

B.Sc. B.Ed.

Overview of the Department

The Department of Education at DAV University, inaugurated in the year 2018, is a beacon of innovation, dedicated to nurturing a generation of transformative educators equipped to uplift society with their wisdom. Our mission is twofold: to shape competent teachers by unlocking their inherent potential, and to instil a value-oriented mindset that enriches our community. We recognise the power of education as a catalyst for societal transformation, aiming to disseminate knowledge while promoting health, livelihood, and social harmony.

The Department of Education proudly presents two comprehensive four-year integrated programs – B.Sc. B. Ed. and B.A. B. Ed. Both of these courses have earned the esteemed endorsement of the National Council for Teacher Education (NCTE). A distinguishing feature of these programs is our steadfast commitment to experiential learning. We are firm believers in providing our aspiring educators with real-world exposure, dispatching them to a variety of schools where they can refine their skills and emerge as proficient knowledge facilitators. In response to the dynamic nature of the educational landscape, Department advocates for the incorporation of state-of-the-art technology and promotes application-oriented research amongst our pupil teachers. The curriculum is thoughtfully designed to provide an optimal blend of theoretical knowledge, practical application, and immersive internships, thereby ensuring a comprehensive educational journey for our students. In doing so, we aim to transcend traditional pedagogy, empowering our graduates to become agents of positive change in the educational realm and beyond.

Learning Objectives:

Upon completing the programmes, students will be able:

- To foster and support their own learning ability, enabling the development of a critical mindset essential for continuous growth and adaptability.
- To cultivate values in students by immersing them in real-world experiences.
- To thrive in an environment that promotes holistic development, actively cultivating leadership skills, and shaping a well-rounded personality extending beyond academic knowledge.
- To identify and proactively resolve misconceptions in the teaching-learning process, employing a constructivist approach within their pedagogical strategies for effective teaching.
- To imbibe proficiencies such as effective communication skills and the usage of various ICT tools. This equips our pupil-teachers to compete effectively in today's competitive world.

Instructional Methods:

- Experiential Method
- Simulations
- Activity Based Learning
- Demonstration Method
- Game Based Learning
- Concept Mapping
- Research Projects
- Inquiry-based learning
- Problem-solving
- Classroom Discussion
- Lecture Method
- Q&A Sessions

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

Key factors and Figures (about the programme)

- Type: Bachelor
- Degree: B.Sc. B.Ed.
- Eligibility: Passed with 60% aggregate marks (55% marks in case of candidate belonging to SC/ST) in 10+2 or equivalent in any stream with English.
- Fee: 69000
- Mode of Study: Full-Time
- Medium of Instruction: English
- Location: DAV University Campus
- Started Date: July-August

Overview of the program

The B.Sc. B.Ed. integrated course is a transformative journey in education. This unique four-year program synergistically blends scientific disciplines with pedagogical studies, potentially saving students a year depending on their aptitude. The curriculum encompasses subjects like Physics, Chemistry, Mathematics, Biology, and Zoology, along with foundational and pedagogical courses. By integrating the Bachelor of Science and Bachelor of Education, this program streamlines the traditional education pathway, optimizing students' learning journey and saving a valuable year in their academic and professional pursuits.

Beyond mere time efficiency, our integrated B.Sc. B.Ed. program seamlessly merges scientific disciplines with pedagogy, transcending traditional education boundaries through hands-on experiences and community engagement. Our mission goes beyond conventional teaching, aspiring to offer a comprehensive, value-oriented learning experience that molds effective leaders. Immerse yourself in an environment that not only recognizes but celebrates your talents and creative potential – a gateway to adaptability and excellence.

Why this Program?

Discover why the B.Sc. B.Ed. course could be your gateway to a transformative educational experience:

- **Holistic Learning:** The program offers a transformative educational journey by seamlessly blending scientific disciplines with pedagogical studies, providing a well-rounded and holistic learning experience.
- **Diverse Curriculum:** Encompassing subjects such as Physics, Chemistry, Mathematics, Biology, Zoology, along with foundational and pedagogical courses, the curriculum ensures a comprehensive understanding of both scientific principles and effective teaching methodologies.
- **Streamlined Pathway:** Integrating the Bachelor of Science and Bachelor of Education streamlines the traditional education pathway, optimizing the learning journey and expediting academic and professional pursuits.
- **Practical Experiences:** The program goes beyond theoretical knowledge by integrating hands-on experiences, encompassing laboratory work, community engagement, and internships to provide practical skills and a deeper understanding of the societal context of education.
- **Innovative Methodologies:** By amalgamating scientific knowledge with inventive methodologies, the program prepares students with the skills needed to excel in various career opportunities within the ever-changing global landscape.
- **Placement Assistance:** Upon program completion, the department actively assists in securing placements, ensuring a strong foundation for professional success.
- **Internships:** This programme offers practical experience and exposure through internships in prestigious private and government schools. Gain hand-on experience through internships.

During Your Study:

As a student in the programme, you will have access to:

- State-of-art laboratories and research facilities
- A meticulously curated library with extensive resources
- Interactive Smart Classes
- Networking opportunities facilitated by departmental clubs and events
- Mock Interviews for honing professional skills
- Guidance from experienced faculty
- Engaging in community work
- Participation in Internship programs
- Explore and master various artistic pursuits, including painting and diverse crafts

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs) FOR B.Sc. B.Ed.

- **PEO1:** Facilitate value-based holistic and comprehensive learning by integrating traditional and innovative learning practices to match the highest quality standards and train students to be effective leaders in their chosen fields and career.
- **PEO2:** Provide a conducive environment to unleash their hidden talents, creative potential, nurture the spirit of critical thinking and encourage them towards higher education.
- **PEO3:** Equip students with skills needed to adapt better to the changing global scenario and gain access to versatile career opportunities in multidisciplinary domains.
- **PEO4:** Facilitate student teachers to adopt Creative Methodologies in teaching Social Science subjects.
- **PEO5:** Provides an opportunity to enhance research in core as well as multidisciplinary areas of Social Science and Education.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

At the end of the program, the student:

- **PSO1:** Graduates will acquire a comprehensive knowledge and sound understanding of fundamentals of their core subjects such as Economics, history, geography, political science and Elective English.
- **PSO2:** Graduates will develop teaching skills on pedagogy of Social Science and pedagogy of Language.
- **PSO3:** Graduates will be prepared to acquire a range of general skills, abilities of communication, reflection, art, aesthetics, self-expression and ICT.
- **PSO4:** Graduates will Perform Procedures as per laboratory standards in the areas of botany, chemistry, zoology and physics.
- **PSO5:** Graduates will be able to develop understanding about teaching, Pedagogy, school management and community involvement.
- **PSO6:** Build understanding and perspective on the nature of the learner, diversity and learning.

PROGRAMME OUTCOMES (POs) of B.Sc. B.ED.

Education graduates will be able to:

- **PO1:** Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate

and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

- **PO2:** Effective Communication: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.
- **PO3:** Effective Citizenship: Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- **PO4:** Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
- **PO5:** Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.
- **PO6:** Self-directed and Life-long Learning: Acquire the ability to engage in independent and life- long learning in the broadest context socio-technological changes
- **PO7:** The Teacher and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional teaching practice.

Programme Outlines:

The B.Sc. B.Ed. Program is designed to provide students a solid foundation of knowledge across a wide range of scientific and educational disciplines. During the program, students will follow a structured curriculum aimed at building a strong understanding of fundamental concepts and practices in both Science and Education.

SEMESTER -1 COURSE OUTLINE COURSE-1

Course Code	EDU101B
Course Title	PHILOSOPHICAL, SOCIOLOGICAL AND PSYCHOLOGICAL BASES OF EDUCATION
Hours	L:4, T:0, P:0
Credits	4
Type	Core Course

Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Describe the philosophical and sociological and psychological basis of education.</p> <p>CO2: Gain knowledge about the contributions of Indian and Western thinkers in education.</p> <p>CO3: Illustrate the role of education in social structure, social change, social stratification, social mobility, cultural change and modernization.</p> <p>CO4: Elaborate the concepts of psychology and its application in the field of education</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1: <ul style="list-style-type: none"> Education: Meaning, Nature, types. Philosophy: Meaning, Nature. Philosophy of Education, Educational Philosophy: Relationship between Education and Philosophy 						CO1
	Unit 2: <ul style="list-style-type: none"> Philosophy: Major schools of philosophy and their educational implications: Idealism, Materialism, Naturalism, Pragmatism. Contribution of Indian and Western Thinkers: Indian Thinkers: Dr. Radhakrishnan, Aurobindo, Maharishi Swami Dayanand, Gandhi, Vivekananda and Tagore, Western Thinker: Plato, Aristotle, Descartes 						CO2
	Unit 3: <ul style="list-style-type: none"> Meaning and functions of Sociology and Sociology of Education. Society: Structure, Social stratification, social mobility, Socialization. Social change in India: Factors affecting social change: Caste, Ethnicity, Class, Language, Religion and Regional imbalances, Education for Social Change. Concept of Culture: Education for Cultural change, Modernization 						CO3

	Unit 4 <ul style="list-style-type: none"> • Educational Psychology: Concept, Nature, Scope and Objectives. • Relationship of Psychology and Education. • Intelligence: Concept, Nature, Theories of Intelligence, Concept of Intelligence Quotient, Emotional Quotient and Social Quotient, Measurement of Intelligence. • Memory/ Forgetting: Concept, Nature, Types, Theories, features effecting memory/ forgetting, Mnemonics. • Aptitude, Attitude, Interest and their Measurement. 	CO4
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Reference Books:

- Bhatia, K. K. & Narang, C. L. (2003). Principles of Education (Methods and Techniques). Ludhiana: Tandon Publishers.
- Chaube, S. P. & Chaube, A. (2000). Philosophical and Sociological Foundations of Education. Agra: Vinod Pustak mandir.
- Dhavan, M. L. (2005). Philosophy of Education. Delhi: Isha Books.
- Durkheim, Emile (1956). Education and Sociology. New York: Free Press.
- Taneja, V. R. (1973). Foundations of Education: Philosophical and Sociological. New Delhi: Sterling Publications.
- Walia, J. S. (2004). Principles of Education. Jalandhar: Paul Publishers.
- Chauhan, S. S. (2004). Advanced Educational Psychology. New Delhi: Vikas Publishing House.
- Mathur, S. S. (1986). Educational Psychology. Agra: Vinod Pustak Mandir.
- Miffin, B. R. (1978). Psychology Applied to Teaching. Haughton: Bosson.
- Suri, S. P., & Sodhi, T. S. (2006). Psychological Foundations of Education. Patiala: Bawa Publications.
- Hurlock (2001). Child Development. Tata McGraw- Hill Education.
- .Morgan (2001). Introduction to Psychology. Tata McGraw- Hill Education.
- Bhatia, K. K. & Narang, C. L. (2003). Principles of Education (Methods and Techniques). Ludhiana: Tandon Publishers.
- Chaube, S. P. & Chaube, A. (2000). Philosophical and Sociological Foundations of Education. Agra: Vinod Pustak mandir.
- Dhavan, M. L. (2005). Philosophy of Education. Delhi: Isha Books.
- Durkheim, Emile (1956). Education and Sociology. New York: Free Press.
- Taneja, V. R. (1973). Foundations of Education: Philosophical and Sociological. New Delhi: Sterling Publications.
- Walia, J. S. (2004). Principles of Education. Jalandhar: Paul Publishers.
- Chauhan, S. S. (2004). Advanced Educational Psychology. New Delhi: Vikas Publishing House.
- Mathur, S. S. (1986). Educational Psychology. Agra: Vinod Pustak Mandir.
- Miffin, B. R. (1978). Psychology Applied to Teaching. Haughton: Bosson.
- Suri, S. P., & Sodhi, T. S. (2006). Psychological Foundations of Education. Patiala: Bawa Publications.
- Hurlock (2001). Child Development. Tata McGraw- Hill Education.

COURSE-2

Course Code	EDU109						
Course Title	INORGANIC CHEMISTRY-I						
Hours	L:4, T:0, P:0						
Credits	4						
Type	Core Course						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Correlate the contribution of various scientists in describing the concept of atomic structure.						
	CO2: Elaborate the concept of chemical bonding.						
	CO3: Explain the nature of s block, p block elements and Nobel gases.						
	CO4: Elaborate the concepts of psychology and its application in the field of education.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	<p align="center">Atomic Structure:</p> <p>Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: deBroglie equation, Heisenberg 's Uncertainty Principle and its significance. Quantum numbers and their significance. Shapes of <i>s</i>, <i>p</i>, <i>d</i> and <i>f</i> orbitals. Pauli 's Exclusion Principle, Hund's rule of maximum multiplicity, Aufbau 's principle and its limitations.</p> <p>periodicity of Elements: <i>s</i>, <i>p</i>, <i>d</i>, <i>f</i> block elements, the long form of periodic table. Detailed discussion of the following properties of the elements, with reference to <i>s</i> & <i>p</i>-block.</p> <p>a) Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table.</p> <p>b) Atomic radii (van der Waals)</p>						

<p>c) Ionic and crystal radii</p> <p>d) Covalent radii (octahedral and tetrahedral)</p> <p>e) Ionization enthalpy, Successive ionization enthalpies and factors affecting ionization energy. Applications of ionization enthalpy.</p>	
Unit 2	CO ₂
<p>Chemical Bonding</p> <p>1) <i>Ionic bond</i>: General characteristics, types of ions, size effects, radius ratio rule and its limitations. Packing of ions in crystals.</p>	
<p>2) <i>Covalent bond</i>: Lewis structure, Valence Bond theory (Heitler-London approach). Resonance and resonance energy, Molecular orbital theory.</p> <ul style="list-style-type: none"> ● Molecular orbital diagrams of diatomic and simple polyatomic molecules N₂, O₂. Valence shell electron pair repulsion theory (VSEPR) shapes of simple molecules and ions containing lone pairs and bond pair of electrons, multiple bonding (σ and π bond approach) and bond lengths. 	
<p>3) <i>Metallic Bond</i>: Qualitative idea of valence bond and band theories. Semiconductors and insulators, defects in solids.</p>	
Unit 3	CO ₃
<p>Chemistry of s and p Block Elements: Inert pair effect, Relative stability of different oxidation states, diagonal relationship and anomalous behaviour of first member of each group. Allotropy and catenation. Complex formation tendency of s and p block elements.</p>	
<p>Noble Gases: Occurrence and uses, rationalization of inertness of noble gases, preparation and properties of XeF₂, XeF₄ and XeF₆; Nature of bonding in noble gas compounds (Valence bond treatment). Molecular shapes of noble gas compounds (VSEPR theory).</p>	

	Unit 4	CO4
	General Principles of Metallurgy: Chief modes of occurrence of metals based on standard electrode potentials. Methods of purification of metals: Electrolytic Kroll process, and Mond 's process, Zone refining Van-Arkel method.	

Reference Books :

- 1.Lee, J.D. Concise Inorganic Chemistry, ELBS, 1991.
- 2.Douglas, B.E. and Mc Daniel, D.H. Concepts & Models of Inorganic Chemistry, Oxford, 1970.
- 3.Day, M.C. and Selbin, J. Theoretical Inorganic Chemistry, ACS Publications 1962.
- 4.Vogel, A.I. A Textbook of Quantitative Inorganic Analysis, ELBS

COURSE-3

Course Code	EDU110A						
Course Title	INORGANIC CHEMISTRY-I LABORATORY						
Hours	L0, T:0, P:2						
Credits	1						
Type	Core Course						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Estimate acid-base titrations in solutions and mixture.						
	CO2: Demonstrate oxidation reduction titrations						
Examination Type	PRACTICAL						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	It will include the following activities:					CO1	

	Titrimetric Analysis	
	i. Calibration and use of apparatus ii. Preparation of solutions of different Molarity/Normality of titrants.	
	Acid-Base Titrations	CO2
	iii. Estimation of carbonate and hydroxide present together in mixture.	
	iv. Estimation of carbonate and bicarbonate present together in a mixture.	
	v. Estimation of free alkali present in different soaps/detergents.	
	Oxidation-Reduction Titrimetry	CO3
	vi. Estimation of Fe (II) and oxalic acid using standardized KMnO4 solution.	
	vii. Estimation of oxalic acid and sodium oxalate in a given mixture.	
	viii. Estimation of Fe (II) with K2Cr2O7 using internal (diphenylamine, anthranilic acid) and external indicator	CO4

COURSE-4

Course Code	EDU121
Course Title	Plant Diversity
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Explain the general characteristics of viruses, bacteria and Algae.
	CO2: Construct the life cycle of different species of fungi.
	CO3: Analyze the general characteristics and life cycle of different species of Bryophytes
	CO4: Outline the general characteristics and life cycle of pteridophytes. .
Examination Type	Theory

	<ul style="list-style-type: none"> • Educational Psychology: Concept, Nature, Scope and Objectives. • Relationship of Psychology and Education. • Intelligence: Concept, Nature, Theories of Intelligence, Concept of Intelligence Quotient, Emotional Quotient and Social Quotient, Measurement of Intelligence. • Memory/ Forgetting: Concept, Nature, Types, Theories, features effecting memory/ forgetting, Mnemonics. • Aptitude, Attitude, Interest and their Measurement. 	
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Reference Books :

- 1.Alexopoulos, C. J. Mims, C. W` and Blackwell, M. 1996. Introductory Mycology. John Wiley and Sons, Inc. USA.
- Dube, H.C. 1990. An Introduction to Fungi. Vikas Publishing House Pvt. Ltd., Delhi.
- Sharma, P.D. 1991. The Fungi. Rastogi& Co., Meerut.
- Smith, G.M. 1971. Cryptogamic Botany. Vol. 1, Algae & Fungi, Tata McGraw Hill Publishing Co. New Delhi.
- Singh, V. Pandey, P.C. and Jain, D.K. 2012. Text Book of Botany, Diversity of Microbes and Cryptogams. Rastogi Publications, Meerut & New Delhi.
- Vishishta, B. R. 1999. Botany for Degree Students. Algae. S. Chand and Company Ltd., New Delhi.
- Vishishta, B. R. 1999. Botany for Degree Students. Fungi. S. Chand and Company Ltd., New Delhi.
- Puri, P. 1980. Bryophyta. Atma Ram & Sons, Delhi.
- Vishishta, B. R. 1999. Botany for Degree Students. Bryophyta. S. Chand and Company Ltd., New Delhi.
- Vishishta, B. R. 1999. Botany for Degree Students. Pteridophyta. S. Chand and Company Ltd., New Delhi.

COURSE-5

Course Code	EDU122A
Course Title	PLANT DIVERSITY LABORATORY
Hours	L0, T:0, P:2
Credits	1
Type	Departmental Elective

Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Observe the morphological features of various generas of algae and fungi.						
	CO2: Differentiate between different types of lichens.						
	CO3: Identify the causal organism of different types of fungal disease.						
	CO4: Discriminate between Bryophytes and pteridophytes on the basis of their morphological features.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	1.Study of morphology of various genera included in algae and fungi.						CO1
	2.Study of Crustose, Foliose and Fruticose types of Lichen thalli.						
	3.Histopathological study of White rust of crucifers, loose smut of wheat, Black rust of wheat and Red rot of sugarcane.						CO2
	4.Study of morphology of various genera mentioned in Bryophyta and Pteridophyta.						
	5.Preparation of permanent stained slides of: Marchantia (V.S. Thallus) Selaginella (T.S. Stem) Riccia (V.S. Thallus) Anthoceros (V.S. Thallus) Equisetum (T.S. Aerial stem passing through internode) Funaria (T.S. Stem) Pteris (T.S. Petiole and leaflet)						CO3
	6.Study of permanent slides of the above specimens.						

COURSE-6

Course Code	EDU125
Course Title	Mechanics

Hours	L:4, T:0, P:0						
Credits	4						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Define inertial and non-inertial frame of reference to elaborate concepts of Galilean transformation, centre of mass and laboratory frame of reference.						
	CO2: Express dynamics of a particle in a frame of reference and around a fixed frame of reference.						
	CO3: Elaborate the concept to central forces, fictitious force and coriolis forces.						
	CO4: Discuss Special Theory of relativity.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	<ul style="list-style-type: none">Fundamentals of Dynamics: Reference frames. Inertial frames; Galilean transformations; Galilean in variance centre of mass. Principle of conservation of momentum.Conservative and non-conservative forces. Potential Energy. Force as gradient of potential energy.Collisions: Elastic and inelastic collisions between particles. Centre of mass and laboratory frames. Various relations between lab and centre of mass frames.						
	Unit 2						
	Rotational Dynamics: Angular momentum of a particle and system of particles. Torque. Principle of conservation of angular momentum. Rotation about a fixed axis. Moment of Inertia. Calculation of moment of inertia for						CO2

	rectangular, cylindrical and spherical bodies. Kinetic energy of rotation. Motion involving both translation and rotation. Elasticity: Relation between Elastic constants.	
	Unit 3	
	Central forces and Central Force Motion: Motion of a particle under a central force field. Two-body problem and its reduction to one- body problem. Differential equation of orbit. Kepler 's laws. Satellite in circular orbit and applications. Basic idea of global positioning system. Non-Inertial Systems: Non-inertial frames and fictitious forces. Uniformly rotating frame. Laws of physics in rotating coordinate systems. Centrifugal force. Coriolis force and its applications. Components of velocity and acceleration in cylindrical and spherical Coordinate systems.	CO3
	Unit 4	
	Special Theory of Relativity: Michelson-Morley experiment and its outcome. Postulates of special theory of relativity. Lorentz transformations. Simultaneity and order of events. Lorentz contraction. Time dilation and its experimental verification. Relativistic transformation of velocity, Relativistic addition of velocities. Variation of mass with velocity. Mass less Particles. Mass-energy equivalence. Relativistic Doppler Effect. Relativistic kinematics. Transformation of energy and momentum.	CO4

Reference Books :

- D. Kleppner, R.J. Kolenkow, An introduction to mechanics, New Delhi: McGraw-Hill, 1973.
- C.Kittel, W. Knight, et.al. Mechanics, Berkeley Physics, vol.1, New Delhi: TataMcGrawHill, 2007.
- Resnick, Halliday and Walker, Physics, 8/e. Wiley, 2008.
- G.R. Fowles and G.L. Cassiday, Analytical Mechanics, New Delhi: Cengage Learning, 2005.
- R. P. Feynman, R. B. Leighton, M. Sands, Feynman Lectures, Vol. I, Pearson Education, 2008.

- R. Resnick, Introduction to Special Relativity, John Wiley and Sons, 2005.
- R. L. Reese University Physics, Thomson Brooks/Cole, 2003.
- D.S. Mathur, Mechanics, New Delhi: S. Chand and Company Limited, 2000.
- F.W Sears, M.W Zemansky, H.D Young, University Physics. 13/e, Addison Wesley, 1986.

