Periods per week: 5 **C1+C2=30**
Examination:3hours **C3=70Marks**

Instruction : This course is divided into independent unit In the end semester theory examination paper will be divided into two parts viz, A and B. Part A Eleven (11) questions of short answer type will be asked covering all four units and it is compulsory. In Part B Three (3) questions of essay type (300 words) from each unit will be asked which carries remaining proportion of maximum marks of the paper. The candidate will be required to attempt one question from each unit.

Distribution of Marks for the Course			
Paper	**Max.Marks**	**Duration**	**Min.Pass Marks**
Internal Test(C1)	15	1hr	12
Internal Test(C2)	15	1hr	
End Semester Theory Examination(C3)	70	3hrs	28
Total Max Marks	**100**		**40**

Note:
C1:Written Test as per schedule (at the end of 8th week)
C2:As per class schedule -Written Test/ Assignment/ Essay/ Presentation/ Report/ Seminar/ Quiz (at the end of fifteen week).

About the Course

Home Science is a multidisciplinary branch of study that makes the most use of the resources at hand to produce methodical and scientific information about various facets of family life. It involves every family member's health and happiness. This course encompasses three units describeing the modern meaning of home making and the purpose of teaching Home Science in schools, nature, scope and importance of Home Science teaching, its historical perspective. The course emphasizes the aims, objectives and learning outcomes of teaching Home Science at the secondary level. The course deals with the implication of various approaches, development of high order thinking skills and various methods of teaching Home Science .

Learning Outcomes

After completion of this course, student teachers will be able to :

- explain the modern meaning of Home Science and its nature ,
- discus sevolution of Home Science as a school subject and its correlation with other subjects ,
- examine the scope and importance of Home Science in daily life ,
- outline the aims, objectives and learning outcomes of the teaching of Home Science,
- adapt appropriate teaching methods based on learning outcomes,
- select participatory method for teaching Home Science,
- improve high orderthinking skills,
- demonstrate values related to Home Science.

UNIT-I

Nature, Scope, and Historical Perspective of Home Science

A. Modern meaning of Home Science, nature of Home Science as a discipline.
B. Historical perspective and major landmarks in the evolution of Home Science as a subject.
C. Scope of Home Science and its importance in daily life and as a profession.
D. Recommendations/suggestions of various committees, commissions and policies related to education of Home Science.

UNIT-II

Aims and Objectives of Home Science Teaching

A. Aims and objectives of teaching Home Science.
B. Learning outcomes and competencies of teaching Home Science at secondary stage.
C. Place of Home Science in school curriculum, its correlation with other school subjects, economics in Home Science.
D. Inculcation of associated values for teaching Home Science.

UNIT-III

Pedagogical Aspects of Home Science

A. Implication of various approaches such as inductive-deductive, constructivist, experiential learning, interdisciplinary and multidisciplinary and blended learning approaches in Home Science teaching.
B. Analytical pedagogical aspects in teaching of agriculture for the development of high order thinking skills such as critical, creative, communication, decision making, collaborative and reflective.
C. Methods of teaching Home Science: one to one teaching and group teaching in Home Science, lecture cum demonstration, observation, activity based, discussion, problem-solving, laboratory, project based, hands on activity, discovery, inquiry, experimentation, exhibition and displays, collaborative and cooperative learning, peer learning and flipped classroom.

Suggestive Practicum (Any Three)

1. Prepareare porton the significance of Home Science in daily life.
2. Formulate objectives based on learning outcomes for two chapters of Home Science at secondary stage.
3. Analyze recommendations of NEP 2020 with reference to Home Science education.
4. Prepare are porton interdisciplinary and multidisciplinary approaches use dinthe practices of Home Science.
5. Identify and integrate values in Home Science concepts and prepare a write up.
6. Any other project as signed by HEI.

Suggestive Mode of Transaction

Lecture cum demonstration, experimental method, observation method, project method, laboratory method, discovery, problem solving method, inquiry method, success stories, discussions, self-study, and experiential method.

Suggestive Mode of Assessment

Written test, classroom presentations, discussion forums, observation, research/study report, assignments, practicum, sessional and terminal examination (As per UGC Norms).

Suggestive Reading Materials:

- Food Safety and Standards Authority of India. Ministry of Health and Family Welfare, Government of India.
- National Council of Educational Research and Training. (April 2022). Mandate documents Guidelines for the development of National Curriculum Frame works.
- National Education Policy 2020, MoE, Government of India
- National Steering Committee for National Curriculum Frame works, (2023). Draft National Curriculum Frame work for School Education.