COURSE-7

Course Code	EDU126						
Course Title	MECHANICS LABORATORY						
Hours	L0, T:0, P:2						
Credits	1						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Explore the fundamental principles and concepts in classical mechanics. CO2: Demonstrate the use of measuring instruments. CO4: Describe and analyse the motion of objects using mathematical equation and graphical representation.						
	CO2: Demonstrate the use of measuring instruments.						
	CO3: Describe and analyse the motion of objects using mathematical equation and graphical representation.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	practical						
	1.Measurements of length (or diameter) using vernier calliper, screw gauge and travelling microscope. 2.To study the random error in observations.						CO1

<p>3.To determine the height of a building using a Sextant.</p> <p>4.To study the Motion of Spring and calculate (a) Spring constant, (b) g and (c) Modulus of rigidity</p> <p>10.To determine the elastic Constants of a wire by Searle ‘s method.</p> <p>11.To determine the value of g using Bar Pendulum.</p> <p>12.To determine the value of g using Kater ‘s Pendulum.</p>	
<p>5.To determine the Moment of Inertia of a Flywheel.</p> <p>6.To determine g and velocity for a freely falling body using Digital Timing Technique</p> <p>7.To determine Coefficient of Viscosity of water by Capillary Flow Method (Poiseuille’s method).</p>	CO2
<p>♦Rotational Dynamics: Angular momentum of a particle and system of particles. Torque. Principle of conservation of angular momentum. Rotation about a fixed axis. Moment of Inertia. Calculation of moment of inertia for rectangular, cylindrical and spherical bodies. Kinetic energy of rotation. Motion involving both translation and rotation. Elasticity: Relation between Elastic constants.</p>	
<p>8.To determine the Young's Modulus of a Wire by Optical Lever Method.</p> <p>9.To determine the Modulus of Rigidity of a Wire by Maxwell ‘s needle</p>	CO3
<p>♦♦Non-Inertial Systems: Non-inertial frames and fictitious forces. Uniformly rotating frame. Laws of physics in rotating coordinate systems. Centrifugal force. Coriolis force and its applications. Components of velocity and acceleration in cylindrical and spherical Coordinate systems.</p>	

COURSE-8

Course Code	EDU123
Course Title	ANIMAL DIVERSITY I: NON-CHORDATES
Hours	L:4, T:0, P:0

Credits	4						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Describe the general characteristics of protozoa, porifera and cnidarian, CO2: Classify Platyhelminthes and Nemathelminthes on the basis of general characteristics. CO3: Differentiate between Annelida and Arthropoda on the basis of their general characteristics CO4: Explain the general characteristics of Mollusca and Echinodermata						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	● Protozoa: General characteristics of protozoans and their classification up to orders; Detailed study of <i>Euglena</i> , <i>Plasmodium</i> , Evolution of symmetry and segmentation of Metazoa.						
	● Porifera: Canal system and spicules in sponges.						
	Unit 2						CO2
● Platyhelminthes: General characteristics and classification up to orders. Life cycle and pathogenicity of <i>Fasciola hepatica</i> and ● <i>Taeniasolium</i> ● Nemathelminthes: General characteristics and classification upto orders; Lifecycle, and pathogeniciciy of <i>Ascarislumbricoides</i>							

	Unit 3 (10 hours)	CO3
	• Annelida: General characteristics and classification up to orders. Excretion in Annelida	
	• Arthropoda: General characteristics and classification up to orders; vision and respiration in Arthropoda; Metamorphosis in Insects; social life in bees and termites.	
	Unit 4 (12 hours)	CO4
	• Mollusca: General characteristics and classification up to orders; Torsion and detorsion in Gastropoda; Pearl formation in bivalves; Evolutionary significance of trochophore larva.	
	• Echinodermata: water vascular system in Asterozoa; Larval forms in Echinodermata; Affinities with Chordates.	

Reference Books :

- Dhami, P.S. and Dhami, J.K. *Invertebrate Zoology*. 5th edition New Delhi: R. Chand & Co.,
- Hyman L.H. *The Invertebrates*. Vol. I, II, III, IV and V. McGraw Hill Book Company. Inc., 1959.
- Kotpal, R.L. *Minor phyla*. 5th ed. Meerut: Rastogi Publishers, 2006.
- Kotpal, R.L. *Modern Text Book of Zoology Invertebrates*. 10th ed., Rastogi Publishers, Meerut, 2012.

COURSE-9

Course Code	EDU124A
Course Title	ANIMAL DIVERSITY I: NON-CHORDATES LABORATORY
Hours	L0, T:0, P:2
Credits	1
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Collect the specimens of different phylum of invertebrate.
	CO2: Observe the different species of phyla: protozoa, porifera, coelenterate and ctenophore.

	CO3: Identify the different species of Platyhelminthes, Nematelminthes, annelida, arthropoda and mollusca						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignmen t/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
	.Protozoa: Amoeba, Euglena, Paramecium, Vorticella, Balantidium. Porifera: Sycon, Spongilla, Euplectella, Temporary mounts of gemmules and spicules of Sycon.						CO1
	Coelenterata: Hydra, Obelia, Physalia, Aurelia, Metridium, Madrepora, Favia, Fungia, Bougainvillea. Ctenophora: One specimen/slide To determine the elastic Constants of a wire by Searle ‘s method. To determine the value of g using Bar Pendulum. To determine the value of g using Kater ‘s Pendulum.						
	Platyhelminthes: Planaria, Fasciola (W.M.), larval stages of Fasciola, Taenia (scolex, proglottids-mature and gravid),						
	Nematelminthes: Ascarislumbricoides (male and female)						CO2
	Annelida: Pheretima, Lumbricus, Nereis, Heteronereis, Polynoe, Aphrodite, Amphitrite, Arenicola, Hirudinaria.						CO3

	<p>Arthropoda: Peripatus, Lepisma, Periplanata, mouth parts of Periplanata, Grasshopper, Praying mantis, Termite (queen and other castes), Butterfly, Beetle, Honeybee, Crab, Prawn, Apus, Limulus, Spider, Millipede, Centipede, Cypris, Cyclops, Daphnia, Prawn.</p> <p>Mollusca: AnodontaPecten, Haliotis, Pila, Octopus, Nautilus, Chiton; Glochidium larva and radula of Pila.</p> <p>.Platyhelminthes: Planaria, Fasciola (W.M.), larval stages of Fasciola, Taenia (scolex, proglottids-mature and gravid),</p> <p>Nemathelminthes: Ascarislumbricoides (male and female)</p> <p>.Annelida: Pheretima, Lumbricus, Nereis, Heteronereis, Polynoe, Aphrodite, Amphitrite, Arenicola, Hirudinaria.</p> <p>Arthropoda: Peripatus, Lepisma, Periplanata, mouth parts of Periplanata, Grasshopper, Praying mantis, Termite (queen and other castes), Butterfly, Beetle, Honeybee, Crab, Prawn, Apus, Limulus, Spider,</p>	
	<p>Millipede, Centipede, Cypris, Cyclops, Daphnia, Prawn.</p> <p>Mollusca: AnodontaPecten, Haliotis, Pila, Octopus, Nautilus, Chiton; Glochidium larva and radula of Pila.</p> <p>s.</p>	

COURSE-10

Course Code	EDU115A
Course Title	ALGEBRA
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective

Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :							
	CO1: Perform elementary operations on matrices and find rank of matrix.							
	CO2: Use basic concepts of Matrices in a system of homogeneous and non homogeneous equations.							
	CO3: Describe and compute relations between the roots and co-efficient of general polynomial equation in one variable and transform equations.							
	CO4: Apply Descarte's rule of signs and use different methods to solve cubic and biquadratic equations							
Examination Type	Theory							
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT	
Weightage	10%	10%	25%	0%	50%	0%	5%	
Examination Mode	Theory							
Syllabus	Unit 1						CO1	
	Differentiation and integration of hyperbolic function, Rank of a matrix. Linear dependence and independence of rows and columns of matrices. Row rank and Column rank of a matrix. Eigenvalues, eigenvectors and the characteristic equation of a matrix. Minimal polynomial of a matrix. Cayley Hamilton theorem							
	Unit 2						CO2	
	<ul style="list-style-type: none"> Applications of matrices to a system of linear homogeneous equations. Theorems on consistency of a system of linear equations. Unitary and Orthogonal Matrices, and Quadratic forms. 							
	Unit 3						CO3	
	<ul style="list-style-type: none"> Relations between the roots and coefficients of general polynomial equation in one variable. Solutions of polynomial equations having conditions on roots. Common 							

	roots and multiple roots. Transformation of equations.	
	Unit 4	
	<ul style="list-style-type: none"> ● Nature of the roots of an equation. Descartes 'rule of signs. Solutions of cubic equations (Cardens method). Biquadratic equations and their solutions. 	CO4

Reference Books :

- Hall H.S. and Knight, S.R. Higher Algebra. Agra: H.M. Publications, 1994.
- Narayan, Shanti, and Mittal, P.K. A Text Book of Matrices. New Delhi: S. Chand & Co. Ltd., Reprint 2002.
- Grewal, B.S. Higher Engineering Mathematics. New Delhi: Khanna Publishers, 2012.
- Jain, R. K., and Iyengar S. R. Advanced Engineering Mathematics, New Delhi: Narosa Publishing House, 2003.

COURSE-11

Course Code	EDU105A						
Course Title	ELECTIVE ENGLISH-1						
Hours	L:5,T:0, P:0						
Credits	5						
Type	Core Course						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Critically understand and analyze literature across a wide range of literary age and context.</p> <p>CO2: Interpret, and appreciate poems while refining their reading, writing, critical thinking, and expressive communication skills.</p> <p>CO3: Analyse drama as a literary genre, with a due emphasis on Elizabethan drama.</p> <p>CO4: Apply various grammatical units of English and design a language component critically and coherently to meet desired needs within the realistic constraints</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT

Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1: Historical and Literary Characteristics From Chaucer to Elizabethan age						CO1
	Unit 2: Poem The Canterbury Tales: General Chaucer by Geoffrey Chaucer						CO2
	Unit 3: <ul style="list-style-type: none"> Dramas Hamlet by Shakespeare						CO3
	Unit 4 <ul style="list-style-type: none"> Applied Grammar Tenses Paragraph Writing (based on outline situation etc)						CO4

Reference Books:

1. English Literature: Its History and Its Significance for the Life of the English-speaking World by William J. Long.
2. Fifteen Poets (1988). Calcutta: Oxford University Press India.
3. Hewing 's, M. (2007). Advanced English Grammar. New Delhi: Cambridge University Press India Ltd.
4. Rao, V.K. (2007). Peculiar English. New Delhi: Neel Kamal Publications.
5. Sharma, G.L. (2008). Glimpses of English Poetry. Chandigarh: Publication Bureau, Punjab University.
6. Tickoo, C. & Kumar, J.S. (2000). Writing with a Purpose. New Delhi: Oxford University Press.

Course-12

Course Code	EDU106
Course Title	ELECTIVE HINDI-I
Hours	L:5, T:0, P:0
Credits	5
Type	Departmental Elective
Course Outcomes	अध्यापन प्रक्रिया के समापन के उपरान्त विद्यार्थीरू <ul style="list-style-type: none"> • दिए गए कविताओं की पाठ्यवस्तु के संदर्भ में व्याख्या

	<p>करेंगे ।</p> <ul style="list-style-type: none"> पाठ्यक्रम में दी गई कहानीयों के संदर्भ व्याख्या प्रश्न करेंगे । आदिकाल के साहित्य का नामकरण, काल सीमा, परिस्थितियों व प्रवृत्तियों का वर्णन करेंगे । राज रासो तथा बीसल देव रासो का परिचय लिखेंगे। सन्तकाव्य प्रमाशयानक काव्य, रामकाव्य व कृष्ण काव्य में विभेद व विशेषताएं लिखेंगे। कबीर, जायसी, तुलसी और सूरदास के जीवन चरित्र व काव्य पद्यों के चर्चे में लिखेंगे। 						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%
Examination Mode	Theory						
Syllabus	<p>कविता लोक</p> <ul style="list-style-type: none"> सं० डा० शिवकुमार शर्मा, पब्लिकेशन ब्यूरो, पंजाब विश्वविद्यालय, चण्डीगढ़ द्वारा प्रकाशित। इन सात कवियों की रचनाएं पाठ्यक्रम में निर्धारित की गई हैं :- कबीर, रैदास, गुरुनानक देव, सूरदास, मीराबाई, तुलसीदास और लगररधर कविराय। इस खण्ड में कवि परिचय, कविता सार तथा उद्देश्य सम्बन्धी प्रश्न पूछे जाएंगे। 						CO1
	<p>UNIT-II</p> <p>सजीव कहानियाँ</p> <ul style="list-style-type: none"> सं० डा० लक्ष्मीचन्द्र खुराना, पब्लिकेशन ब्यूरो, पंजाब विश्वविद्यालय, चण्डीगढ़ द्वारा प्रकाशित। निम्नलिखित सात कहानियाँ पाठ्यक्रम में हैं: शतरंज के खिलाड़ी, ममता, अशिक्षित का हृदय, मौत के मुँह में, न्याय मंत्री, गुलाब,सम्भ-असम्भ। इस खण्ड में कथावस्तु, चरित्र-चित्रण एवं उद्देश्य से सम्बन्धित कुल दो प्रश्न पूछे 						CO2

	जाएँगे।	
	UNIT- III हिन्दी साहित्य का इतिहास <ul style="list-style-type: none"> आदिकाल का नामकरण, काल सीमा, परिस्थितियाँ, प्रवृत्तियाँ और पृथ्वी राज रासो तथा बीसल देव रासो का परिचय। 	C03
	UNIT- IV <ul style="list-style-type: none"> भक्तिकाल की परिस्थितियाँ, सन्तकाव्य, प्रेमाख्यानक काव्य, रामकाव्य और कृष्ण काव्य की विशेषताएं, कबीर, जायसी, तुलसी और सूरदास। 	C04

Reference Books:

- सं० डा० लक्ष्मीचन्द्र खुराना ; २००७ई, पब्लिकेशन ब्यूरो, पंजाब विश्वविद्यालय, चण्डीगढ़ द्वारा प्रकाशित।
- मनोहर लाल आनन्द ; २००६ई तंरंगिणी, पंजाब यूनिवर्सिटी पब्लिकेशन ब्यूरो, चण्डीगढ़।
- सं० डा. संसार चन्द्र ; २००६ई आदर्श एकांकी संग्रह, पंजाब यूनिवर्सिटी पब्लिकेशन ब्यूरो, चण्डीगढ़ द्वारा प्रकाशित।
- दक्षित भागीरथ ; २००३ई, समीक्षालोक, इन्द्रप्रस्थ प्रकाशन, दिल्ली।
- जैन निर्मला ; २००६ई, नई समीक्षा के प्रतिमान, नेशनल पब्लिशिंग हाउस, दिल्ली।
- चतुर्वेदी राजेश्वर प्रसार ; २००८ई हिन्दी व्याकरण, उपकार प्रकाशन, आगरा।
- साहनी एस. बी. शर्मा आर. पी. ; २००७ई सर्वोत्तम हिन्दी व्याकरण, साहनी प्रकाशन, आगरा।
- वृन्दावन लाल वर्मा ; १९९५ई झांसी की रानी मयूर प्रकाशन, झांसी
- नगेन्द्र हरदयाल ; २००९ई हिन्दी साहित्य का इतिहास, मयूर पेपरबैक्स, नोयडा।
- राजाराम कल्पना ; २००९ई निबंध बोध, स्पेक्ट्रम बुक्स प्रा. लि., दिल्ली।

Course-13

Course Code	EDU107
Course Title	ELECTIVE PUNJABI-I
Hours	L:5, T:0, P:0
Credits	5

Type	Departmental Elective						
Course Outcomes	<p>On the completion of the course the students will be able to</p> <ul style="list-style-type: none"> • ਇਸ ਪੇਪਰਾ ਮੰਤਵ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਮੱਧਕਾਲੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਸੰਬੰਧੀ ਜਾਣਕਾਰੀ ਨੂੰ ਹੋਰ ਵਿਸਥਾਰ ਦੇਣਾ ਹੈ। • ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ ਵਿੱਚ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਦਿਲਚਸਪੀ ਪੈਦਾ ਕਰਨਾ ਹੈ। • ਫੋਨੋਲੋਜੀ ਦਾ ਰੂਪ ਬਾਰੇ ਭੂਮਿਕਾ ਜਾਣਕਾਰੀ ਦੇਣਾ ਸੀ। • ਇਕਾਗਰੀ ਦੇ ਇਤਿਹਾਸ ਬਾਰੇ ਭੂਮਿਕਾ ਜਾਣਕਾਰੀ ਦੇਣਾ ਹੈ। <p>gkmeqw</p> <ol style="list-style-type: none"> 1. ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਅਧਿਐਨ 2. ਪੰਜਾਬੀ ਇਕਾਗਰੀ 3. ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਇਤਿਹਾਸ 4. ਸਾਹਿਤ ਦੇ ਰੂਪ 						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	<p>UNIT-1</p> <ul style="list-style-type: none"> • ਨਕਸ਼ਾ ਨੁਹਾਰ (ਸੰਪਾ: ਡਾ. ਜਸਵਿੰਦਰ ਸਿੰਘ) ਪੁਸਤਕ ਵਿੱਚੋਂ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) • ਦਰਸ਼ਨ (ਸੰਪਾ: ਪ੍ਰੋ. ਸੰਤ ਸਿੰਘ ਸੇਖੋਂ) ਇਕਾਗਰੀ ਦੇ ਵਾਰਤਾਲਾਪੀ ਅਧੀਨ ਪ੍ਰੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) 						CO1
	<p>UNIT - II</p> <ul style="list-style-type: none"> • ਕਾਵਿ-ਸੰਗ੍ਰਹਿ ਵਿੱਚੋਂ ਕਿਸੇ ਇੱਕ ਕਵਿਤਾ ਦਾ ਿਵਸ਼ਾ-ਵਸਤੂ ਸ਼ਟ ਕਰੋ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) • ਇਕਾਗਰੀ ਸੰਗ੍ਰਹਿ ਵਿੱਚੋਂ ਿਵੇਰੇ ਸ਼ਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) (ਸਾਹਿਤਕ ਪਰਖ, ਿਵਸ਼ੇ, ਪਲਾਟ ਤੇ ਪਾਤਰ ਚਿਤਰਨ ਸੰਬੰਧੀ ਿਵੇਰੇ) 						CO2
	<p>UNIT - III</p> <p>(ਪਹਿਲੀਆਂ ਇਕਾਗਿਯਆਂ) ਦਾ ਆਧਾਰ ਤੇ।</p> <ol style="list-style-type: none"> i. ਇਕਾਗਰੀ ਦਾ ਸਾਰ ii. ਪਾਤਰ iii. ਸਾਹਿਤਕ ਪਰਖ 						CO3

	<p>UNIT - IV</p> <p>gzikph eftsk dk fJfsjk;</p> <ul style="list-style-type: none"> ਨਿਰਧਾਰਿਤ ਕਵੀਆਂ ਤੋਂ ਨੋਟ (ਦੋ ਵਿਚੋਂ ਇੱਕ) (ਭਾਈ ਵੀਰ ਸਿੰਘ, ਪ੍ਰੋ: ਪੂਰਨ ਸਿੰਘ, ਪ੍ਰੋ: ਮੋਹਨਸਿੰਘ, ਿੇਸ਼ਵ ਕੁਮਾਰ ਬਟਾਲਵੀ) (ਜੀਵਨ, ਰਚਨਾ, ਯੋਗਦਾਨ) ਸਾਹਿਤ ਦੇ ਰੂਪ: ਿੇਰਭਾਸ਼ਾ ਤੇ ਤੱਤ, ਕਵਿਤਾ, ਗੀਤ, ਗਜ਼ਲ, ਇਕਾਂਗੀ, ਨਾਵਲ, ਕਹਾਣੀ (ਦੋ ਵਿਚੋਂ ਇੱਕ) 	CO4
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Reference Books:

- ਛੇ ਦਰੂਨ, (ਸੰਪਾ.) ਪ੍ਰਿੰ. ਸੰਤ ਸਿੰਘ ਸੇਖੋ ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ 1700 ਈ. ਤੱਕ (2003), ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ 1700 ਈ. ਤਕ (1972), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀ ਉਤਪਤੀ ਤੇ ਵਿਕਾਸ, ਪਰਮਿੰਦਰ ਸਿੰਘ ਤੇ ਕਿਰਪਾਲ ਸਿੰਘ ਕਸੇਲ (1968), ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਲੁਧਿਆਣਾ।
- ਸ਼ਬਦ ਸਵੇਰਾ (ਸੰਪਾ. ਡਾ. ਹਰਿਭਜਨ ਸਿੰਘ) (2007) ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ ਚੰਡੀਗੜ੍ਹ
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ - ਡਾ. ਹਰਿਭਜਨ ਸਿੰਘ (1972), ਭਾਸ਼ਾ ਵਿਭਾਗ ਪੰਜਾਬ, ਪਟਿਆਲਾ।
- ਮਧਕਾਲੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿਵੇਕ:- ਡਾ. ਅਮਰਜੀਤ ਸਿੰਘ ਕਾਂਗ, ਡਾ. ਜਸਪਾਲ ਕੌਰ ਕਾਂਗ, ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ

COURSE-14

Course Code	EDU 152A
Course Title	ENVIRONMENTAL STUDIES
Hours	L:2,T:0, P:0
Credits	2
Type	Core Course
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Understand the interconnected and interdisciplinary nature of environmental studies and develop critical thinking skills in relation to environmental affairs.</p> <p>CO2: Aware about the ecosystems, biodiversity and its importance to mankind.</p> <p>CO3: Identify the various types of pollution and to create awareness about environmental laws.</p> <p>CO4: Describe about different natural calamities and environmental movements.</p>
Examination Type	Theory

Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1: Introduction to Environment <ul style="list-style-type: none"> Definition, components and types of Environments. Meaning of Environmental studies and its Multidisciplinary nature. Scope and importance; the concept of sustainability and sustainable development. Natural Resources: Renewable and Non- Renewable Resources <ul style="list-style-type: none"> Land resources and land-use change; Land degradation, soil erosion and desertification. Deforestation: Causes and impacts due to mining, dam building on the environment, forests, biodiversity and tribal population. Water: Use and over-exploitation of surface and groundwater, floods, droughts. Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources. 						CO1
	Unit 2: Ecosystems <ul style="list-style-type: none"> Concept of Ecosystem, Structure and function of the ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Forest ecosystem Grassland ecosystem Desert ecosystem Aquatic ecosystem Biodiversity and Conservation <ul style="list-style-type: none"> Levels of biological diversity: genetic, species and ecosystem diversity; Biogeographic zones of India. Endangered and endemic species of India. Threats to biodiversity: Habitat loss, poaching of wildlife, man- wildlife conflicts; Conservation of biodiversity: In- situ and Ex-situ conservation of biodiversity 						CO2
	Unit 3: Environmental Pollution <ul style="list-style-type: none"> Environmental Pollution: Types, Cause, Effects and control; Air, Water, Soil and Noise Pollution. 						CO3

	<ul style="list-style-type: none"> Nuclear hazards and human health risks. Environmental Policies & Practices <ul style="list-style-type: none"> Climate change, global warming, ozone layer depletion, acid rain and impact on human communities and agriculture. Environment Laws: Environment Protection Act; Air (Prevention and Control of Pollution) Act; Water (Prevention and Control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act 	
	Unit 4 Human Communities and the Environment <ul style="list-style-type: none"> Human Population growth: Impacts on environment, human health and welfare. Disaster management: floods, earthquakes, cyclones and landslides. Environmental movements: Chipko, Silent valley. 	CO4

Reference Books:

- Carson, R. (2002). Silent Spring. Houghton Mifflin Harcourt.
- Gadgil, M., & Gyga, R. (1993). *This Fissured Land: An Ecological History of India*. University of California Press.
- Gleeson, B., & Low, N. (eds.) (1999). Global Ethics and Environment, London, Routledge.
- Glelok, P. H. (1993). Water in Crisis. Pacific Institute for Studies in Dev., Environment and Security. Stockholm Environmental Institute, Oxford Univ. Press.
- Groom, Martha, J., Gary K. Meffe, & Carl Ronal Carroll (2006). *Principles of Conservation Biology*. Sunderland: Sinauer Associated.
- Grumbine, R. Edward, & Pandit, M. K. (2013). Threats from India 's Himalaya dams. Science, 339: 36- 37.
- McCully, P. (1996). Rivers no more: the environmental effects of dams (pp. 29- 64). Zed. Books.
- McNeill, John, R. (2000). Something New Under the Sun: An Environmental History of the Twentieth Century.
- Odum, E. P., Odum, H. T., Andrews, J. (1971). Fundamentals of Ecology. Philadelphia: Saunders.
- Pepper, I. L., Gerba, C. P., & Brusseau, M. L. (2011). Environmental and Pollution Science. Academic Press.
- Rao, M. N., & Datta, A. K. (1987). Wastewater treatment. Oxford and IBH Publishing Co. Pvt. Ltd.
- Raven, P. H., Hassenzahl, D. M., & Berg, L. R. (2012). Environment. 8th Edition. John Wiley & Sons.

Course-15

Course Code	EDU182						
Course Title	DRAMA AND ART IN EDUCATION						
Hours	L0;T0;P4						
Credits	2						
Type	Core Course						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Experiment with different materials of visual art.</p> <p>CO2: Demonstrate the various forms of performing art.</p> <p>CO3: Identify the Indian crafts, traditions, art and artists.</p> <p>CO4: Organize the various activities related to art and drama in their respective institution.</p>						
Examination Type	PRACTICAL						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	PRACTICAL						
Syllabus	Unit 1: <ul style="list-style-type: none"> Experimentation with different materials of Visual Art, such as pastel, poster, pen and Ink, Rangoli materials, clay, etc. Exploration and experimentation with different methods of Visual Arts like Painting, Block printing, collage, clay modelling, paper cutting and folding, etc. <p>Paper framing and display of Art works</p>						CO1
	Unit 2: <ul style="list-style-type: none"> Listening/viewing and exploring Regional Art forms of Music, Dance, Theatre and Puppetry. Participation and performance in any one of the Regional Arts forms keeping in mind the integrated approach 						CO2
	Unit 3: <ul style="list-style-type: none"> Instruments, Theatre, Puppetry (based on a set of slides, videos, documentaries selected for the purpose) Knowledge of Indian Craft Traditions and its relevance in education (based on a set of slides, Videos Films, Documentaries selected for the 						CO3

	purpose) Knowledge of Indian Contemporary Arts and Artists; Visual Arts based on the videos, Films and Documentaries selected for the purpose <ul style="list-style-type: none"> Indian festivals and its Artistic significance. 	
	Unit 4 <ul style="list-style-type: none"> Initiation into the craft of Drama and related activities for engagement in schools with learners Theme-based projects from any one of the curricular areas covering its social, economic, cultural and scientific aspects integrating various Arts and Craft forms. Textbook analysis to find scope to integrate Art forms either in the text or activities or exercises; Documentation of the processes of any one Art or Craft form with the pedagogical basis such as weaving or printing of textiles, making of musical instruments, folk performances in the community, etc. How does the artist design their products, manage their resources, including raw materials, its marketing, problems they face, to make them aware of these aspects of historical, social, economic, scientific and environmental concerns? 	CO4

Reference Books:

- Position Paper- National Focus Group on Arts, Music, Dance and Theatre NCERT, 2006, New Delhi
- Position Paper- National Focus Group on Heritage Crafts, NCERT, New Delhi, 2006 3. NCF2005
- NROER- National Repository of Open Educational Resource, Department of School Education & Literacy, MHRD.
- Living Craft tradition of India (Textbook in Heritage Crafts) NCERT
- Exploring the Craft Tradition of India NCERT
- Bhartiya Hastakalaki Paramparayen, NCERT
- An Introduction to Indian Art, NCERT
- Bhartiya Hastkala Parampara Ki Khoj, NCERT
- Craft Tradition of India (Textbook in Heritage craft for class XII)

Art Education- Teachers 'Handbook for Class I, II, III, IV, V, VI, VII, VIII, IX Source Book on Assessment for Classes I- V, Art Education.

Course-16

Course Code	EDU 180
Course Title	INTERACTING CHILD'S PARENTS
Hours	L: T: P: 1 week
Credits	1
Type	Core Course
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills:

	CO1: This course will enable student- teachers to have closer look at the parent involvement and parents ‘expectations, it will help them in their future profession.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL
Weightage	0%	0%	0%	0%	0%	100%	0%
Examination Mode	Practical						
Syllabus	<p>Some of the important points to be kept in mind while interacting child ‘s parents will be to get information about:</p> <ul style="list-style-type: none"> • Parents involvement • Parents Expectations <p>Each pupil teacher will prepare a report and will submit it to the concerned teacher.</p> <p>This report will be evaluated and grades will be awarded.</p>						

SEMESTER -2
COURSE OUTLINE
COURSE-1

Course Code	EDU102B
Course Title	TEACHING AND LEARNING
Hours	L:4,T:0, P:0
Credits	4
Type	Core Course
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Explain various types, factors and strategies influencing teaching and learning</p> <p>CO2: Explore cognitive, psycho-social, emotional and moral domains of teaching and learning</p> <p>CO3: Identify various Teaching and Learning Styles</p> <p>CO4: Analyse and differentiate between various variables, principles, phases and models of teaching</p>
Examination Type	Theory

Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1: <ul style="list-style-type: none"> Understanding Learning Learning: Concept, Nature, Types of learning and factor influencing learning Learning Strategies : Co-operative learning, Collaborative learning, peer tutoring, group learning. Individual Differences : Concept, Types, Causes and Educational Implications 						CO1
	Unit 2: <ul style="list-style-type: none"> Classical Conditioning (Ivan Pavlov) and Operant Conditioning(B.F. Skinner) : Nature, Factors and Educational Implications. Psychosocial domains (Erik Erikson Theory) : Nature, Factors and Educational Implications. Cognitive Constructivism (Jean Piaget) and Social Constructivism(Lev Vygotsky) : Nature, Factors and Educational Implications. Emotional development (Kurt Goldstein): Nature, Factors and Educational Implications. Moral Development (Lawrence Kohlberg) : Nature, Factors and Educational Implications 						CO2
	Unit 3: <ul style="list-style-type: none"> Learning Style: Concept, Types and importance in Teaching-Learning process, factors affecting learning styles. Teaching Style: Concept, Types and effect on Teaching-Learning process, factors affecting teaching styles. Variables in Teaching Process : The Learning task(Instructional Objectives), Learning Behaviour(Entry behaviours and Learner's characteristics), Social-constructivist approach in teaching : Applications of Bruner's and Vygotsky's ideas in teaching (ZPD concept). 						CO3
	Unit 4 <ul style="list-style-type: none"> Effective teaching: meaning, component and parameters of effective teaching, identification of 						CO4

	teaching skills, principles of teaching., Phases of teaching <ul style="list-style-type: none"> • Models of Teaching • Concept Attainment Model • Advance Organizer Model • Inquiry Training Model 	
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Reference Books:

1. Aggarwal J. C., Essentials of Educational Psychology, Vikas Publishing House Pvt. Ltd.2010.
2. Bhatia & Bhatia, A Text Book of Educational Psychology, Doaba House, New Delhi 2001.
3. Charles E. Skinner, Educational Psychology, Prentice Hall of India Pvt.Ltd. New Delhi1996.
4. Clifford T. Morgon, A Brief Introduction to Educational Psychology, Tata- McGraw HillPub. Com. Ltd. New Delhi 2000.
5. Dandekar W. N, Psychological Foundations of Education, Macmillan India Pvt. Ltd.2000.
6. Dandapani S, A Text Book of Advanced Educational Psychology, Anmol PublicationsPvt. Ltd. NewDelhi,2000.
7. Singh. D.P, talang. Amritanshy, prakashved. Psycho- social basis of learning and development, research publication, Jaipur,2002.
8. Shrivasha. D.N. Verma, Verma, Preeti, Modern Experimental Psychology and Teshing, Shri Vinod PustakHandir, Agra,2010.
9. Mathur, S.S., Development of learner and Teaching learning process, Agrawal publication, Agra,2007-08.
10. Mishra. R.c., Child Psychoplogy. A.P.H Publishing Corporation, New Delhi,2010.
11. Dweck, C. Mindset: The new psychology of success. Random House LLC,2006.
12. Plato, R e a s o n and persuasion Three dialogues in J. Holbo (Ed) meno: reason, persuasion and virtue. Person, 2009.
13. Mangal S.K, Advanced Educational Psychology P H I Learning Pvt. Ltd. NewDelhi.

COURSE-2

Course Code	EDU161
Course Title	GENETICS AND CELL BIOLOGY
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :

	CO1: Review Mendelian inheritance in the light of gene interactions and gene expression.						
	CO2: Outline the structure of different cell organelles.						
	CO3: List down various types of chromosomal alterations with example.						
	CO4: Illustrate the structure of DNA and elaborate various types of Mutations.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	<ul style="list-style-type: none">● Mendelism: Mendel ‘s experiments and results, Mendel ‘s Laws of Dominance, Segregation and Independent assortment; Linkage: complete and incomplete linkage, linkage groups, linkage maps, importance of linkage, cytological interpretation of Mendelism.						
	Unit 2						CO2
	<ul style="list-style-type: none">● Ultra structure and functions of a typical plant cell and its organelles: Nucleus, Mitochondrion, Plastids, Ribosome, Endoplasmicreticulum, Golgi apparatus, Lysosomes; Structure and functions of cell wall and plasma membrane: fluid mosaic model only.						
	<ul style="list-style-type: none">● Cell divisions: Mitosis and Meiosis in plants and their significance.						
	<ul style="list-style-type: none">● Giant chromosomes: Polytene and Lamp brush chromosomes.						
	Unit 3						CO3
	<ul style="list-style-type: none">● Chromosome theory of heredity, Sex linked inheritance; Characteristics and examples; Cytoplasmic or extra nuclear inheritance: mitochondrial and plastid DNA.						
	<ul style="list-style-type: none">● Chromosomal alterations (deletion, duplication, inversion, translocation) and their importance;						

	Variations in chromosome number,(aneuploidy and polyploidy) introduction and their importance.	
	Unit 4	
	<ul style="list-style-type: none"> DNA: Structure (Watson and Crick model), Nucleosome, types of DNA and role of DNA, Replication of DNA. 	
	<ul style="list-style-type: none"> Mutations: characteristics, types, importance, factors affecting mutations; Mutagens: Physical and chemical, mechanism of genemutations; DNA damage and repair: Types of damage (Single base change and structural distortion), introduction to repair systems. 	CO4

Reference Books :

- Alberts, B., Gray, D. Lewis, J. Raff, M., Roberts, K. and Watson, I.D. 1999. Molecular Biology of Cell. Garland Publishing Co.,Inc., New York, USA.
- Bhatia, K.N. and Dhand Neelam. 2013. Cell Biology and Genetics. Trueman Book Company, Jalandhar.
- Gupta, P.K. 1999. A Text-book of Cell and Molecular Biology. Rastogi Publications, Meerut, India.
- Wolfe, S.L. 1993. Molecular and Cell Biology. Wadsworth Publishing Co., California, USA. Paper-B: Genetics
- Gupta, P.K. 1999. Genetics. Rastogi Publications, Meerut, India.
- Russel, P.J. 1998. Genetics. The Benjamin/ Cummings. Publishing Co. Inc., USA.
- Snustad, D.P. and Simmons, M.J. 2000. Principles of Genetics, John Wiley & Sons, Inc., USA.

COURSE-3

Course Code	EDU162A
Course Title	GENETICS AND CELL BIOLOGY LABORATORY
Hours	L0, T:0, P:2
Credits	1
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Perform the steps of staining and mounting method in onion peel.

	CO2: Prepare temporary slides to show different stages of mitosis and Meiosis.						
	CO3: Solve problems related to Mendalism and gene interactions.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment / Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
	1.To study cell structure from onion leaf peels; demonstration of staining and mounting method.						CO1
	2Preparation of temporary slides to show different stages of mitosis from root tips of <i>Allium cepa</i> and <i>A. sativum</i> .						CO2
	3Preparation of temporary slides to show different stages of meiosis from floral buds of <i>Allium/ Brassica</i> .						
	4Problems related to Mendalism and gene interactions.						CO3

COURSE-4

Course Code	EDU165
Course Title	OPTICS
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Relate the concepts of wave. wavefront and coherent waves.
	CO2: Describe and diffentiate interference and diffraction of light waves.
	CO3: Elaborate the concept of polarization of light waves.

	CO4: Compare and contrast the concepts of Induced, Spontaneous and Stimulated Emissions of lasers.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	<ul style="list-style-type: none"> Wave Optics: Electromagnetic nature of light, Definition and Properties of wave front, Huygens Principle. 						
	<ul style="list-style-type: none"> Interference: Interference: Division of amplitude and division of wave-front, Young's Double Slit experiment, Lloyd's Mirror and Fresnel's Biprism, Phase change on reflection: Stokes' treatment, Interference in Thin Films, parallel and wedge-shaped films, Fringes of equal inclination (Haidinger Fringes); Fringes of equal thickness (Fizeau Fringes), Newton's Rings: measurement of wavelength and refractive index, Michelson's Interferometer: Idea of form of fringes, Determination of wavelength, Wavelength difference, Refractive index, and Visibility of fringes. 						
	Unit 2						CO2
	<ul style="list-style-type: none"> Diffraction: Difference between Fresnel and Fraunhofer diffraction, Fraunhofer diffraction- Single slit; Double Slit. Multiple slits and Diffraction grating, Diffraction of N slits and its discussion, Diffraction grating, Missing orders, dispersive power, Rayleigh Criterion for resolving power, Fresnel Diffraction: Half-period zones, Zone plate, Fresnel Diffraction pattern of a straight edge, a slit and a wire using half-period zone analysis. 						
	Unit 3						CO3
	<ul style="list-style-type: none"> Polarization: Transverse nature of light waves. Plane polarized light – production and analysis. Circular and elliptical polarization, Polarization by transmission and reflection, Malus Law, Brewster 's Law, Polarization by 						

	refraction, anisotropic crystals, Theory of double refraction, Elliptically and circularly polarized light, Quarter wave and half wave plates, Production and detection of polarized light.	
	Unit 4	CO4
	<ul style="list-style-type: none"> LASERS: Attenuation of light in an optical medium; thermal equilibrium; interaction of light with matter: Induced, Spontaneous and Stimulated Emissions, Einstein relations; laser beam characteristics and applications, light amplification; population in version; active medium, pumping; metastable states; principle pumping schemes; Laser Action, Components of Lasers, Types of lasers; Ruby Laser, Semiconductor Laser, 	

Reference Books :

- F. A. Jenkins and H. E. White Fundamentals of Optics, McGraw-Hill, 1976
- H. R. Gulati and D. R. Khanna Fundamentals of Optics, R. Chand Publications, 1991
- N. Subramanayam, B. Lal, & M. N. Avadhamulu, Textbook of Optics. New Delhi: S. Chand & Company, 2006.
- A. Ghatak, Optics. New Delhi: Tata McGraw Hill Publication, 2008

COURSE-5

Course Code	EDU166A
Course Title	OPTICS LABORATORY
Hours	L0, T:0, P:2
Credits	1
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Obtaine the data and learn how to make the precise measurements in Optics experiment.

	CO2: Summarise the optical principles and verify theoretical predictions with actual results.						
	CO3: Analyse various optical instruments and their functions such as lens, Mirrors, prisms and diffraction gratings.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
	1. To determine the Refractive Index of the Material of a given Prism using Sodium Light						CO1
	2. To determine the Dispersive Power of the Material of a given Prism using Mercury Light.						
	3. To determine the Resolving Power of a Prism.						
	4. To determine wavelength of sodium light using Fresnel Biprism.						CO2
	5. To determine wavelength of sodium light using Newton’s Rings.						
	6. To determine the Thickness of a Thin Paper by measuring the Width of the Interference Fringes produced by a Wedge-Shaped Film.						
	7. To determination Wavelength of Sodium Light using Michelson ‘s Interferometer.						
	8. To determine the wavelength of Laser light using Diffraction of Single Slit.						CO2
	9. To determine the wavelength of (1) Sodium and (2) Mercury Light using Plane Diffraction Grating.						
	10. To determine the Dispersive Power of a Plane Diffraction Grating.						CO3
	11. To determine the Resolving Power of a Plane Diffraction Grating.						
	12. To determine the (1) Wavelength and (2) Angular						

	<p>Spread of HeNe Laser using Plane Diffraction Grating.</p> <p>13. To study the wavelength of spectral lines of sodium light using plane transmission grating.</p> <p>14. To study the specific rotation of sugar solution Laurent's half shade polarimeter method.</p> <p>15. To study the numerical aperture and propagation losses using HeNe laser Optical fibre set up.</p> <p>16. To compare the focal length of two lenses by Nodal slide method.</p>	
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COURSE-6

Course Code	EDU109						
Course Title	ANIMAL DIVERSITY II: CHORDATES						
Hours	L:4, T:0, P:0						
Credits	4						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Outline the classification and general characteristics of Chordata and Protochordata.						
	CO2: Classify Agnatha and Pisces on the basis of their general characteristics.						
	CO3: Explain the general characteristics and classification of Amphibia and Reptilia.						
	CO4: Distinguish between Aves and Mammals on the basis of their general characters.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ ATT

Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1 <ul style="list-style-type: none">Introduction to Chordates: General Characteristics; Outline classification Protochordata: General characteristics of Hemichordata, Urochordata and Cephalochordata. Hemichordates as link between non-chordates and chordates; study of larval forms in protochordates; retrogressive metamorphosis in Urochordata.						CO1
	UNIT 2 Agnatha: General characteristics and classification up to orders of Cyclostomes. Pisces: General characteristics of Chonrichthyes and Osteichthyes; Classification up to orders; Migration; osmoregulation and Parental care in fishes.						CO2
	Unit 3 <ul style="list-style-type: none">Amphibia: General characteristics and classification up to order Parental care in AmphibiansReptilia: General characteristics and classification up to orders; A of <i>Sphenodon</i>.						CO3
	Unit 4						CO4
	<ul style="list-style-type: none">Aves: General characteristics and classification up to orders; Archaeopteryx- a connecting link; Principles and aerodynamics offlight; Flight adaptations; Migration in birdsMammals: General characters and classification up to order; Affinities of Prototheria; Adaptive radiation with reference to locomotory appendages.						

Reference Books :

- 1Kotpal, R. L. (2012). *Text Book of Zoology- Vertebrates*. Meerut: Rastogi Publications.
- Parker, T.J., & Haswell, W.A. (1972). *A Text Book of Zoology Vertebrates*. 7th ed. Vol. II. London: Mac Millan.
- Dodson, E. O. (1976). *A Text Book of Zoology*. Delhi: CBS Publishers & Distributors.
- Young, J. Z. (2004). *The Life of Vertebrates*. III Edition. Oxford university press.
- Hall B.K. & Hallgrimsson B. (2008). *Strickberger's Evolution*. IV Edition. Jones and Bartlett Publishers Inc.
- Dhami, P.S., & Dhami, J.K. (2006). *Chordate Zoology*. 5thed. New Delhi: R. Chand & Co.

COURSE-7

Course Code	EDU164A						
Course Title	ANIMAL DIVERSITY II: CHORDATES LABORATORY						
Hours	L0, T:0, P:2						
Credits	1						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Identify different specimen of chordates with respect to levels and patterns of organization.						
	CO2: Demonstate the functioning of animal system with the help of working models, charts and videos.						
	CO3: Create permanent/ temporary slide for different parts of animals,						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignmen t/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
	1. Study of Museum specimen with respect to levels and patterns of organization, biosystematics, biodiversity, adaptations, developmentstages, population dynamics, ecological implications etc. <i>a) Hemichordata: Balanoglossus.</i> <i>b) Urochordata: Herdmania, Pyrosoma.</i> <i>c) Cephalochordata: Amphioxus.</i> <i>d) Cyclostomata: Petromyzon, Myxine.</i> <i>e) Pisces: Scoliodon, Sphyrna, Torpedo, Pristis,</i>						CO1

<p><i>Trygon, Lepidosteus, Clarias, Ophiocephalus, Anabas, Exocoetus, Hippocampus, Tetradon, Protopterus.</i></p> <p>f) Amphibia: <i>Ichthyophis, Necturus, Proteus, Ambystoma, Axolotl larva, Triturus. Amphiuma, Alytes, Bufo.</i></p> <p>g) Reptilia: <i>Testudo, Trionyx, Sphenodon, Hemidactylus, Draco, Calotes, Chamaeleon, Varanus, Heloderma, Typhlops, Eryx, Hydrophis, Viper, Bungarus, Naja, Alligator;</i> Identification of Venomous and Non-venomous Snakes.</p> <p>h) Aves: <i>Pavo, Columba, Psitacula, Passer, Corvus, Archaeopteryx.</i></p> <p>i) Mammals: <i>Ornithorhynchus, Echidna, Macropus, Loris, Manis, Rattus.</i></p>	
<p>2 .Study of Permanent Slides:</p> <p>a) Balanoglossus: T.S. of proboscis, collar region and trunk</p> <p>b) Amphioxus: T.S. of oral hood, pharynx.</p> <p>c) Mammals: T.S. of skin, stomach, duodenum, ileum, liver, Pancreas, spleen, lungs, kidney, Testis, Ovary.</p>	CO2
<p>3. Osteology:</p> <p>a) Study of skull bone of Frog, <i>Varanus</i>, Bird and Rabbit.</p> <p>b) Study of vertebrae of Frog. <i>Varanus</i>, Bird and Rabbit.</p> <p>c) Study of girdles, forelimb and hind limb bones of Frog, <i>Varanus</i>, Bird and Rabbit.</p>	
<p>4.Dissections and/ or its demonstration through Charts/ Models/ Video/ CD/ digital alternatives etc. and/ or preparation of workingmodels of the different system of the following animals.</p> <p>a) Scoliodon: Afferent branchial systems, efferent branchial system, cranial nerves and internal ear.</p> <p>b) Frog: Digestive, system, Urino- genital system</p>	CO3
<p>5.Permanent /Temporary preparation of the following-:</p> <p>a) Scales: Placoid, Cycloid</p>	

	b) Blood film of any vertebrate c) Filoplumes of birds d) Thigh muscles of frog Microtomy: Fixing, block making, section cutting, staining, mounting and submission of slides.	
	Note: <ul style="list-style-type: none"> • Use of animals for dissection is subject to the conditions that these are not banned under the Wildlife Protection Act or any other legislation. • Students are required to submit the following during examination. <ol style="list-style-type: none"> a. One assignment on the instrument/ technique about its principle, working, precautions and applications; and /or reagents /solutions preparation. b. Report on study of animals from their natural habitat from their local surroundings. Live Zoology Project Report. c) 	

COURSE-8

Course Code	EDU167A
Course Title	CALCULUS
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Describe the various concepts of differential calculus.

	CO2: Understand and apply the rule of successive differentiation, indeterminate forms, find concavity and convexity of curve						
	CO3: Understand exactness of differential equation and solve differential equations with constant coefficients, find orthogonal trajectories.						
	CO4: Solve differential equations of first order and higher degree, find area under the curve and understand solids of revolution.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	DIFFERENTIAL CALCULUS <ul style="list-style-type: none">$\epsilon - \delta$ definition of the limit of a function, continuous functions and classification of discontinuities. Successive differentiation, Leibnitz theorem, indeterminate forms, asymptotes curvature, tests for concavity and convexity, points of inflexion, multiple points.						
	Unit 2						CO2
	INTEGRAL CALCULUS <ul style="list-style-type: none">Reduction formulae: definite integrals. Quadrature and rectifications volumes and surfaces of solids of revolution						
	Unit 3						CO3
	INTRODUCTION TO ORDINARY DIFFERENTIAL <ul style="list-style-type: none">Exact differential equations, first order higher degree equations solvable for x.y.p. Clairaut's form and singular solutions, orthogonal trajectories linear differential equations with constant coefficients, homogeneous linear ordinary differential equations Linear differential equations of second order, transformation of the equation by changing the dependent variable/ the independent variable, method of variations of parameters.						
	Unit 4						CO4

	Numerical Differentiation and Integration Interpolation, Newton Forward Difference, Newton Backward Difference, Integration by Trapezoidal rule, Simpson's 1/3 rd rule. Simpson's 3/8 rule.	
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Reference Books :

- Acharya, B.P. & Das R.N. (1998). Fundamentals of Differential Geometry. New Delhi: Kalyani Publishers.
- Jain, P.K. & Kaushik, S.K. (2000). An Introduction to Real Analysis. New Delhi: S. Chand & Co.
- Kishan, H. (2007). Integral Calculus. New Delhi: Atlantic Publishers.
- Kishan, H. (2007). Vector Algebra and Calculus. New Delhi: Atlantic Publishers.
- Kreyszig, E. (1999). Advanced Engineering Mathematics. New Delhi: John Wiley and Sons.
- Muray, D.A. (1967). Introductory course in Differential Equations. New Delhi: Orient Longman.
- Murray, R.S. (1967). Theory and Problems of Advanced Calculus. New York: Schaum Publishing Co.
- Prasad, G. (2002). Integral Calculus. Allahabad: Pothishala Pvt. Ltd.
- Prasad, G. (2004). Differential Calculus. Allahabad: Pothishala Pvt. Ltd.
- Shanker, A.G. (1994). Numerical Integration of Differential Equations. New Delhi: Deep & Deep Publications.
- Widder, F. (2008). Advanced Calculus. New Delhi: PHI Pvt. Ltd.

COURSE-9

Course Code	EDU168
Course Title	PHYSICAL CHEMISTRY- I
Hours	L:4, T:0, P:0
Credits	4
Type	Core Course
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Elaborate the concept of liquid and gaseous state.
	CO2: Discuss the concepts of solid state and Ionic equilibria.
	CO3: Illustrate the laws of Chemical Thermodynamics.

	CO4: Analyse the concepts of Chemical Equilibrium and Solutions and Colligative Properties.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	DIFFERENTIAL CALCULUS						
	Gaseous state: <ul style="list-style-type: none">Kinetic molecular model of a gas: postulates, collision frequency; collision diameter; mean free path and viscosity of gases,including their temperature and pressure dependence, relation between mean free path and coefficient of viscosity.Maxwell distribution and molecular velocities (average, root mean square and most probable) and average kinetic energy, law of equipartition of energy,Behaviour of real gases: Deviations from ideal gas behaviour, Causes of deviation from ideal behaviour. Vander Waals equationof state,						
	Liquid state: <ul style="list-style-type: none">Qualitative treatment of the structure of the liquid state; physical properties of liquids; vapor pressure, surface tension and coefficient of viscosity,						
	Unit 2						CO2
Solid state: <ul style="list-style-type: none">Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, qualitative idea of point and space groups, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg ‘s law, Defects in crystals.							

<p>Ionic equilibria:</p> <ul style="list-style-type: none"> • 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; derivation of Henderson equation and its applications Solubility and solubility product of sparingly soluble. Theory of acid–base indicators 	
Unit 3	
<p>Chemical Thermodynamics:</p> <ul style="list-style-type: none"> • Intensive and extensive variables; state and path functions; isolated, closed and open systems; zeroth law of thermodynamics. • <i>First law:</i> Concept of heat, q, work, w, internal energy, U, and statement of first law enthalpy, H, relation between heat capacities, calculations of q, w, U and H for reversible, irreversible and free expansion of gases (ideal and van der Waals) under isothermal and adiabatic conditions. • <i>Thermo chemistry:</i> Heats of reactions: standard states; enthalpy of formation of molecules and ions and enthalpy of combustion and its applications; calculation of bond energy, bond dissociation energy and resonance energy from thermo chemical data • <i>Second Law:</i> Concept of entropy; thermodynamic scale of temperature, statement of the second law of thermodynamics; Calculation of entropy change for reversible and irreversible processes. • <i>Third Law:</i> Statement of third law, concept of residual entropy, calculation of absolute entropy of molecules. • <i>Free Energy Functions:</i> Gibbs and Helmholtz energy; variation of S, G, A with T, V, P; Free energy change and spontaneity. 	CO3
Unit 4	
<p>Chemical Equilibrium:</p> <ul style="list-style-type: none"> • Criteria of thermodynamic equilibrium, chemical equilibrium in ideal gases, concept of fugacity. Equilibrium constants and their quantitative dependence on temperature, pressure and 	CO4

	<p>concentration. thermodynamic derivation of relations between the various equilibrium constants K_p, K_c and K_x. Le Chatelier principle (quantitative treatment);</p>	
	<p>Solutions and Colligative Properties:</p> <ul style="list-style-type: none"> • Dilute solutions; lowering of vapour pressure, Raoul's and Henry's Laws and their applications. • Thermodynamic derivation using chemical potential to derive relations between the four colligative properties [(i) relative lowering of vapour pressure, (ii) elevation of boiling point, (iii) Depression of freezing point, (iv) osmotic pressure] and amount of solute. <p>This course is intended to learn the basic concepts of Physical Chemistry Lab. The various topics of the syllabus are grouped under different units in order to bring forth importance of academic and laboratory skills for the undergraduate students.</p>	

Reference Books :

- Peter, A. & Paula, J. de. *Physical Chemistry 9th Ed.*, Oxford University Press, 2011.
- Castellan, G. W. *Physical Chemistry 4th Ed.*, Narosa 2004.
- Engel, T. & Reid, P. *Physical Chemistry 3rd Ed.*, Prentice-Hall, 2012.
- McQuarrie, D. A. & Simon, J. D. *Molecular Thermodynamics* Viva Books Pvt. Ltd.: New Delhi, 2004.
- Assael, M. J.; Goodwin, A. R. H.; Stamatoudis, M.; Wakeham, W. A. & Will, S. *Commonly Asked Questions in Thermodynamics*. CRC Press: NY, 2011.
- Levine, I. N. *Physical Chemistry 6th Ed.*, Tata McGraw Hill, 2010.
- Metz, C. R. *2000 solved problems in chemistry*, Schaum Series, 2006.
- Atkins, P. W. & Paula, J. de *Atkin's Physical Chemistry Ed.*, Oxford University Press, 2006. Khosla, B. D.; Garg, V. C. and Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi, 2011.
- Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. *Experiments in Physical Chemistry 8th Ed.*; McGraw-Hill: New York, 2003.
- Halpern, A. M. and McBane, G. C. *Experimental Physical Chemistry 3rd Ed.*; W.H. Freeman & Co.: New York, 2003.
- Ball, D. W. *Physical Chemistry* Thomson Press, India, 2007.
- Castellan, G. W. *Physical Chemistry 4th Ed.* Narosa, 2004.
- Mortimer, R. G. *Physical Chemistry 3rd Ed.* Elsevier: NOIDA, UP, 2009.
- Khosla, B. D.; Garg, V. C. and Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi, 2011.

COURSE-10

Course Code	EDU169A
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Course Title	CHEMISTRY LABORATORY						
Hours	L0, T:0, P:2						
Credits	1						
Type	Core Course						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Measure the surface tension by various methods.						
	CO2: Determine the viscosity using Ostwald Viscometer.						
	CO3: Measure different parameters of pH metry and thermochemistry.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	5%
Examination Mode	Practical						
	Surface tension measurements. Determine the surface tension by (i) drop number (ii) drop weight method.						
	Viscosity measurement using Ostwald's viscometer. Determination of viscosity of aqueous solutions of (i) polymer (ii) ethanol and (iii) sugar at room temperature. Study the variation of viscosity of sucrose solution with the concentration of solute.						
	Indexing of a given powder diffraction pattern of a cubic crystalline system.						
	pH metry						

COURSE-11

Course Code	EDUI70A						
Course Title	ELECTIVE ENGLISH -11						
Hours	L:5,T:0, P:0						
Credits	5						
Type	Core Course						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Critically understand and analyse literature across a wide range of literary age and context.</p> <p>CO2: Interpret and appreciate poetry while refining their reading, writing, critical thinking, and expressive communication skills.</p> <p>CO3: Examine drama as a literary genre, with particular emphasis on Restoration drama, dissecting its form, themes, characters, and cultural context.</p> <p>CO4: Develop students' understanding and appreciation of short stories while fostering critical thinking, communication, and creativity through analysis, discussion, and creative exercises.</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1: <ul style="list-style-type: none"> LITERARY AND HISTORICAL BACKGROUND From Puritan age to Neo-Classical Age 						CO1
	Unit 2: <ul style="list-style-type: none"> POEMS The Sun Rising by John Donne When I Consider How My Light is Spent by John Milton Ode on Solitude by Alexander Pope The Vanity of Human Wishes by Samuel Johnson 						CO2

	Unit 3: <ul style="list-style-type: none"> • DRAMA • The Way of the World by William Congreve 	CO3
	Unit 4 <ul style="list-style-type: none"> • SHORT STORIES • The Purloined Letter and The Black Cat by Edgar Allan Poe • The Five Boons of Life by Mark Twain 	CO4

Reference Books:

- English Literature: Its History and Its Significance for the Life of the English-speaking World by William J. Long.
- Fifteen Poets (1988). Calcutta: Oxford University Press India.
- Hewing 's, M. (2007). Advanced English Grammar. New Delhi: Cambridge University Press India Ltd.
- Rao, V.K. (2007). Peculiar English. New Delhi: Neel Kamal Publications.
- Sharma, G.L. (2008). Glimpses of English Poetry. Chandigarh: Publication Bureau, Punjab University.
- Tickoo, C. & Kumar, J.S. (2000). Writing with a Purpose. New Delhi: Oxford University Press.

COURSE-12

Course Code	EDU171A
Course Title	ELECTIVE HINDI-II
Hours	L:5, T:0, P:0
Credits	5
Type	Departmental Elective
Course Outcomes	<p>On the completion of the course the students will be able to</p> <ul style="list-style-type: none"> • उपन्यास की परिभाषा, तत्व और वर्गीकरण करेंगे । • कहानी की परिभाषा, तत्व और वर्गीकरण के सम्बन्धित दो प्रश्नों का उत्तर लिखेंगे । • झांसी की रानी के संदर्भ में उसके नामकर्ण, कथावस्तु चरित्रा, उद्देश्य के आधार पर • व्हारिक व्याकरण में से दिए गए प्रश्नों का उत्तर लिखेंगे । • दिए गए मुहावरे व लोकोवित्यां का प्रयोग करेंगे । • निर्धारित विषय पर अनुच्छेद लेखन करेंगे ।

	<ul style="list-style-type: none"> निजी पत्र लेखन की विधि का प्रयोग करने हेतु एक निजी पत्र लि 						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%
Examination Mode	Theory						
Syllabus	UNIT- I <ul style="list-style-type: none"> समीक्षा केवल उपन्यास और कहानी उपन्यास की परिभाषा, तत्त्व और वर्गीकरण कहानी की परिभाषा, तत्त्व और वर्गीकरण 						CO1
	UNIT-II <ul style="list-style-type: none"> झांसी की रानी-वृन्दावन लाल वर्मा- मयूर प्रकाशन, झांसी नामकरण, कथावस्तु, चरित्र, उद्देश्य 						CO2
	UNIT- III <ul style="list-style-type: none"> व्यावहारिक व्याकरण विपरीतार्थक शब्द समानार्थक शब्द शब्द शोधन और वाक्य शोधन वाक्यांश के लिए एक शब्द मुहावरे और लोकोक्तियां 						CO3
	UNIT- IV <ul style="list-style-type: none"> निर्धारित विषय पर अनुच्छेद-लेखन निजी पत्र-लेखन 						CO4

Reference Books:

- दिक्षित भागीरथ; २००३, समीक्षालोक, इन्द्रप्रस्थ प्रकाशन, दिल्ली।
- जैन निर्मला; २००६, नई समीक्षा के प्रतिमान, नेशनल पब्लिशिंग हाउस, दिल्ली।
- चतुर्वेदी राजेश्वर प्रसार; २००८, हिन्दी व्याकरण, उपकार प्रकाशन, आगरा।
- साहनी एस. बी. शर्मा आर. पी.; २००७, सर्वोत्तम हिन्दी व्याकरण, साहनी प्रकाशन, आगरा।
- वृन्दावन लाल वर्मा; १९९७, झांसी की रानी मयूर प्रकाशन, झांसी।
- नगेन्द्र हरदयाल; २००९, हिन्दी साहित्य का इतिहास, मयूर पेपरबैक्स, नोयडा।
- राजाराम कल्पना; २००९, निबंध बोध स्पेक्ट्रम बुक्स प्रा. लि., दिल्ली।

Course-13

Course Code	EDU172A						
Course Title	ELECTIVE PUNJABI-II						
Hours	L:5, T:0, P:0						
Credits	5						
Type	Departmental Elective						
Course Outcomes	<p>On the completion of the course the students will be able to</p> <ul style="list-style-type: none"> • ਇਸ ਪੇਪਰ ਦਾ ਮੰਤਵ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਇਕਾਂਗੀ ਸੰਬੰਧੀ ਜਾਣਕਾਰੀ ਨੂੰ ਹੋਰ ਵਿਸਥਾਰ ਦੇਣਾ ਹੈ। • ਨਾਵਲ ਰਾਹੀਂ ਪੰਜਾਬ ਦੇ ਪੇਡ ਸਭਿਆਚਾਰ ਤੇ ਜਾਣੂ ਕਰਵਾਉਣਾ ਹੈ। • ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ ਵਿੱਚ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਦਿਲਚਸਪੀ ਪੈਦਾ ਕਰਨਾ ਹੈ। • ਨਾਵਲ ਦੇ ਇਤਿਹਾਸ ਬਾਰੇ ਡੂੰਘੀ ਜਾਣਕਾਰੀ ਦੇਣਾ ਹੈ। 						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%
Examination Mode	Theory						

Syllabus	UNIT- I <ul style="list-style-type: none"> • ਤੂਤਾ ਵਾਲਾ ਖੂਹ ਨਾਵਲ ਦੇ ਆਧਾਰ ਤੇ ਦੋਵਾਂ ਵਿੱਚੋਂ ਕੋਈ ਇੱਕ ਪ੍ਰਸਾਰ ਕਰੋ। ਖ ਿਵਸ਼ਾਵਸਤੂ ਖ ਪਲਾਟ ਖ ਪਾਤਰ ਚਿਤਰਣ • 	CO1
	UNIT- II <ul style="list-style-type: none"> • ਛੇ ਦਰੁਨ ਇਕਾਂਗੀ ਸੰਗ੍ਰਹਿ ਵਿੱਚੋਂ (ਪਿਛਲੀਆਂ ਤਿੰਨ ਇਕਾਂਗੀਆਂ) ਇਕਾਂਗੀ ਦਾ ਸਾਰ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਖ ਨਾਵਲ ਅਤੇ ਇਕਾਂਗੀਆਂ ਵਿੱਚੋਂ ਲਘੂ ਪ੍ਰਸਾਰ (ਛੇ ਵਿੱਚੋਂ ਚਾਰ) 	CO2
	• UNIT- III <ul style="list-style-type: none"> ਖ ਭਾਸ਼ਾ ਤੇ ਸਾਹਿਤ ਦੇ ਆਧਾਰ ਤੇ ਦੋਵਾਂ ਵਿੱਚੋਂ ਕੋਈ ਇੱਕ ਪ੍ਰਸਾਰ ਕਰੋ। ਖ ਸਾਹਿਤ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਅਤੇ ਪ੍ਰਯੋਜਨ ਖ ਭਾਸ਼ਾ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਅਤੇ ਪ੍ਰਯੋਜਨ 	CO3
	UNIT- IV <ul style="list-style-type: none"> ਖ ਅਲੰਕਾਰ ਦੇ ਆਧਾਰ ਤੇ ਤਿੰਨਾਂ ਵਿੱਚੋਂ ਇੱਕ ਕਰੋ ਉਪਮਾ ਖ ਟਟਿਕਬਨੀ ਖ ਅਨੁਪ੍ਰਾਸ ਖ ਦ੍ਰਿਸ਼ਟਾਂਤ 	CO4

Reference Books:

- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ 1700 ਈ. ਤੱਕ(2003), ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ
- ਜਜ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ 1700 ਈ. ਤਕ(1972), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
- ਜਜਜ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀ ਉਤਪਤੀ ਤੇ ਵਿਕਾਸ, ਪਰਮਿੰਦਰ ਸਿੰਘ ਤੇ ਕਿਰਪਾਲ ਸਿੰਘ ਕਸੇਲ(1968), ਲਾਹੌਰ ਬੁੱਕਸ਼ਾਪ, ਲੁਧਿਆਣਾ।
- ਜਡੂਬਦ ਸਵੇਰਾ (ਸੰਪਾ. ਡਾ. ਹਰਿਭਜਨ ਸਿੰਘ)(2007) ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ ਚੰਡੀਗੜ੍ਹ
- ਡ ਐਧ ਚਾਨਣੀ ਰਾਤ - ਗੁਰਦਿਆਲ ਸਿੰਘ(1972), ਹਿੰਦ ਪਾਕਿਟ ਬੁਕਸ ਪ੍ਰਾਈਵੇਟ ਲਿਮਟਿਡ, ਦਿੱਲੀ
- ਡਜ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ - ਡਾ. ਹਰਿਭਜਨ ਸਿੰਘ (1972), ਭਾਗੋ ਵਿਭਾਗ ਪੰਜਾਬ, ਪਟਿਆਲਾ।
- ਡਜਜ ਨਾਵਲ ਪ੍ਰਸਤਰ ਤੇ ਪੰਜਾਬੀ ਨਾਵਲ- ਡਾ. ਸੁਰਿੰਦਰ ਕੁਮਾਰ ਦਵੇਵਰ
- ਡਜਜਜ ਪੰਜਾਬੀ ਨਾਵਲ- ਡਾ. ਜੋਗਿੰਦਰ ਸਿੰਘ ਰਾਹੀ(2000) ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ।
- ਜਘ ਆਓ ਨਾਵਲ ਪੜ੍ਹੀਏ- ਡਾ. ਟੀ ਆਰ. ਵਿਨੋਦ(2002) ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ।
- ਘ ਮਧਕਾਲੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿਵੇਕ:- ਡਾ. ਅਮਰਜੀਤ ਸਿੰਘ ਕਾਂਗ, ਡਾ. ਜਸਪਾਲ ਕੌਰ ਕਾਂਗ, ਨਾਨਕ ਸਿੰਘ

Course-14

Course Code	EDU153						
Course Title	BASIC COMMUNICATION SKILLS						
Hours	L:2,T:0, P:1						
Credits	3						
Type	Core Course						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Develop skills in analyzing language structure, evaluating language usage, and creating coherent communication in English.</p> <p>CO2: Demonstrate improved proficiency in listening, speaking, reading, and writing through comprehension, expression, and effective communication in various contexts.</p> <p>CO3: Develop comprehensive understanding of communication's essence, diverse forms, and their distinct characteristics.</p> <p>CO4: Acquire skills in navigating a spectrum of professional communication scenarios.</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1 APPLIED GRAMMAR (IN SOCIO- CULTURAL CONTEXT) Communication and its types: Verbal and Non-verbal Barriers to communication Role plays (situational and behavioral) in Lab. Group Discussion in Lab						CO1
	Unit 2 <ul style="list-style-type: none"> READING (COMMUNICATIVE APPROACH TO BE FOLLOWED) Dialogue making (in bank, at railway etc.) in Lab. Short films review in Lab. Paragraphs (Fill in the blanks) 						CO2
	Unit 3						CO3

	<ul style="list-style-type: none"> • VOCABULARY ENHANCEMENT AND GRAMMAR PRACTICE • Error correction in sentences (Parts of Speech) • Rewrite jumbled words into meaningful sentences (Tenses) • Online Practice Worksheets in Lab 	
	Unit 4 <ul style="list-style-type: none"> • TECHNICAL WRITING • Notice: Format, Characteristics, and 5 W 's. • Email: Structure, Characteristics of Effective Emails, and Advantages in Lab. • Letters: Formal 	CO4

Reference Books:

- Padhey, Sudhir S. English Grammar and Writing Skills. Chennai: Notion Press, 2017. Print
- Hosler, Mary Margaret. English Made Easy. Delhi: McGraw, 2013. Print.
- Koneru, Aruna. Professional Communication. Delhi: McGraw, 2008. Print.
- Mahanand, Anand. English for Academic and Professional Skills. Delhi: McGraw, 2013. Print.
- Rani, D Sudha, TVS Reddy, D Ravi, and AS Jyotsna. A Workbook on English Grammar and Composition. Delhi: McGraw, 2016. Print.
- Rizvi, M. Ashraf. Effective Technical Communication. Delhi: McGraw, 2018. Print.
- Sharma, R.C. and Krishna Mohan. Business Correspondence and Report Writing. Delhi: McGraw, 2013. Print.
- Tyagi, Kavita and Padma Misra. Basic Technical Communication. Delhi: PHI Learning, 2013. Print.

COURSE-15

Course Code	EDU153L
Course Title	BASIC COMMUNICATION SKILLS LABORATORY (ENGLISH)
Hours	L:0T:0, P:2
Credits	1
Type	Core Course
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1 : Develop accurate phonetic transcription and improved pronunciation skills.</p> <p>CO2. Demonstrate adaptive interpersonal skills in realistic scenarios.</p>

	CO3. Foster critical thinking and engage in collaborative problem-solving in group settings. Co4. Compose professional emails effectively, with an emphasis on structure and key characteristics.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	It will include the following activities: Phonetics Transcription and Phonetics Drillings Role plays (situational and behavioural) Group Discussion Short films review. Email: Structure, Characteristics of Effective Emails, and Advantages in Lab.						CO1,CO2, CO3, CO4

Reference Books:

- Padhey, Sudhir S. *English Grammar and Writing Skills*. Chennai: Notion Press, 2017. Print
- Hosler, Mary Margaret. *English Made Easy*. Delhi: McGraw, 2013. Print.
- Koneru, Aruna. *Professional Communication*. Delhi: McGraw, 2008. Print.
- Mahanand, Anand. *English for Academic and Professional Skills*. Delhi: McGraw, 2013. Print.
- Rani, D Sudha, TVS Reddy, D Ravi, and AS Jyotsna. *A Workbook on English Grammar and Composition*. Delhi: McGraw, 2016.Print.
- Rizvi, M. Ashraf. *Effective Technical Communication*. Delhi: McGraw, 2018. Print.
- Sharma, R.C. and Krishna Mohan. *Business Correspondence and Report Writing*. Delhi: McGraw, 2013. Print.
- Tyagi, Kavita and Padma Misra. *Basic Technical Communication*. Delhi: PHI Learning, 2013. Print.

COURSE-16

Course Code	EDU155
Course Title	BASIC COMMUNICATION SKILLS (HINDI)
Hours	L:2, T:0, P:1
Credits	3
Type	Departmental Elective
Course Outcomes	On the completion of the course the students will be able to

	<ul style="list-style-type: none"> छात्रों में भाषा को समझने तथा मूल्यांकन करने की दृष्टि बढ़ाना भाषा संरचना प्रक्रिया के प्रति छात्रों का ध्यानाकर्षण कराना। छात्रों को प्रयोजनमूलक हिन्दी की व्यापकता से अवगत कराना। हिन्दी भाषा की व्यावहारिक उपयोगिता का परिचय देना। 						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%
Examination Mode	Theory						
Syllabus	UNIT-I हिन्दी संरचना <ul style="list-style-type: none"> पर्यायवाची, समानार्थक, विलोमार्थक, अनेकार्थक, अनेक भाषाओं के स्थान पर एक भाषा समूहार्थक भाषाओं के प्रयोग, निकटार्थी भाषाओं के सूक्ष्म अर्थ-भेद, समानार्थक भाषाओं के भेद, उपसर्ग, प्रत्यय 						CO1
	UNIT-II वर्तनी, विराम चिह्न एवं वर्तनी सम्बन्धी अ गुणित्यो, मात्राओं की अ गुणित्यो वर्तनी सम्बन्धी अ गुणित्यो के कारण, वर्तनी सम्बन्धी अ गुणित्यो के सुधारने उपाय। विराम चिह्न-पूर्ण विराम, प्र नवाचक चिह्न सम्बोधन या आ चर्य चिह्न, निर्देशक चिह्न, अवतरण चिह्न						CO2
	UNIT-III लेखन सम्बन्धी □ लिखित भाषा शिक्षण के उद्देश्य लेखन की विभिन्न विधियाँ, लेखन के दोष निवन्ध लेखन, कहानी लेखन						CO3

	UNIT- IV हिन्दी पत्राचार एवं लेखन • औपचारिक पत्राचार अनौपचारिक पत्राचार राष्ट्रीय-अन्तराष्ट्रीय तात्कालिक घटनाक्रमों पर लेखन	CO4
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Course 17

Course Code	EDU154						
Course Title	BASIC COMMUNICATION SKILLS (PUNJABI)						
Hours	L:2, T:0, P:1						
Credits	3						
Type	Departmental Elective						
Course Outcomes	<p>On the completion of the course the students will be able to</p> <ul style="list-style-type: none"> • ਇਸ ਪੇਪਰ ਦਾ ਮੰਤਵ ਕਹਾਣੀ ਤੇ ਕਵਿਤਾ ਦੀਆਂ ਪੁਸਤਕਾਂ ਦਾ ਨਿਕਟ ਅਧਿਐਨ ਕਰਨਾ ਹੈ। • ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਲੇਖਕ ਦੇ ਜੀਵਨ ਤੇ ਭਾਂਤ ਜਾਣੂ ਕਰਵਾਉਣਾ ਹੈ। • ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿੱਚ ਲੇਖਕਾਂ ਦੀ ਭੂਮਿਕਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦੇਣਾ ਹੈ। • ਵਿਆਕਰਣ ਵਿੱਚ ਬਦਾਂ ਦੇ ਵਿਭਿੰਨ ਰੂਪਾਂ ਬਾਰੇ ਸੂਝ ਦੇਣਾ ਹੈ। ਸਾਹਿਤ ਰੂਪਾਂ ਅਤੇ ਅਲੰਕਾਰਾਂ ਸੰਬੰਧੀ ਜਾਣਕਾਰੀ ਦੇਣਾ ਹੈ। <p>1.ਕਥਾ ਕਹਾਣੀ, ਸੰਪਾ. ਡਾ. ਧਨਵੰਤ ਕੌਰ, ਪਬਲੀਕੇਨ ਬਿਓਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ</p> <p>2. ਮੇਰੀ ਜੀਵਨ ਗਾਥਾ, ਦੀਵਾਨ ਸਿੰਘ, ਕਸਤੂਰੀ ਲਾਲ ਐਂਡ ਸਨਃ, ਅੰਮ੍ਰਿਤਸਰ</p> <p>4.ਲਘੂਪੂਨ</p> <p>5.ਵਿਆਕਰਣ</p>						
Examination Type	Theory/Practical						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%
Examination Mode	Theory/Practical						

Syllabus	UNIT- I □ ਕਥਾ —ਕਹਾਣੀ (ਪਿਛਲੀਆਂ ਛੇ ਕਹਾਣੀਆਂ ਵਿੱਚੋਂ) ਵਿੱਚੋਂ ਕਿਸੇ ਇੱਕ ਕਹਾਣੀ ਦਾ ਸਿੱਧੀ ਦੱਸ ਕੇ ਸਾਰ (ਤਿੰਨ ਵਿੱਚੋਂ ਇੱਕ)	CO1
	UNIT- II □ ਮੇਰੀ ਜੀਵਨ ਗਾਥਾ ਸਵੈ-ਜੀਵਨੀ ਵਿੱਚੋਂ ਕਿਸੇ ਇੱਕ ਘਟਨਾ/ਕਾਂਡ ਦਾ ਸਾਰ (ਤਿੰਨ ਵਿੱਚੋਂ ਇੱਕ)	CO2
	• UNIT- III ਨਿਰਧਾਰਤ ਕਹਾਣੀਕਾਰਾਂ ਵਿੱਚੋਂ ਕਿਸੇ ਇੱਕ ਦਾ ਜੀਵਨ, ਰਚਨਾ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਕੁਲਵੰਤ ਸਿੰਘ ਵਿਰਕ, ਮੋਹਨ ਭੰਡਾਰੀ, ਗੁਰਬਖਸ਼ ਸਿੰਘ ਪ੍ਰੀਤਲੜੀ, ਸੁਖਵੰਤ ਕੌਰ ਨ, ਸੁਜਾਨ ਸਿੰਘ) (ਤਿੰਨ ਵਿੱਚੋਂ ਇੱਕ)	CO3
	UNIT- IV □ ਮੇਰੀ ਜੀਵਨ ਗਾਥਾ ਅਤੇ ਕਥਾ- ਕਹਾਣੀ (ਪਿਛਲੀਆਂ ਦੇ ਪ੍ਰਸੰਗ ਵਿੱਚ) ਲਘੂ ਪ੍ਰਭੂ ਉੱਤਰ (ਦਸ ਵਿੱਚੋਂ ਅੱਠ)। (ੳ)ਸੰਖੇਪ ਰਚਨਾ (ਪ੍ਰੈਸੀ) (ਅ) ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦ (ਸਾਹਿਤਕ ਪੈਰੋ ਦੇ ਲਗਭਗ 100 ਸ਼ਬਦ) (ੲ) ਸੂਚਨਾ ਹਿਤ ਨੋਟਿਸ ਲਿਖਣਾ (ਸਾਹਿਤਕ, ਸਭਿਆਚਾਰਕ ਅਤੇ ਖੇਡ ਖੇਤਰ ਨਾਲ ਸੰਬੰਧਿਤ ਕਾਲਜ ਦੀਆਂ ਗਤੀਵਿਧੀਆਂ ਬਾਰੇ) (ਸ) ਮੁਹਾਵਰੇ ਅਤੇ ਅਖਾਣ	CO4

Reference Books:

- ਕਵੀਆਂ ਦੀਆਂ ਕਵਿਤਾਵਾਂ ਅਲੱਗ-ਅਲੱਗ ਕਾਵਿ ਸੰਗ੍ਰਹਿਆਂ ਵਿੱਚੋਂ ਲਈਆਂ ਜਾਣਗੀਆਂ।
- ਕਥਾ ਬੋਧ-ਸੰਪਾ ਰਾਮ ਸਰੂਪ ਅਣਖੀ (2006), ਪਬਲੀਕੇਨ ਬਿਓਰੋ ਚੰਡੀਗੜ੍ਹ
- ਪੰਜਾਬੀ ਸਿੱਖ ਲਿਪੀ ਅਤੇ ਵਿਆਕਰਨ - ਡਾ. ਪ੍ਰਦੇਵ ਸਿੰਘ ਗਿੱਲ (2006) ਲੋਕ ਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ।
- ਪੰਜਾਬੀ ਅਧਿਐਨ ਤੇ ਅਧਿਆਪਨ ਦੇ ਮੁਢਲੇ ਸੰਕਲਪ - ਜੀਤ ਸਿੰਘ ਜ਼ੀ (1999), ਸਿੱਖਿਸਿਸ ਫਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀ ਉਤਪਤੀ ਤੇ ਵਿਕਾਸ - ਪਰਮਿੰਦਰ ਸਿੰਘ, ਕਿਰਪਾਲ ਸਿੰਘ ਕਸੇਲ (1968), ਲਾਹੌਰ ਬੁੱਕਸ਼ਾਪ ਲੁਧਿਆਣਾ
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀ ਰੂਪਰੇਖਾ (1850 ਤੋਂ 1970) - ਜੋਗਿੰਦਰ ਸਿੰਘ (2002) ਪਬਲੀਕੇਨ ਬਿਓਰੋ, ਪੰਜਾਬੀ ਯੂਨੀ, ਪਟਿਆਲਾ
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ - (ਆਧੁਨਿਕ ਕਾਲ 1901 ਤੋਂ 1995 ਤੱਕ)- ਡਾ. ਜਸਵਿੰਦਰ ਸਿੰਘ, ਡਾ. ਮਾਨ ਸਿੰਘ ਢੀਡਸਾ (1997), ਪਬਲੀਕੇਨ ਬਿਓਰੋ, ਪੰਜਾਬੀ ਯੂਨੀ ਪਟਿਆਲਾ
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ -ਪਰਿਵਰਤਨ ਤੇ ਪ੍ਰਵਿਰਤੀਆਂ -ਡਾ. ਭੂਪਿੰਦਰ ਕੌਰ (2004), ਤਰਲੋਚਨ ਪਬਲਿਸਰਜ਼, ਚੰਡੀਗੜ੍ਹ।
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਾਵਿ ਧਾਰਾਵਾਂ ਦੇ ਵਿਚਾਰਧਾਰਾਈ ਆਧਾਰ - ਡਾ. ਕਰਮਜੀਤ ਸਿੰਘ (1983), ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀ ਅੰਮ੍ਰਿਤਸਰ
- ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਸ਼ਬਦਸ਼ਾਸ਼ਤਰ - ਡਾ. ਯੋਗਰਾਜ (1998), ਭਾਰਤੀ- ਗੁਰੂਪ ਆਫ ਪਬਲੀਕੇਨ, ਚੰਡੀਗੜ੍ਹ।
- ਪੰਜਾਬੀ ਵਿਆਕਰਣ- ਬੂਟਾ ਸਿੰਘ ਬਗੜ, ਸਿੱਖਿਸਿਸ ਫਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
- ਪ੍ਰਗਤੀਵਾਦ- ਡਾ. ਸੁਰਿੰਦਰ ਕੁਮਾਰ ਦਵੇਵਰ (2008)। ਲੋਕ ਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ।

Course-18

Course Code	EDU181						
Course Title	ASSESSMENT AND EVALUATION						
Hours	L:2,T:0, P:0						
Credits	2						
Type	Core Course						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Explore the nature of assessment and evaluation and their role in teaching- learning process.</p> <p>CO2: Develop assessment tasks and tools to assess learner ‘s competence and performance</p> <p>CO3: Illustrate the importance of assessment in continuous and comprehensive manner</p> <p>CO4: Analyse the data with the help of descriptive statistics.</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	<p>Unit 1:</p> <ul style="list-style-type: none"> • Concept of Test, Measurement, Examination, Appraisal, Evaluation and their interrelationships., • Purpose and objectives of Assessment- providing feedbacks, Grading promotion, Certification, Diagnostic of learning difficulties. • Forms of assessment: - (Formative, Summative, Prognostic; Diagnostic; Norm-referenced; Criterion-referenced based on purpose) 						CO1
	<p>Unit 2:</p> <ul style="list-style-type: none"> • Concept of Cognitive, Affective, Psychomotor domain of learning • A revised taxonomy of objectives (2001) and its implications for assessment and stating the objectives. • Constructing table of Specifications &, writing different forms of questions- (VSA, SA, ET & Objective type, Situation-based) 						CO2

	<ul style="list-style-type: none"> • Construction of Achievement tests- steps, procedure and uses • Construction of Diagnostic test- steps, uses & limitations. 	
	Unit 3: <ul style="list-style-type: none"> • CCE: Need, importance and problems faced by teachers • Observation Schedule; Check-list; Rating scale; Anecdotal record; Cumulative record. • Assessment of group processes– Nature of group dynamics. • Grading – Meaning, types, and uses • Quality Assurance in tools– Reliability (Test-retest & split- half) & Validity (Face, content, construct 	CO3
	Unit 4 <ul style="list-style-type: none"> • Interpreting student 's performance Graphical representation (Histogram and Frequency Curves). Measures of Dispersion: Range, Quartile Deviation and Standard deviation. Measures of Central tendency: Mean, Median and Mode. 	CO4

Reference Books:

- Linn, Robert and Norman E Gronland (2000). Measurement and Assessment in teaching, 8th edition, by Prentice Hall, Inc, Pearson Education, Printed in USA
- Ved Prakash, et.al. (2000). Grading in schools, NCERT, Published at the publication Division by the secretary, NCERT, Sri Aurobindo Marg, New Delhi
- Tierney, R. J., Carter, M. A., & Desai, L. E. (1991). Portfolio Assessment in the Reading – Writing Classroom. Norwood, MA: Christopher-Gordon Publishers.
- Glatthorn, A. A. (1998). Performance Assessment and Standards-based Curricula: The Achievement Cycle. Larchmont, NY: Eye no Education.
- Gredler, M. E. (1999). Classroom Assessment and Learning. USA: Longman.
- Likert, R. (1932). A technique for the Measurement of Attitudes. Archives Psychology,40.
- Mehrens, W. A. & Lehmann, I. J. (1991). Measurement and Evaluation in Education and Psychology (8 th ed.): Chapter 10: Describing Educational Data.
- Oosterhof, A. (1994). Classroom Applications of Educational Measurement (Second Edition). New York: Macmillan College Publishing Company Inc.
- Payne, D. A. (2003). Applied Educational Assessment. Australia: Wadsworth: Thomson Learning.
- Popham, W.J. (1981). Modern Educational Measurement. New Jersey, Engle wood Cliffs: Prentice-Hall Inc.
- Popham, W. J. (2002). Classroom Assessment: What teachers need to know (Third Edition). Boston: Allyn & Bacon.
- T.V. Somashekar (2006). Educational Psychology & Evaluation, Bangalore, Nirmala Prakashan.

COURSE-19

Course Code	EDU183						
Course Title	SIMULATED TEACHING						
Hours	L:0,T:0, P:1week						
Credits	1						
Type	Core Course						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Bridge the gap between theoretical understanding and practical work.</p> <p>CO2: Analyse classroom behavioural problems and learn how to deal with them.</p>						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage						100%	
Examination Mode	Practical						
Syllabus	<p>Simulated teaching: Nature, Meaning, Mechanism, Teaching Role Play, Advantages and Limitations</p> <p>The emphasis shall be laid on the development of some basic major skills of teaching are :</p> <ol style="list-style-type: none"> 1. The skill of introduction 2. The skill of explaining 3. The skill of questioning 4. The skill of stimulus variation 5. The skill of reinforcement 6. The skill of blackboard writing 						CO1

SEMESTER -3**COURSE OUTLINE****COURSE-1**

Course Code	EDU202A
Course Title	EARLY CHILDHOOD, CHILDHOOD AND GROWING
Hours	L:4, T:0, P:0
Credits	4

Type	Core Course						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Describe physical, cognitive, and emotional development that occurs from infancy through childhood						
	CO2: Explain physical, cognitive, and emotional development that occurs during adolescence.						
	CO3: Identify the problems of childhood and their assessment and treatment. CO4: Enlist the problems of adolescence and their assessment and treatment.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1 :Early childhood						CO1
	Physical development in early childhood: Body growth: Brain development, Influences on physical growth and health, Motor development						
	Cognitive development in early childhood: Information processing, Language development and speech						
	Emotional and Social Development in Early childhood: Self-Understanding, Emotional development, Peer relations, Foundations of Morality						CO2
	Unit 2 : Middle Childhood						
	Physical development in middle childhood: Body Growth, Health Issues, Motor Development and Play						
	Cognitive development in middle childhood: Information processing, individual differences in mental development, Language development, learning in school						
Emotional and Social Development in Middle Childhood: Self- Understanding, Emotional development, understanding others: Perspective taking, Moral development, Peer relations, Family influences, and Some common problems of development						CO3	
Challenges and Solutions for the Safety of Children in the Community							
Unit 3 : Adolescence						CO3	
Physical development in adolescence: Puberty- The physical transition to adulthood, The Psychological Impact of Pubertal events, Health issues							

	Cognitive development in adolescence: An Information-Processing View of Adolescent cognitive development	
	Emotional and social development in adolescence: Alienation, Identity crisis, Interpersonal relationships, Moral development, Career choices, The family, Peer relations, Brain drains, Impact of Media.	
	Unit 4 : Childhood and Adolescence problems: Assessment and Treatment	CO4
	Assessment and treatment of childhood problems (Behavioural and psychosocial): Managing common problems: Eating problems, Toileting, Habits and Tics, Sleep, Sexuality and Sexual Problems, Depression, Disruptive Behaviour. Assessment and treatment of adolescence problems (Behavioural and psychosocial): Problems of adjustment, Understanding of emotional disturbance and risk behaviour, Identity Crisis, Parent-child conflict, Emotional Problems, Juvenile delinquency, School Attendance Problems, Anorexia Nervosa, Drug Abuse, Attempted Suicide, Internet addiction	

Reference Books :

- Cole, M and Cole, S (1989). The Development of Children, Scientific American Books, New York
- Hurlock, E.B. (2003). Child Growth and Development, Tata Mc Graw - Hill Education
- Kakkar, S (1978). The Inner World: A Psychoanalytic Study of Childhood and Society in India. Oxford University Press, New Delhi
- Mishra, A (2007). Everyday Life in a Slum in Delhi. In D.K. Behera (Ed.) Childhood in South Asia. New Delhi: Pearson Education India
- Nambissan, G.B. (2009). Exclusion and Discrimination in Schools: Experiences of Dalit Children. Indian Institute of Dalit Students and UNICEF.
- Piaget, J. (1997). Development and Learning. In M. Gauvain and M. Cole (Eds), Readings on the Development of Children. New York: WH Freeman and Company
- Saraswathi, T.S. (1999). Adult-Child Continuity in India: Is Adolescence a myth or an emerging reality? In T.S. Saraswathi (Ed), Culture, Socialisation and Human Development: Theory, Research and Applications in India. New Delhi. Sage
- Sharma, N (2011). Understanding Adolescence, NBT, New Delhi, India
- Chauhan, S.S. (2002). Advanced Educational Psychology. New Delhi: Vikas Publishing House.
- Collins R (1979). The Credential Society: An Historical Sociology of Education and Stratification. New York: Academic Press.
- Dash, B.N. (2004). Theories of Education & Education in the Emerging Indian Society. New Delhi: Dominant Publishers and Distributors.
- Gupta D (1991). Social Stratification. New Delhi: Oxford University Press.
- Mangal, S.K. (2002). Advanced Educational Psychology. New Delhi: Prentice-Hall of India.
- Sharma K.L. (1999). Social Inequality in India: Profiles of Caste, Class and Social Mobility. Jaipur: Rawat Publications.

COURSE-2

Course Code	EDU231						
Course Title	VALUE BASED EDUCATION AND APPLIED ETHIC						
Hours	L:2, T:0, P:0						
Credits	2						
Type	Core Course						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Emerge as responsible citizens with clear conviction to practice value and ethics in life.						
	CO2: Explain the concept of value crisis and conflict resolution.						
	CO3: Illustrate the scope and approaches of applied ethics.						
	CO4: Recognize the different types of Professional ethics.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	VALUE EDUCATION • Value Education: Concept, Nature, Source & importance. • Fundamental Human Values-Truth, Peace, Non-violence, Righteous Conduct. • The value education system in India. • Factors affecting values.						
	Unit 2						
	RESOLUTION AND MANAGEMENT OF CONFLICT • Value Crisis and conflict resolution: Concept, Positive and negative aspects of conflict, types of conflicts, • Conflict resolution, conflict management, Model of conflict resolution, Styles of conflict resolution. • Role of family and community in value development						CO2
	Unit 3						

	APPLIED ETHICS <ul style="list-style-type: none"> • Nature, Scope and uses of Applied Ethics. • De-ontological approach to moral education- Immanuel Kant, Bhagavat Gita • Teleological approach to moral action- J.S Mill, Bentham 	CO4
	Unit 4	
	PROFESSIONAL ETHICS <ul style="list-style-type: none"> • Introduction to ethics in teaching • Educational ethics, Definition, Nature, Problems • Teacher as a moral person and moral educator 	

Reference Books :

- Nagarajan. A Text Book on Professional Ethics and Human Values. New Age Publishers, 2006.
- Dr. S. N. Gupta, (Logic Western and Indian)and Applied Ethics, Bharat Parkashan (Regd.) Jalandhar city.
- Chand, J. (2007). Value education. Delhi: Anshah Publishing House.
- Jagannath, M. (2005). The teaching of moral values development. New Delhi: Deep and Deep Publication.
- Passi, B.K., & Singh, P. (1999). Value education. Agra: Psychological Corporation.
- Singh, Y.K. (2009) Value Education. New Delhi: APH Publishing Corporation.
- Bhatt, S.R(1986). Knowledge, Value and Education: An Axiomatic Analysis, Delhi: Gian Pub.
- Kar, N.N. (1996). Value Education: A Philosophical Study. Ambala: Associated Pub.
- Ethics for Everyone: <https://arthurdobrin.files.wordpress.com/2008/08/ethics-for-everyone.pdf>
- <http://choicesvideo.net/guidebooks/aboutgoldenruleguidebook.pdf>
- Universal Declaration of Human Rights: <http://www.un.org/en/documents/udhr/>

COURSE-3

Course Code	EDU233
Course Title	GUIDANCE AND COUNSELLING
Hours	L:2, T:0, P:0
Credits	2
Type	Core Course
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Describe the scope and domains of guidance.
	CO2: Familiarize with the concept of various tools and technique of guidance.
	CO3: Elaborate the various techniques of counselling.

	CO4: Explain the organization of guidance programme at different levels of education.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	<ul style="list-style-type: none">• Nature and Scope of Guidance• Domains of Guidance: Educational Guidance: Role of Guidance Officer and Role of Government Agencies,• Vocational Guidance: Concept of Vocational Guidance, Role of Guidance Counsellor and Modern trends in Vocational Guidance.• Personal Guidance: Concept and functions of Personal Guidance, Guidance for personality building.						
	Unit 2						CO2
	<ul style="list-style-type: none">• Tools of Guidance- (Intelligence tests, Aptitude tests, Interest inventories, Personality tests and Achievement tests)• Role of teachers in Guidance, Functions of Guidance Services						
	Unit 3						CO3
	<ul style="list-style-type: none">• Approaches of Counselling: Meaning, characteristics and Principles of counselling, Counselling approaches viz directive, non directive technique, eclectic and RECBT (Rational emotive cognitive behavioural therapy)						
	Unit 4						CO4
<ul style="list-style-type: none">• The organization of Guidance and Counselling Programmes: organisation of guidance service at different levels of education, Essentials of good programme. Training of School Counsellors and Managing Guidance and Counselling Programmes.							

Reference Books :

- David Capuzzi, Douglass R. Gross. (2008) Counseling and Psychotherapy. Delhi Dorling Kindersley.
- Devi, L. Encyclopedia of Child Welfare Vol (I-VI).
- Madan, G. R. Indian Social Problems.
- Mussen, P., Conger, J., Kagan, J. and Huston, A.C. (1990). Child development and personality. New York: Harper and Row.
- Rane, A. (Ed.) (1994). Street children: A challenge to the social work profession. Bombay: TISS.
- Rane, A. et al. (1980). Children in difficult situations in India: A review. Bombay: TISS.
- Roy, S. Shikshamanavidya.
- Aggarwal, J. C. (2004). Educational Vocational Guidance and Counseling, New Delhi: Doaba House.
- Bhatia, K.K. (2008). Principles of Guidance and Counselling, New Delhi: Kalyani Publishers.

COURSE-4

Course Code	EDU213A						
Course Title	ADVANCE CALCULUS AND DIFFERENTIAL EQUATIONS						
Hours	L:5, T:0, P:0						
Credits	5						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Define sequence and series and apply different tests to check the convergence of series						
	CO2: Comprehend the use and importance of Laplace transform and solve differential equations in series.						
	CO3: Analyse the different mean value theorems and their importance, concept of envelope and evolute, jacobians.						
	CO4: .Work out on functions of more than one variable and its different parameters						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	Definition of a sequence, theorems on limits of sequences. Bounded and monotonic sequences,						
	Cauchy's convergence criterion, Series of non-negative terms						

Comparison tests, Cauchy's Integral test, Ratio test, Cauchy's Root test. Raabe 's test, Logarithmic test, De Morgan and Bertrand's tests, Gauss test. Alternating series, Leibnitz's theorem. Absolute and conditional convergence.	
Unit 2	CO2
Continuity, sequential continuity, properties of continuous functions, Uniform continuity Darboux's intermediate value theorem for derivatives, Taylor's theorem with various forms of remainders McLaurin and Taylor series expansions limit and continuity of functions of two variables	
Unit 3	CO3
Partial differentiation, change of variables, partial derivation and differentiability of real- valued functions of two variables. Euler's theorem on homogeneous functions. Taylor's theorem for functions of two variables Jacobians envelopes, evolutes. Maxima, minima and Saddle points of functions of two variables. Lagrange's multiplier method.	
Unit 4	CO4
Series solutions of differential equations-power series method, Bessel, Legendre Orthogonality of functions, Sturm Liouville problem. Eigen- functions. Reality of Eigen values. Orthogonality of Bessel functions and Legendre polynomials, Laplace transformation. Linearity of the Laplace transformations. Existence theorem for Laplace transformation of derivatives and integrals. Shifting theorems.	

Reference Books :

- Apostol, T.M. (1985), Mathematical Analysis. Narosa Publishing House, New Delhi.
- Goldberg, R.R. (1970), Real Analysis. Oxford & I.B.H. Publishing Co., New Delhi.
- Jain, P.K. & Kaushik, S.K. (2000), an Introduction to Real Analysis. S. Chand & Co., New Delhi.
- Klaumber, G. (1975), Mathematical Analysis. Marcel Dekkar, Inc. New York.
- Sharma, D.R. (2009), Spectrum, Analysis Inc. Sharma Publications, Jalandhar.
- Spiegel, M.R. (1993), Theory and Problems of Advanced Calculus. Schaum Publishing Co., New York.
- Sundaram, D.S. & Chaudhary, B. (1997), a First Course in Mathematical Analysis. Narosa Publishing House, New Delhi.

COURSE-5

Course Code	EDU249
Course Title	BIOCHEMISTRY AND ANIMAL PHYSIOLOGY
Hours	L:4, T:0, P:0

Credits	4						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Classify various types of Proteins, enzymes, carbohydrates, lipids and nucleic acids						
	CO2: Explain the process of digestion and respiration in animals.						
	CO3: Illustrate circulatory and excretory system of animals. CO4: Restate the function of Muscles and Endocrine system						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	Carbohydrates, proteins, lipids and nucleic acids: their classifications and functions.						
	Enzymes: Nature, their classification and coenzymes.						
	Carbohydrate metabolism: The Embden Meyerhof, Parnas pathway, (glycolysis), the tricarboxylic acid cycle, the hexose monophosphate shunt, glycogenesis and glycogenolysis.						
	Lipid Metabolism: β -oxidation of fatty acids, fate of glycerol and, ketosis. Protein Metabolism: Metabolism of amino acids (Oxidative deamination, transamination & decarboxylation) hydrolysis of protein and ornithine cycle.						
	Unit 2						CO2
Digestion: Digestion of dietary constituents, regulation of digestive processes and absorption. Extra and intra cellular digestion, enzymatic digestion and symbiotic digestion.							
	Respiration: Transport of O ₂ and CO ₂ , Oxygen dissociation curve of hemoglobin, Bohr effect, chloride (-) shift, Haldane effect and control of breathing.						
	Unit 3						CO3
	Blood: Composition and functions of blood and lymph. Function of hemoglobin, blood clotting. Blood groups including Rh. Factor						

	Excretory system: Histology of kidney, ureter and bladder; renal blood supply; Mechanism and regulation of urine formation; Regulation of acid-base balance; renal failure and dialysis.	
	Unit 4	
	<p>Muscles: Ultra structure, chemical and physiological basis of skeletal muscles contraction.</p> <p>Neural Integration: Structure of neuron, resting membrane potential, origin and propagation of impulse along the axon, synapse and myoneural junction.</p> <p>Endocrine System: Structure, hormones and functions of thyroid, parathyroid, adrenal, pineal, hypothalamus, pituitary, pancreas, gonads, thymus, hormones of alimentary canal and kidney.</p>	CO4

Reference Books :

- Guyton, A.C., Hall, J.E. Text Book of Medical Physiology, XIIth edition, Harcourt Asia Pvt. Ltd. /W.B. Saunders Company, 2011.
- Best, J.P., Best and Taylor 's physiological basis of medical practice, 11th ed., William and Wilkins, 1985.
- Hoar, W.S., General and comparative physiology, Adaptation and Environment, 3rd, Cambridge University Press, 1983.
- Rhoades, R.A., Tanner, G.A., Medical Physiology, 2nd ed., Lippincott Williams and Wilkins, 2003.
- Tortora, G.J., Derrickson, B.H. Principles of Anatomy and Physiology, XII Edition, John Wiley and Sons, Inc., 2009.
- Bhojwani, S.S. 1990: Plant Tissue Culture Applications and Limitations. Elsevier Science Publishers, New York, USA.
- Lea, P.J. and Leegood, R.C. 1999: Plant Biochemistry and Molecular Biology, John Wiley & Sons, Chichester, England.
- Old, R.W. and Primrose, S.B. 1989: Principles of Gene Manipulation, Blackwell Scientific Publications, Oxford, UK.
- Raghavan, V. 1986: Embryogenesis in Angiosperms: A Developmental and Experimental Study, Cambridge University Press, New York, USA.
- Taneja, S.K.: Biochemistry & Animal Physiology, TruemanBook Co.,1997.
- 3. Robert, K., Murray, R.K., Harper 's Biochemistry, 22nd edition,
- Daryl, M., Granner, K., Prentice – Hall International, Inc., 1990Victor, W. and Woodwell.

Course Code	EDU251A						
Course Title	BIOCHEMISTRY AND ANIMAL PHYSIOLOGY LABORATORY						
Hours	L:0, T:0, P:2						
Credits	1						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Identification of various food stuffs and demonstration of different phenomenon.						
	CO2: Determination of blood groups, bleeding time, blood pressure and count of WBCS, RBCS of man.						
	CO3: Analyze the urine sample and locate endocrine glands through charts/ models.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	It will include the following activities: Identification of food stuffs-starch, sucrose, glucose, proteins and fats. Demonstration of osmosis and diffusion. Demonstration of the presence of amylase enzyme in saliva. Effect of pH and Temperature on enzyme action. Determination of coagulation and bleeding time of blood. Determination of blood groups of human blood samples. Recording of blood pressure of man. Enumeration of red blood corpuscles and white blood corpuscles of man. Estimation of hemoglobin content in blood. Analysis of urine for urea, chloride, glucose and uric acid. An idea of location of endocrine glands in mammals through charts / models/ video clippings						CO1, CO2, CO3
Field study: Visit to a fossil Park/Museum. Familiarity with the local vertebrate fauna and report Note: The above-mentioned practical are in accordance with the guidelines of UGC. Practical involving animal material will be conducted using models/charts/e-resources. Minor modifications in the curriculum are allowed subject to the availability of resources.							

Course Code	EDU241						
Course Title	ORGANIC CHEMISTRY-I						
Hours	L:4, T:0, P:0						
Credits	4						
Type	Core Course						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Describe the basic concepts of Organic Chemistry.						
	CO2: Relate the chemistry of Aliphatic Hydrocarbons.						
	CO3: Apply the rules of Aromaticity and reactions mechanism.						
Examination Type		Theory					
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1 : BASICS OF ORGANIC CHEMISTRY						CO1
	Organic Compounds: Classification, and Nomenclature, Hybridization, Shapes of molecules, Influence of hybridization on bond properties.						
	Electronic Displacements: Inductive, electromeric, resonance and mesmeric effects, hyper conjugation and their applications; Dipole moment; Organic acids and bases; their relative strength.						
	Hemolytic and Heterolysis fission with suitable examples. Curly arrow rules, formal charges; Electrophiles and Nucleophiles; Nucleophilicity and basicity; Types, shape and their relative stability of Carbocations, Carbanions, Free radicals and Carbene s. Stereochemistry						
Fischer Projection, Newman and Sawhorse Projection formulae and their interconversions; Geometrical isomerism: cis–trans and, syn–anti isomerism E/Z notations with C.I.P rules.							

Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers, Molecules with two or more chiral- centres, Distereoisomers, meso structures, Racemic mixture and resolution. Relative and absolute configuration: D/L and R/S designations.	
Unit 2	
Carbon-Carbon sigma bonds : Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz-Fittig Reactions, Corey-House Reaction, Free radical substitutions: Halogenation - relative reactivity and selectivity. Carbon-Carbon pi bonds : Formation of alkenes and alkynes by elimination reactions, Mechanism of E1, E2, E1cb reactions. Saytzeff and Hofmann eliminations. Reactions of alkenes: electrophilic additions their mechanisms (Markownikoff/ AntiMarkownikoff addition), mechanism of oxymercuration-demercuration, hydroboration-oxidation, ozonolysis, reduction (catalytic and chemical). Diels- Alder reaction; Allylic and benzylic bromination and mechanism, e.g., propene, 1- butene, toluene, ethyl benzene Reactions of alkynes: Acidity, Electrophilic and Nucleophilic additions. Hydration to form carbonyl compounds. Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz-Fittig Reactions, Corey-House Reaction, Free radical substitutions: Halogenation - relative reactivity and selectivity. Carbon-Carbon pi bonds : Formation of alkenes and alkynes by elimination reactions, Mechanism of E1, E2, E1cb reactions. Saytzeff and Hofmann eliminations. <i>Reactions of alkenes:</i> Electrophilic additions their mechanisms (Markownikoff/ AntiMarkownikoff addition), mechanism of oxymercuration-demercuration, hydroboration-oxidation, ozonolysis, reduction (catalytic and chemical). Diels- Alder reaction; Allylic and benzylic bromination and mechanism, e.g., propene, 1- butene, toluene, ethyl benzene. <i>Reactions of alkynes:</i> Acidity, Electrophilic and Nucleophilic additions. Hydration to form carbonyl compounds.	CO2
Cycloalkanes and Conformational Analysis : Types of cycloalkanes and their relative stability, Baeyer strain theory, Conformation analysis of alkanes: Relative stability: Energy diagrams of cyclohexane: Chair, Boat and Twist boat forms; Relative stability with energy diagrams.	
Unit 3 :AROMATIC HYDROCARBONS	
Aromaticity: Hückel 's rule, aromatic character of arenes, cyclic carbocations/carbanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft 's alkylation/acylation with their mechanism. Directing effects of the groups.	CO3
Unit 4:CHEMISTRY OF HALOGENATED HYDROCARBONS:	CO4

	<p>Fossil gymnosperms: Brief account of fossils, their formation and types (excluding details).</p> <p>Introduction, external structure of stem; internal structure of primary stem, root and leaf; reproduction</p>	
	<p>Unit 2</p> <p>Structure, reproduction (male and female strobilus; structure of ovule; development of male and female gametophytes pollination, fertilization, development of embryo and structure of seed) and life cycle of <i>Cycas</i> and <i>Pinus</i></p>	CO2
	<p>Unit 3</p> <p>General characters of Angiosperms. Plant nomenclature and International Code of Botanical Nomenclature: Common names and scientific names, principles and rules; taxonomic ranks</p> <p>type concept (Holotype, Isotype, Syntype, Paratype, Lectotype, Neotype and Topotype); principle of priority, aims and objectives of plant taxonomy.</p> <p>A brief account of Bentham and Hooker's System of classification, its merits and demerits.</p> <p>Terminology pertaining to floral description</p>	
	<p>Unit 4</p> <p>General account and diagnostic features of the following families (excluding economic importance):</p> <p>Gramineae (Poaceae): <i>Triticum</i></p> <p>Ranunculaceae: <i>Ranunculus</i> and <i>Delphinium</i></p> <p>Brassicaceae: <i>Brassica</i></p> <p>Rutaceae: Citrus and <i>Murraya</i></p> <p>Malvaceae: <i>Hibiscus</i></p> <p>Fabaceae: <i>Lathyrus</i>, <i>Cassia</i> and <i>Acacia</i></p> <p>Compositae (Asteraceae): <i>Helianthus/Ageratum</i></p> <p>Solanaceae: <i>Solanum</i></p> <p>Labiatae (Lamiaceae): <i>Ocimum</i></p>	CO4

Reference Books :

- Bhatnagar, S.P. and Moitra, A. Gymnosperms, New Age International Limited, New Delhi, 1996.
- Chopra, G.L. Text book of Gymnosperms, S. Nagin, Delhi, 1976.
- Pandey, B.P. College Botany, Vol. II., S. Chand & Company Ltd., New Delhi, 1994.
- Singh, V., Pande, P.C. and Jain, D.K., A Text Book of Botany: Diversity and Systematics of Seed Plants, Rastogi Publications, Meerut, 2013.
- Srivastava, H.N. Diversity of Seed Plants and their Systematics, Vol. III., Pradeep Publications, Jalandhar, 2014.
- Stewart, W.M. Pale botany and the Evolution of Plants, Cambridge University Press, Cambridge, 1983.

- Chopra, G.L. Angiosperms: Systematic and Life Cycle, Pradeep Publications, Jalandhar, 1987.
- Davis, P.H. and Heywood, V.H. Principles of Angiosperm Taxonomy, Oliver and Boyd, London, 1963.
- Naik, V.N. Taxonomy of Angiosperms, Tata McGraw Hill Education, 1984.
- Singh, G. Plant Systematics: Theory and Practice, Oxford and IBH Pvt. Ltd., New Delhi, 1999.
- Vasishta, P.C. Taxonomy of Angiosperms. R. Chand & Co., New Delhi, 1997.

COURSE- 10

Course Code	EDU247A						
Course Title	DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS LABORATORY						
Hours	L:0, T:0, P:2						
Credits	1						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1 : Observe the morphological and anatomical features of Cycas, Pinus and its parts CO2 : Draw the floral Formula of different Families and describe the technical terms used in it						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	It will include the following activities: Cycas: a.) Habit, armour of leaf bases on the stem, young and old foliage leaves, scale leaves, male cone, Megasporophyll, seed. b.) Preparation of permanent stained slides of Cycas (T.S. leaflet, rachis and coralloid root). Pinus: a.) Dwarf shoot; Male cone; Female cones (first year, second year and third year); Seed. b.) Preparation of permanent slide of T.S. needle and pollen grains						CO1, CO2

	<p>c.) Study through permanent slides: L.S. male cone; L.S. female cone; L.S. ovule</p> <p>Description of flowers in technical terms, drawing Floral Diagram, V.S. flower, T.S. ovary, writing Floral Formula with reference to the respective families of the genera mentioned in different families in theory syllabus</p>	
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COURSE-11

Course Code	EDU253						
Course Title	DIGITAL SYSTEMS AND APPLICATION						
Hours	L:4, T:0, P:0						
Credits	4						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Explain the concept of CRO and IC's						
	CO2: Explain digital logic concepts, including binary number systems, Boolean Algebra , logic gates and logic simplification techniques.						
	CO3: Design and analyse combinational and sequential digital circuits using various design methodologies and tools.						
Interpret the concepts of Computer organization, memory and Microprocessor Architecture							
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	Introduction to CRO: Block Diagram of CRO, Electron Gun, Deflection System and TimeBase, Deflection Sensitivity, Applications of CRO: (1) Study of Waveform, (2) Measurement of Voltage, Current, Frequency, and Phase Difference.						
	Integrated Circuits (Qualitative treatment only): Active & Passive components, Discrete Components, Wafer, Chip, Advantages and drawbacks of ICs, Scale of integration: SSI, MSI, LSI and VLSI (basic idea and definitions only), Classification of ICs, Examples of Linear and Digital ICs.						CO2
Unit 2						CO2	

	<p>Digital Circuits and Boolean algebra: Difference between Analog and Digital Circuits. Binary Numbers, Decimal to Binary and Binary to Decimal Conversion, BCD, Octal and Hexadecimal numbers; AND, OR and NOT Gates (realization using Diodes and Transistor); NAND and NOR Gates as Universal Gates; XOR and XNOR Gates and application as Parity Checkers; De Morgan's Theorems; Boolean Laws; Simplification of Logic Circuit using Boolean Algebra; Fundamental Products, Conversion of a Truth table into Equivalent Logic Circuit by (1) Sum of Products Method and (2) Karnaugh Map.</p> <p>Data processing circuits: Basic idea of Multiplexers, Demultiplexers, Decoders, Encoders.</p>	
	Unit 3	
	<p>Arithmetic and Sequential Circuits: Binary Addition. Binary Subtraction using 2's Complement; Half and Full Adders, Half & Full Subtractors, 4-bit binary Adder/Subtractor</p> <p>SR, D, and JK Flip-Flops; Clocked (Level and Edge Triggered) Flip-Flops, Preset and Clear Operations, Race-around conditions in JK Flip-Flop, M/S JK Flip-Flop.</p> <p>Shift registers: Serial-in-Serial-out, Serial-in-Parallel-out, Parallel-in-Serial-out and Parallel in-Parallel-out Shift Registers (only up to 4 bits). Counters (4 bits): Ring Counter, Asynchronous counters, Decade Counter. Synchronous Counter.</p>	CO3
	Unit 4	
	<p>Computer Organization: Input/output Devices; Data storage (idea of RAM and ROM); Computer memory, Memory organization & addressing; Memory Interfacing; Memory Map;</p>	CO4
	<p>Intel 8085 Microprocessor Architecture: Main features of 8085. Block diagram.</p>	

Reference Books :

- P. Malvino, and D. P. Leach, Digital Principles and Applications. New Delhi: TataMcGraw Hill, 1986.
- A. P. Malvino, Digital Computer Electronics. New Delhi: Tata McGraw Hill, 1986.
- W. H. Gothmann, Digital Electronics. New Delhi: Prentice Hall, 1980.
- J. Millman, and H. Taub, Pulse, Digital and Switching Waveforms. New Delhi: TataMcGraw Hill, 1992.
- A. Mottershead, Electronic Devices and Circuits. New Delhi: Prentice Hall, 1977.
- R. S. Gaonkar, Microprocessor Architecture, Programming and Applications with 8085. New Delhi: Prentice Hall, 2002.

COURSE- 12

Course Code	EDU255A						
Course Title	DIGITAL SYSTEMS AND APPLICATION LABORATORY						
Hours	L:0, T:0, P:2						
Credits	1						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills : CO1: Create and implement digital circuits to perform specific function. CO2: Implement Digital Signal Processing algorithms using digital system. CO3: Design digital logic concepts such as logic gates, Boolean Algebra, truth tables and logic circuit design. CO4: Classify digital components like flip flop, Decoder and multiplexers.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	It will include the following activities: To measure (a) Voltage, and (b) Time period of a periodic waveform using CRO. To test a Diode and Transistor using a Multimeter. To design a switch (NOT gate) using a transistor. To verify and design AND, OR, NOT and XOR gates using NAND gates. To design a combinational logic system for a specified Truth Table. To convert a Boolean expression into logic circuit and design it using logic gate ICs. To minimize a given logic circuit. Half Adder, Full Adder and 4-bit binary Adder. Half Subtractor, Full Subtractor, Adder-Subtractor using Full Adder I.C. Parity generator and checker. To study D/A and A/D convertor. To build Flip-flop Circuits using elementary gates (RS, Clocked RS, D type, and JK Flip Flop). To build Flip-Flop (RS, Clocked RS, D-type and JK) circuits using NAND gates. To build JK Master-slave flip-flop using Flip-Flop ICs.						CO1, CO2, CO3, CO4

COURSE-13

Course Code	EDU203A						
Course Title	ENGLISH ENGLISH-III						
Hours	L:5, T:0, P:0						
Credits	5						
Type	Core Course						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Analyze, interpret, and apply a variety of literary terms in English within diverse literary works, while gaining a nuanced understanding of the historical background and literary features of the Romantic Age.						
	CO2: Critically analyze, interpret, and appreciate English novels, while nurturing higher-order thinking and literary insights.						
	CO3: Interpret and appreciate poetry while refining their reading, writing, critical thinking, and expressive communication skills.						
	CO4: Demonstrate mastery in using the same words as different parts of speech in narrative/descriptive essays.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	• Historical Background and Literary features of Romantic age. • Literary Terms						
	Unit 2						CO2
	• Pride and Prejudice by Jane Austen. • The Mill on the Floss by George Eliot.						
	Unit 3						CO3
	POEMS • Poem No. 1- The Tyger by William Blake • Poem No. 2 – The Solitary Reaper by William Wordsworth. • Poem No. 3 – Christable by S.T Coleridge • Poem No. 4 – Ode in an Grecian Urn by John Keats						
	Unit 4						CO4

	APPLIED GRAMMER <ul style="list-style-type: none"> • Use of same word as different part of speech. • Narrative/Descriptive essay. 	
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Reference Books :

- English Literature: Its History and Its Significance for the Life of the English-speaking World by William J. Long.
- Fifteen Poets (1988). Calcutta: Oxford University Press India.
- Hewing 's, M. (2007). Advanced English Grammar. New Delhi: Cambridge University Press India Ltd.
- Rao, V.K. (2007). Peculiar English. New Delhi: Neel Kamal Publications.
- Sharma, G.L. (2008). Glimpses of English Poetry. Chandigarh: Publication Bureau, Punjab University.
- Tickoo, C. & Kumar, J.S. (2000). Writing with a Purpose. New Delhi: Oxford University Press.

COURSE-14

Course Code	EDU205A
Course Title	ELECTIVE HINDI-III
Hours	L:5, T:0, P:0
Credits	5
Type	Departmental Elective
Course Outcomes	<p>On the completion of the course the students will be able to</p> <ul style="list-style-type: none"> • दिए गए कवियों की पाठ्यवस्तु के सन्दर्भ में व्याख्या-सहित खण्ड करेंगे । • कवि-परिचय, सार और उद्देश्य सम्बन्धित प्रश्न कर सकेंगे। • मस्टर अभिमन्यु की सन्दर्भ सहित व्याख्या करेंगे । • पात्रों के चरित्र चित्राश, तत्वों के आधार पर नाटक की समीक्षा तथा समस्या कर सकेंगे। • तरंगशी व मिस्टर अभिमन्यु से संबन्धित लघु प्रश्नों के उत्तर लिख सकेंगे। • रीतिकाल की परिस्थितियाँ, नामकरण, सीमा निर्धारण, प्रवृत्तियाँ, रीतिब(और रीति मुक्त काव्य की प्रमुख विशेषताओं का वर्णन कर सकेंगे। • रीति काव्य के प्रमुख कवियों के सम्बन्ध में समीक्षात्मक प्रश्न का उत्तर दे पायेंगे। • आधुनिक काल के केवल कविता खण्ड में से भारतेन्दु युग, द्विवेदी युग, छायावाद, प्रगतिवाद, प्रयोगवाद, और नई कविता के प्रमुख प्रवृत्तियों सम्बन्धित समीक्षा लिख सकेंगे।

Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%
Examination Mode	Theory						
Syllabus	<p>UNIT-I</p> <ul style="list-style-type: none"> • तंरंगिणी तंरंगिणी तंरंगिणी तंरंगिणी-मनोहर लाल आनन्द • पंजाब यूनिवर्सिटी पब्लिकेशन ब्यूरो, चण्डीगढ़ निम्नलिखित कवि पाठ्यक्रम में निर्धारित हैं : मैथिलीशरण गुप्त, जयशंकर प्रसाद, सूर्यकान्त त्रिपाठी निराला, सुमित्रानन्दन पंत, महादेवी वर्मा, अज्ञेय, धर्मवीर भारती; कछ्छ दो सन्दर्भ- सहित-व्याख्या-खण्ड करने होंगे। 						CO1
	<p>UNIT-II</p> <ul style="list-style-type: none"> • मिस्टर अभिमन्यु मिस्टर अभिमन्यु मिस्टर अभिमन्यु मिस्टर अभिमन्यु • डा० लक्ष्मी नारायण लाल; कछ्छ सन्दर्भ सहित व्याख्या के लिये दो खण्ड पूछे जायेंगे, उत्तर एक का ही देना होगा। ;खछ्छ पात्रों के चरित्र चित्रण, तत्त्वों के आधार पर नाटक की समीक्षा तथा समस्या सम्बन्धी दो प्रश्न पूछे जायेंगे उत्तर एक का ही देना होगा। 						CO2
	<p>UNIT- III</p> <ul style="list-style-type: none"> • हिन्दी साहित्य का इतिहास-रीतिकाल ;केवल काव्य खण्डछ्छ हिन्दी साहित्य का इतिहास-रीतिकाल ;केवल काव्य खण्डछ्छ हिन्दी साहित्य का इतिहास-रीतिकाल ;केवल काव्य खण्डछ्छ हिन्दी साहित्य का इतिहास-रीतिकाल ; केवल काव्य 						CO3

	खण्ड	
	UNIT- IV हिन्दी साहित्य का इतिहास-आधुनिक काल हिन्दी साहित्य का इतिहास-आधुनिक काल हिन्दी साहित्य का इतिहास-आधुनिक काल हिन्दी साहित्य का इतिहास-आधुनिक काल ;केवल काव्य खण्ड ;केवल काव्य खण्ड ;केवल काव्य खण्ड ;केवल काव्य खण्ड <ul style="list-style-type: none"> आधुनिक काल के केवल कविता खण्ड में से भारतेन्दु युग, द्विवेदी युग, छायावाद, प्रगतिवाद, प्रयोगवाद और नई कविता की केवल प्रमुख पद्धतियों पर आधारित समीक्षात्मक प्रश्न। 	CO4

Reference Books:

- बाहरी हरदेव ;२००४ हिन्दी उद्भव विकास और रूप, किताब महल, इलाहाबाद।
- सिंह बहादुर ;२००८ हिन्दी साहित्य का इतिहास, माधव प्रकाशन, यमुना नगर।
- साहनी एस.बी. एवं शर्मा आर.पी. ;२००७ सर्वोत्तम हिन्दी व्याकरण, साहनी प्रकाशन, आगरा।
- चतुर्वेदी राजेश्वर प्रसाद ;२००८ हिन्दी व्याकरण, उपकार प्रकाशन, आगरा।

COURSE-15

Course Code	EDU207A
Course Title	ELECTIVE PUNJABI-III
Hours	L:5, T:0, P:5
Credits	5
Type	Departmental Elective
Course Outcomes	<p>On the completion of the course the students will be able to</p> <ul style="list-style-type: none"> ਇਸ ਪੇਪਰ ਦਾ ਉਦੇਸ਼ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਮੱਧਕਾਲੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੇ ਅਖੀਰਲੇ ਪੜਾਅ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦੇਣਾ ਹੈ। ਕਹਾਣੀ ਵਿੱਚ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਦਿਲਚਸਪੀ ਜਗਾਉਣਾ ਹੈ।

	<ul style="list-style-type: none"> ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ ਦੇ ਤੱਥਾਂ ਨੂੰ ਨਿਰਧਾਰਤ ਕਰਨਾ ਹੈ। ਕਹਾਣੀ ਸਾਹਿਤਰੂਪਾਂ ਤੇ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਜਾਣੂ ਕਰਵਾਉਣਾ ਹੈ। 						
Examination Type	Theory/Practical						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%
Examination Mode	Theory/Practical						
Syllabus	UNIT- I <ul style="list-style-type: none"> ਮੱਧਕਾਲ ਦੀ ਚੋਣਵੀਂ ਪੰਜਾਬੀ ਕਵਿਤਾ: (ਜ) ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿੱਚੋਂ ਇਕ) 6 (ਜਜ) ਕਵਿਤਾ ਦਾ ਕੇਦਰੀ ਭਾਵ ਦੱਸ ਕੇ ਸਾਰ ਲਿਖੋ (ਦੋ ਵਿੱਚੋਂ ਇਕ) 						CO1
	UNIT- II <ul style="list-style-type: none"> ਅੱਠੇ ਪਹਿਰ: (ਜ) ਕਹਾਣੀ ਦਾ ਵਿਹਾਰ ਵਸਤੂ (ਦੋ ਵਿੱਚੋਂ ਇਕ) (ਜਜ) ਕਹਾਣੀ ਦਾ ਸਾਰ (ਦੋ ਵਿੱਚੋਂ ਇਕ) 						CO2
	UNIT- III <ul style="list-style-type: none"> ਮੱਧਕਾਲ ਦੀ ਚੋਣਵੀਂ ਪੰਜਾਬੀ ਕਵਿਤਾ ਅਤੇ ਅੱਠੇ ਪਹਿਰ (ਪਹਿਲੀਆਂ ਚਾਰ ਕਹਾਣੀਆਂ) ਤੇ ਆਧਾਰਿਤ ਲਘੂ ਪ੍ਰੰਨ (ਅੱਠਾਂ ਵਿੱਚੋਂ ਪੰਜ) 						CO3
	UNIT- IV <ul style="list-style-type: none"> (ੳ) ਲੋਕ ਸਾਹਿਤ ਦੇ ਰੂਪ (ਦੋ ਵਿੱਚੋਂ ਇਕ) (ਜ) ਕਿੱਸਾ (ਜਜ) ਵਾਰ (ਜਜਜ) ਕਾਫ਼ੀ (ਜਡ) ਜੰਗਨਾਮਾ (ਅ)ਛੰਦ-ਪ੍ਰਬੰਧ:(ਦੋ ਵਿੱਚੋਂ ਇਕ (ਜ) ਦੇਹਿਰਾ (ਜਜ) ਸੋਰਠਾ (ਜਜਜ) ਕੋਰੜਾ (ਜਡ) ਦਵੱਈਆ 						CO4

Reference Books:

- ਮੱਧਕਾਲ ਦੀ ਚੋਣਵੀਂ ਪੰਜਾਬੀ ਕਵਿਤਾ - ਡਾ. ਪ੍ਰੀਤਮ ਸਿੰਘ (ਸੰਪਾ.) ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਚੰਡੀਗੜ੍ਹ।
- ਅੱਠੇ ਪਹਿਰ - ਦਪੀਲ ਕੌਰ ਟਿਵਾਣਾ (ਸੰਪਾ.) ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ ਚੰਡੀਗੜ੍ਹ।
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀ ਉਤਪਤੀ - ਡਾ. ਹਰਿਭਜਨ ਸਿੰਘ
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀ ਉਤਪਤੀ ਤੇ ਵਿਕਾਸ (1968) ਕਿਰਪਾਲ ਸਿੰਘ ਕਸੇਲ, ਪਰਮਿੰਦਰ ਸਿੰਘ ਗੋਬਿੰਦ ਸਿੰਘ ਲਾਂਬਾ, ਲਾਹੌਰ ਬੁੱਕ ਹਾਊਸ, ਲੁਧਿਆਣਾ।
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ(1987) ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ(1972) ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆ

COURSE-16

Course Code	NCC 201A
Course Title	NCC Organization and National Integration

Hours	L:3, T:0, P:0						
Credits	3						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Know about the history of NCC, its organization, and the incentives of NCC for their career prospects.						
	CO2: Acquire knowledge of duties and conduct of NCC cadets.						
	CO3: Understand different NCC camps and their conduct.						
	CO4: Explain the concept of national integration and its importance.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL
Weightage	0%	0%	0%	0%	100%	0%	0%
Examination Mode	Theory						
Syllabus	Unit 1 : NCC Organization						CO1
	Introduction of NCC, History, Aims, and Objective of NCC						
	NCC as Organization, NCC song, Training of NCC, Incentives of joining NCC, Duties of NCC Cadet.						
	NCC Camps: Types & Conduct. Ranks in Amry, Air Force and Navy, Organizational structure of Indian Army.						CO2
	Unit 2 : National Integration & Awareness						
	National Integration: Importance & Necessity, Emotional integration, Factors Affecting National Integration, Unity in Diversity & .						
	Role of NCC in Nation Building, Threats to National Security. India and its neighbor, Contribution of Youth in National Building						CO3
	Unit 3 : National Integration and Awareness						
	Water Conservation and Rain Harvesting						
Waste Management and Energy Conservation						CO4	
Unit 4 : Social Service and Community Development							
Basics of social service and its need, Types of social service activities, Objectives of rural development programs and its importance,							

	NGO's and their contribution in social welfare, the contribution of youth, and NCC in Social welfare.	
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COURSE-17

Course Code	EDU 291						
Course Title	Recording Best Practices in Different School						
Hours	L: T: P:1week						
Credits	1						
Type	Core Course						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: To comprehend the various teaching methodologies and approaches employed in different educational institutions.</p> <p>CO2: To learn how to adapt and implement effective instructional practices that can lead to improved student learning outcomes across different contexts.</p> <p>CO3: To connect with educators from various backgrounds and exchange ideas, resources, and experiences to enrich one's teaching practice.</p> <p>CO4: To stay informed about the latest trends, innovations, and research findings in education by learning from the experiences and practices of various educational institutions.</p>						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL
Weightage	0%	0%	0%	0%	0%	100%	0%
Examination Mode	Practical						
Syllabus	<p>Best practices are an inherent part of a curriculum that exemplifies the connection and relevance identified in educational research. They interject rigor into the curriculum by developing thinking and problem-solving skills through integration and active learning. Relationships are built through opportunities for communication and teamwork. Best practices are applicable to all grade levels and provide the building blocks for instruction. Best practices motivate, engage and prompt students to learn and achieve. Students who receive a balanced curriculum and possess the knowledge, skills and abilities to transfer and connect ideas and concepts across disciplines will be successful as</p>						

Syllabus

Unit 1	
CONTEMPORARY INDIA <ul style="list-style-type: none">• Right to Education and Universal Access, Equality of Educational Opportunity.• Universal Elementary Education (UEE): Meaning, Definition and Challenges.• Impact of liberalization, privatization and globalization (LPG) on education.• Population explosion and educational challenge: Population size; composition and distribution in India; consequences of population growth;	CO1
Unit 2	
CONSTITUTIONAL PROVISIONS AND EDUCATION <ul style="list-style-type: none">• Constitutional Provisions on Education that reflect National ideals.• Democracy and the values of Equality, Justice, Freedom, Concern for others 'Wellbeing, Secularism, respect for Human Dignity and Rights.• India as an evolving Nation: Vision, Nature and Salient Features; Democratic and Secular polity, Federal structure: Implications for the educational system; Aims and purposes of education drawn from the constitutional provision• Fundamental Rights & Duties of Citizens.• Decentralization of Education and Panchayati Raj (Specifically though 73rd and 74th Amendment)	CO2
Unit 3	
POLICY FRAMEWORK FOR DEVELOPMENT OF EDUCATION IN INDIA <ul style="list-style-type: none">• Education in Post- Independence Period: Mudaliar Commission (1952); Education Commission (1964-66); NPE1968; NPE 1986 and its modified version 1992; Learning Without Burden-1993, Knowledge Commission (NCF 2005); Justice Verma Commission- 2012, NPE 2020 and Language Policy.• Emerging Trends in the interface between: Political Process and Education, Economic Developments and Education, Socio- Cultural Changes and Education, The idea of the Common School System and National System of Education.	CO3
Unit 4	CO4

INITIATIVES OF THE GOVERNMENT OF INDIA

- Sarva Shiksha Abhiyan (SSA)
- Rashtriya Madhyamik Shiksha Abhiyan (RMSA)
- Mid-Day Meal
- Challenges in Implementation of RTE Act 2009.
- Meaning of Equality and Constitutional Provisions, Issues of Quality and Equity.
(The above to be discussed with specific reference to physical, economic, social and cultural access, particularly to the girl child and weaker sections as well as differently-abled children)
- School safety

Reference Books :

- Kumar, Ajay, 2021, Education in Contemporary India, Kalyani Publishers, New Delhi.
- Anand, C.L. et.al. (1983). Teacher and Education in Emerging in Indian Society, NCERT, New Delhi.
- Govt. of India (1986). National Policy on Education, Min. of HRD, New Delhi.
- Krishnamurti, J. (1992). Education and world peace. In Social responsibility. Krishnamurti Foundation.
- Mohanty, J., (1986). School Education in Emerging Society, Sterling Publishers.
- Mukherji, S.M., (1966). History of Education in India, Acharya Book Depot, Baroda.
- GOI (1964-1966): _Education and National Development. Ministry of Education Government of India 1966.
- GOI (2004): Learning without Burden, Report of the National Advisory Committee. Education Act.
- Naik, J.P. & Syed, N., (1974). A Student 's History of Education in India, MacMillan, New Delhi.
- UNESCO; (1997). Learning the Treasure Within.

COURSE-2

Course Code	EDU 293A
Course Title	HEALTH, YOGA AND FITNESS
Hours	L:4, T:0, P:0
Credits	4
Type	Core Course

Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Discuss the scope and importance of physical education in context with ancient and modern Olympics.						
	CO2: Acquire knowledge about health education including different aspects of nutrition and personal hygiene.						
	CO3: Explain the Principles of first aid and different types of injuries along with their treatment.						
	CO4: Analyse the impact of various yogic practices and physical exercises on human body system.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	INTRODUCTION TO PHYSICAL EDUCATION • Meaning, Definition, Aims, Objectives, Scope and Importance of Physical Education- PhysicalFitness-Meaning, • Definition, Components and Benefits - Origin and Development of Ancient and ModernOlympics • Olympic torch, Olympic Flag, Marathon Race, Difference between Ancient and Modern Olympic Games - Recreational activities.						
	Unit 2						CO2
	CONCEPT OF HEALTH EDUCATION • Meaning, Definition, Aims, Objectives and Importance of Health Education– Nutrition -Malnutrition - Personal Hygiene • Health Education in Schools - Health Instruction, Health Services, Safety Education:Importance with reference to Schools, Playfields, Road • School and Home First Aid: Road, Water, Fire accidents and Snake bite •Common sports injuries: Strain, Sprain, Contusion, Laceration, Fractures and Dislocation.						
	Unit 3						CO3

	FIRST-AID- PRINCIPLES AND USES <ul style="list-style-type: none"> • Principles of first aid, first aid equipment's, Fracture - causes and symptoms and the first aid related to them, • Muscular sprain causes, symptoms and remedies, first aid related to hemorrhage, respiratory discomfort, first aid related to the natural and artificial carriage of sick and wounded persons, Treatment of unconsciousness, treatment of heatstroke 	
	Unit 4 YOGA, PHYSICAL EXERCISES AND FITNESS <ul style="list-style-type: none"> • Meaning, Definition and Uses of Yoga - Essentials of Yogic Practices- Eight limbs of Yoga- Methods and Benefits of selected Asanas and Pranayama- Physical Exercises, Types: Aerobic, Anaerobic, Effects of Physical Exercises on various systems - Circulatory, Muscular, Digestive and Respiratory systems - Difference between Physical Exercises and Yoga- Fitness components and its importance - Effect of Physical Exercises on human body systems. 	CO4

Reference Books :

- Agarwal, Satya, P. (1998). The social role of the Gita: How and why, Motilal Banarsidass.
- Goel Devraj & Goel Chhaya (2013) Universe of Swami Vivekananda & Complete Wholistic Social Development, CASE Publication under UGC SAP, The M.S University of Baroda, Vadodara.
- Porter, Noah. (2003) Falun Gong in the United States: An Ethnographic Study, Master Thesis, Department of Anthropology, College of Arts and Sciences, University of South Florida.
- Dhanajoy, S., & Seema, K. (2007). Lesson planning: Teaching methods and class management in physical education. New Delhi: Khal Sahitya Kendra.
- Nash T.N. (2006). Health and physical education. Hyderabad: Nilkamal Publishers.
- Prasad, Y. V. (2006). Method of teaching physical education. New Delhi: Discovery Publishinghouse.
- Sachdeva, M. S. (2006). School organization, administration and management. Ludhiana: DantonPublication
- Chandra, S., Sothi, & Krishnan.P. (2005). Health education and physical education. Delhi:Subject Publications.
- Mangal, S. K. (2005). Health and physical education. Ludhiana: Tandon Publication book market.
- Ajmer, S. (2003). Essentials of physical education. New Delhi: Kalyani Publishers.

COURSE-3

Course Code	EDU204A						
Course Title	ELECTIVE ENGLISH- IV						
Hours	L:5, T:0, P:0						
Credits	5						
Type	Core Course						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Critically elaborate literature across a wide range of literary age and context.						
	CO2: Interpret and appreciate poetry while refining their reading, writing, critical thinking, and expressive communication skills.						
	CO3: Critically analyze, interpret, and appreciate English novels, while nurturing higher-order thinking and literary insights.						
	CO4: Develop deep understanding and proficient application of diverse English literary terms for precise analysis and interpretation of texts with nuanced insight.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	Historical and Literary Characteristics of Victorian and Modern Age.						
	Unit 2						CO2
	POEMS • Break, Break, Break by Alfred Lord Tennyson. • Tears Idle Tears by A.L Tennyson. • My Last Dutches by Robert Browning. • Dover Beach by Matthew Arnold. • A Prayer for my daughter by William Butler Yeats. • Journey of the Magi by T.S Eliot.						
	Unit 3						
	NOVEL Hard Times by Charles Dickens.						
	Unit 4						
	• Literary Terms: Allegory, Allusion, Epic, Epithet, Hyperbole, Metaphor, Metonymy, Oxymoron, Personification, Satire, Imagery, Symbol, Alliteration, similie, Theme.						

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| <ul style="list-style-type: none"> • Identifying figures of Speech in sentences (unseen) • Precise Writings. |
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Reference Books :

- English Literature, Its History and Its Significance for the Life of the english-speaking World by William J. Long.
- Hewings, M. (2007). Advanced English Grammar. New Delhi: Cambridge University Press India Ltd.
- Rao, V.K. (2007). Peculiar English. New Delhi: Neelkamal Publications.
- Sharma G.L (2008). Glimpse of English Poetry. Chandigarh: Publication Bureau, Punjab University.
- Tickoo, C. & Kumar, J.S. (2000). Writing with a Purpose. New Delhi: Oxford University Press.

COURSE-4

Course Code	EDU206A						
Course Title	ELECTIVE HINDI-IV						
Hours	L:5, T:0, P:0						
Credits	5						
Type	Departmental Elective						
Course Outcomes	<p>On the completion of the course the students will be able to</p> <ul style="list-style-type: none"> • एकांकी के तत्वों के आधार पर समीक्षात्मक प्रश्न करेंगे। • पाठ्य क्रम में दिए गए नाटक और एकांकी की परिभाषा, तत्व और वर्गीकरण पर आधारित दोनों विधाओं सम्बन्धी प्रश्न करेंगे • व्यवहारिक व्याकरण सम्बन्धित प्रश्न का उत्तर करेंगे। • निर्धारित विषय पर सार लेखन करेंगे। • विराम चिह्नों का प्रयोग व्यवहारिक रूप में करेंगे। <p>देवनागरी लिपि के विकास व गुणों को जानकर दोष व सुधारों के उपायों को तैयार करेंगे।</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						

Syllabus	UNIT-I <ul style="list-style-type: none"> आदर्श एकांकी संग्रह सं० डा. संसार चन्द्र, पंजाब यूनिवर्सिटी पब्लिकेशन ब्यूरो, चण्डीगढ़ द्वारा प्रकाशित। एकांकी के तत्वों के आधार पर समीक्षात्मक प्रश्न ;सार-लेखन, चरित्र-चित्रण, उद्देश्य सम्बन्धी ख.संदर्भ सहित व्याख्या नहीं पूछी जायेगी। 	C01
	UNIT-II <ul style="list-style-type: none"> समीक्षा सिद्धान्त: केवल नाटक तथा एकांकी परिभाषा, तत्त्व और वर्गीकरण पर आधारित नाटक तथा एकांकी दोनों विधाओं सम्बन्धी प्रश्न पूछे जायेंगे 	C02
	UNIT- III <ul style="list-style-type: none"> तकनीकी शब्दावली: केवल प्रशासकीय शब्दावली, (संलग्न शब्दावली।) निमंत्रण पत्र, विज्ञापित/विज्ञापन का अपतैयार करना देवनागरी लिपि: विकास गुण व दोष सुधार के उपाय 	C03
	UNIT- IV <ul style="list-style-type: none"> व्यावहारिक व्याकरण <ul style="list-style-type: none"> (क) समाकृति, भिन्नार्थक शब्द-युग्म (ख) स्वर संधि एवं व्यंजन सन्धि (ग) सन्धि-विच्छेद (केवल व्यावहारिक) (घ) वाक्य शोधन (ङ) विराम चिह्न 	C04

Reference Books:

- चन्द्र संसार (२००६) आदर्श एकांकी संग्रह, पंजाब यूनिवर्सिटी पब्लिकेशन ब्यूरो, चण्डीगढ़।
- कुमार सुशील (२००९) सामान्य हिन्दी, प्रयाग पुस्तक भवन, इलाहाबाद
- सिंह बहादुर (२००८) हिन्दी साहित्य का इतिहास, माधव प्रकाशन, यमुनानगर।
- बाहरी हरदेव (२००४) हिन्दी उद्भव विकास और रूप, किताब महल, इलाहाबाद।
- दीक्षित भागीरथि (२००३) समीक्षालोक, इन्द्रप्रस्थ प्रकाशन दिल्ली।
- जैन निर्मला (२००६) नई समीक्षा के प्रतिमान, नेशनल पब्लिशिंग हाउस, दिल्ली।
- तिवारी भोलानाथ (२००८) भाषाविज्ञान, किताबमहल एजेन्सीज़, इलाहाबाद।

COURSE-5

Course Code	EDU208A						
Course Title	ELECTIVE PUNJABI-IV						
Hours	L:5, T:0, P:5						
Credits	5						
Type	Departmental Elective						
Course Outcomes	<p>On the completion of the course the students will be able to</p> <ul style="list-style-type: none"> • ਇਸ ਪੇਪਰ ਦਾ ਉਦੇਸ਼ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਮਧਕਾਲੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਸੰਬੰਧੀ ਸੰਪੂਰਨ ਜਾਣਕਾਰੀ ਦੇਣਾ ਹੈ। • ਕਹਾਣੀ ਰਾਹੀਂ ਵਿਦਿਆਰਥੀਆਂ ਦੇ ਅਨੁਭਵ ਨੂੰ ਹੋਰ ਡੂੰਘਾ ਬਣਾਉਣਾ ਹੈ। • ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ ਸੰਬੰਧੀ ਤੱਥਾਂ ਨੂੰ ਹੋਰ ਸਪੁਰ ਕਰਨਾ ਹੈ। • ਕਹਾਣੀ ਸਾਹਿਤ ਰੂਪ ਬਾਰੇ ਵਿਸਥਾਰਪੂਰਵਕ ਚਰਚਾ ਕਰਨਾ ਹੈ। 						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	<p>UNIT- I</p> <ul style="list-style-type: none"> • (ੳ)ਮੱਧਕਾਲੀ ਕਾਵਿ ਸੁਰੰਧੀਆਂ(ਸੰਪਾ: ਡਾ. ਧਰਮ ਸਿੰਘ)ਪੁਸਤਕ ਵਿਚੋਂ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) • (ਅ)ਨਿਰਧਾਰਤ ਕਾਵਿ- ਪੁਸਤਕ ਵਿਚੋਂ ਕਿਸੇ ਇੱਕ ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਲੇਸ਼ਣਾ ਕੇ ਸਾਰ ਕਰਨਾ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) 						CO1
	<p>UNIT- II</p> <ul style="list-style-type: none"> • (ੳ) ਕਥਾ—ਪ੍ਰਵਾਹ (ਸੁਰਿੰਦਰ ਕੁਮਾਰ ਦਵੇਵਰ)ਪੁਸਤਕ ਵਿਚੋਂ ਘਟਨਾਵਾਂ, ਥੀਮ, ਪਾਤਰ ਚਿਤਰਨ ਤੇ ਕਥਾ ਜੁਗਤਾਂ ਸੰਬੰਧੀਪ੍ਰਸੰਗ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) • (ਅ) ਕਹਾਣੀ ਸੰਗ੍ਰਹਿ ਵਿਚੋਂ ਕਿਸੇ ਇੱਕ ਕਹਾਣੀ ਦੀ ਸਾਹਿਤਕ ਪਰਖ (ਦੋ ਪ੍ਰਸੰਗਾਂ ਵਿਚੋਂ ਇੱਕ ਕਰਨਾ) 						CO2
	<p>UNIT- III</p> <ul style="list-style-type: none"> • ਕਾਵਿ ਸੰਗ੍ਰਹਿ ਤੇ ਕਹਾਣੀ ਸੰਗ੍ਰਹਿ ਵਿਚੋਂ ਲਘੂ ਉਸ਼ਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸੰਗ (ਔਨ ਪ੍ਰਸੰਗਾਂ ਵਿਚੋਂ ਪੰਜ) • (ਪ੍ਰਸੰਗ ਦਾ ਉਸ਼ਤਰ ਤਿੰਨ- ਚਾਰ ਸਤਰਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ) 						CO3

	UNIT- IV <ul style="list-style-type: none"> ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (1701 ਈ: ਤੋਂ 1900 ਈ:) ਵਾਰ ਕਾਵਿ, ਜੰਗਨਾਮਾ ਅਤੇ ਕਿੱਸਾਸਾਹਿਤ (ਸੰਖੇਪ ਉਸ਼ਤਰਾਂ ਵਾਲੇ ਪ੍ਰੰਨ) (ਅੱਠ ਵਿੱਚੋਂ ਕੋਈ ਪੰਜ—ਉਸ਼ਤਰ ਤਿੰਨ ਸਤਰਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ) ਨਿਰਧਾਰਿਤ ਕਵੀਆਂ ਉਸ਼ਤੇ ਨੋਟ (ਜੀਵਨ, ਰਚਨਾ, ਯੋਗਦਾਨ), (ਹੂਮ ਸ਼ਾਸ, ਕਾਦਰਯਾਰ, ਸ਼ਾਸ ਮੁਹੰਮਦ, ਭਗਵਾਨ ਸਿੰਘ) ਦੇ ਵਿੱਚੋਂ ਇੱਕ 	CO4
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Reference Books:

- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (1701-1900)- ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ।
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (1701-1900)- ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ— ਡਾ. ਹਰਿਭਜਨ ਸਿੰਘ ਭੂਾ ਵਿਭਾਗ (1972), ਪਟਿਆਲਾ।
- ਜੰਗਨਾਮਾ ਸਿੰਘਾਂ ਤੇ ਫਰੰਗੀਆਂ—ਸੰਘਾ. ਕਿਰਪਾਲ ਸਿੰਘ ਕਸੇਲ (2001) ਭੂਾ ਵਿਭਾਗ, ਪਟਿਆਲਾ।
- ਮੱਧਕਾਲੀ ਕਾਵਿ ਸੁਰੰਗੀਆਂ(ਸੰਘਾ:) ਡਾ. ਧਰਮ ਸਿੰਘ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ। (ਨਿਰਧਾਰਿਤ ਕਵੀ : ਹੂਮ ਸ਼ਾਸ, ਕਵੀ ਸੋਧਾ, ਕਾਦਰਯਾਰ, ਮੁਹੰਮਦ, ਭਗਵਾਨ ਸਿੰਘ)
- ਕਥਾ ਪ੍ਰਵਾਹ (ਸੰਘਾ:) ਸੁਰਿੰਦਰ ਕੁਮਾਰ ਦਵੇਵਰ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ

COURSE-6

Course Code	EDU214A						
Course Title	DIFFERENTIAL EQUATIONS, VECTOR CALCULUS AND MECHANICS						
Hours	L:5, T:0, P:0						
Credits	5						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Solve partial differential equations, charpits method, solve some special types of equations, partial differential equation with constant coefficients.						
	CO2: Derive theorems related to differentiation and integration of transforms.						
	CO3: Explain motion in one dimension, parallel forces, newton law of motion, resolved parts of force, moments.						
Examination Type	Theory						
	Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP
Weightage	10%	10%	25%	0%	50%	0%	5%

Examination Mode	Theory	
Syllabus	Unit 1	CO1
	Differentiation and integration of transforms Convolution theorem solution of integral equations and systems of differential equations using the Laplace transformations.	
	Unit 2	
	Partial differential equations of the first order Lagrange's solution, some special types of equations which can be solved easily by methods other than the general method Charpit 's general method of solution	CO2
	Unit 3	CO3
	Preliminary concepts, Force Systems – coplanar, collinear, concurrent, parallel, equivalent force systems Forces acting at a point-parallel, law of forces, resolved parts of a force, triangle law of forces Polygon law of forces, Parallel forces-two like parallel, unlike parallel Moments –moment of force, Varignon's theorem	
	Unit 4	CO4
	Dynamics-state of rest and motion, displacement, velocity, speed, acceleration; motion with constant acceleration; Newton's laws of motion Weight carried by a lift, Atwood's machine, motion on a smooth inclined plane; constrained motion along a smooth inclined plane; motion under variable acceleration	

Reference Books :

- Ayres, F. (1972). Theory and Problems of Differential Equations. McGraw-Hill Book Company.
- Bronson, R. (1973). Theory and Problems of Differential Equations. McGraw-Hill Book Company.
- Erwin, K. (1999). Advanced Engineering Mathematics. John Wiley & Sons Inc., New York.
- Forsyth, A.R. (1998). A Treatise on Differential Equations. Macmillan and Co. Ltd., London.
- Hilderbrand, F.B. (1977), Advanced Calculus or Applications. Prentice Hall of India Pvt. Ltd., New Delhi.

- ## COURSE-7

Course Code	EDU250						
Course Title	ECOLOGY AND APPLIED ZOOLOGY						
Hours	L:4, T:0, P:0						
Credits	4						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Illustrate the basic concepts of ecology and pollution.						
	CO2: Construct various types of bio geochemical cycles functioning in the ecosystem						
	CO3: Define the term population and identify the various means of environmental conservation						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	Basic concepts of ecology: Definition, significance. Concepts of habitat and ecological niche. Factors affecting environment: Abiotic factors (light-intensity, quality and duration), temperature, humidity, topography; edaphic factors; biotic factors.						
	Pollution – Definition and types (air, water, soil, pesticide, noise and thermal pollutions); causes, types of pollutants, sources, effects and control measures for air, water and soil pollutions						

	Unit 2	CO2
	Ecosystem and Community: Definition, Types and examples of ecosystem- terrestrial (grassland) and aquatic (pond). Concept, components, properties and functions; Ecological energetic and energy flow-food chain, food web, trophic structure; ecological pyramids concept of productivity, Bio geochemical cycles: Concept, reservoir pool, gaseous cycles and sedimentary cycles	
	Unit 3	CO3
	Population: Growth and regulation Environmental conservation: Natural resources and conservation - mineral and energy resources and conservation; soil and conservation; environmental crisis; biodiversity and its importance; wildlife of India and conservation; Application of the study of ecology in wild life conservation and sustainable development.	
	Unit 4	CO4
	Beneficial animals: Basic principles of practices in culturing; Sericulture, Apiculture, Aquaculture. lac culture, edible and pearl oyster Harmful animals: Pests -morphology, life cycle, damages caused and control measures of common insect pests of stored food grains and crops, nematode pests of crops, insect vectors (each two); Control – biological control and integrated pest management (IPM)	

Reference Books :

- Krebs, J.C. *Ecology*. New York: Harper & Row, Publ., 2009.
- Odum, E.P. *Fundamentals of Ecology*. Indian Edition. Thomson Brooks/Cole, 2008.
- Clarke, G. L. *Elements of Ecology*. New York: John Wiley & Sons, 1954.
- Kendeigh, S.C. *Ecology with special reference to animals and man*. New Delhi: Prentice Hall of India, 1961.
- Smith. *Ecology*. New York: Harper & Row Publishers, 1990.
- Kormondy, E.J. *Concepts of Ecology*. 2nd ed. New Delhi: Prentice Hall of India, 2005.

- Campbell, N.A. and Reece J.B. *Biology*. IX Edition. Pearson, Benjamin, Cummings, 2011.
- Douglas, J. Futuyma. *Evolutionary Biology*. Sinauer Associates, 1997.
- Hall, B.K. and Hallgrimson, B. *Evolution* IV Edition. Jones and Barlett Publishers, 2008.
- Strickberger, M.W. *Genetics*. 3rd Edition. Prentice-Hall, India. 2008. Print.
- Jones, S. *The Language of the Genes*. HarperCollins Publishers. 2012. Print.
- Ridley, M. *Nature via Nurture: Genes, Experience, & What Makes Us Human*. HarperCollins Publishers. 2004. Print.
- Aggarwal, V.K. and Verma, V.S. *Genetics*. 9th Edition. S. Chand, India. 2010. Print.
- Snustad, D.P. and Simmons, M.J. *Principles of Genetics*. 6th Edition. John Wiley & Sons. 2011. Print.
- Pierce, B.A. *Genetics: A Conceptual Approach*. 4th Edition. W.H. Freeman & Company 2010. Print
- Fundamentals of Ecology by E.P. Odum – W.B. Saunders, Philadelphia).
- Environmental Studies by S.V.S. Rana – (Rastogi Publications, 2008).
- Animal Ecology by S.P. Singh, 6th Revised Edition – (Rastogi Publications, 2008).
- Basic Ecology by E.P Odum (Holt, Rinehart & Winston, New York).
- Ecology by S.K. Charles – (Prentice Hall of India, New Delhi)
- Genetics by Stricksberger – (MacMillan).
- Principles of Genetics by Sinnott, Dunn and Dobzhansky – (McGraw Hill).
- Genetics by E. Altenberg – (Holt, Rinehart & Winston, New York).
- Principles of Genetics by Gardner – (John Willey).
- Principles of Genetics by Irwin H. Herskowitz – (Little Brown & Co., Boston).
- Elementary Genetics by Singleton WR – (Van Nostrand).
- Basic Human Genetics by Elain J. Mange & Arthur P. Mange – (Rastogi Publications, 2008).

COURSE-8

Course Code	EDU252A
Course Title	ECOLOGY AND APPLIED ZOOLOGY LABPRATORY
Hours	L:0, T:0, P:2
Credits	1
Type	Departmental Elective
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills :</p> <p>CO1: Estimate the different components of pond water.</p> <p>CO2: Prepare Karyograms, study population of local insects and endangered species.</p> <p>CO3: Explain Mendel's laws and study about blood groups.</p>

	CO4: Illustrate rearing and harvesting practices of silkworm from cocoon.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	<p>It will include the following activities:</p> <p>Estimation of dissolved oxygen in the pond water.</p> <p>Estimation of dissolved alkalinity in the pond water.</p> <p>Estimation of dissolved salinity in the pond water.</p> <p>Population study of Local insects and ciliates in the culture medium for growth pattern (logistic and exponential curves).</p> <p><i>Study any five endangered/ threatened species- one from each class.</i></p> <p>Preparation of karyograms from the given photographs for karyotypic formula.</p> <p>Study of Mendel 's laws, and deviations from Mendelian ratios using seed samples in the ratios of 9:7, 9:4:3, 13:3, 15:1,12:3:1. Use Chi-Square Test for Testing the ratios</p> <p>Isolation of chloroplasts by sucrose gradient. Photographs of Restriction site variation of chloroplast DNA</p> <p>Detection of Blood groups (A B O & Rh factors)</p> <p>Paternity disputes (blood groups)</p> <p>Rearing of two races of silkworm from egg to cocoon stages – conditions required, quality and quantity of food provided, precaution taken during feeding, moulting and spinning.</p> <p>Harvesting cocoons, reeling of silk from the cocoons, study of some economic traits – fecundity, larval duration, cocoon weight, shell weight and silk weight.</p>						CO1, CO2, CO3, CO4
<p><i>Field visit to study the common practices in rearing of honeybees and fish</i></p> <p><i>Note: The above mentioned practical 's is in accordance with the guidelines of UGC.</i></p> <p><i>Practical 's involving animal material will be conducted using models/charts/e-resources.</i></p> <p><i>Minor modifications in the curriculum are allowed subject to the availability of resources. The students will undertake a tour to study, identify HABITAT of marine and terrestrial animals.</i></p>							

COURSE-9

Course Code	EDU 242
Course Title	INORGANIC CHEMISTRY- II
Hours	L:4, T:0, P:0
Credits	4
Type	Core Course

Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Discuss chemistry of coordination compounds and Reaction kinetics. CO2: Differentiate between the series of Transition elements. CO3: Elaborate the concept of organometallic compounds CO4: Integrate the various concepts of Bioinorganic Chemistry						
	Theory						
	Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	Coordination Chemistry: Werner ‘s theory, valence bond theory (inner and outer orbital complexes), electroneutrality principle and back bonding. Crystal field theory, measurement of CFSE10Dq in weak and strong fields, pairing, t _{2g} energies, factors affecting the magnitude of 10 Dq (Octahedral vs. tetrahedral coordination, IUPAC nomenclature of coordination compounds, isomerism in coordination compounds. Stereochemistry of complexes with 4 and 6 coordination numbers. Chelate effect, polynuclear complexes, Labile and inert complexes.						
	Reaction Kinetics and Mechanism: Introduction to inorganic reaction mechanisms. Substitution reactions in square planar complexes, Trans- effect, theories of trans effect, Mechanism of nucleophilic substitution in square planar complexes.						
	Unit 2						CO2
	Transition Elements: General group trends with special reference to electronic configuration, colour, variable valency, magnetic and catalytic properties, ability to form complexes. Difference between the first, second and third transition series. Chemistry of Fe and Co in various oxidation states (excluding their metallurgy) Lanthanides and Actinides: Electronic configuration, oxidation states, colour, spectral and magnetic properties, lanthanide contraction.						
	Unit 3						CO3
Organometallic Compounds: Definition and classification of organometallic compounds on the basis of bond type. Concept of hapticity of organic ligands. Metal carbonyls: 18 electron rule, electron count of mononuclear, polynuclear and substituted metal carbonyls of 3d series. General methods of preparation (direct combination, reductive carbonylation, thermal and photochemical decomposition) of mono and binuclear carbonyls of 3d series.							

	<p>Zeise 's salt: Preparation and structure, evidences of synergic effect and comparison of synergic effect with that in carbonyls.</p> <p>Ferrocene: Preparation and reactions (acetylation, alkylation, metallation, Mannich Condensation). Structure and aromaticity</p> <p>Catalysis by Organometallic Compounds: Study of the following industrial processes and their mechanism: Alkene hydrogenation (Wilkinsons Catalyst), Wacker Process.</p>	
	Unit 4	CO4
	<p>Bioinorganic Chemistry: Metal ions present in biological systems, classification of elements according to their action in biological system. Geochemical effect on the distribution of metals. Excess and deficiency of some trace metals. Toxicity of metal ions (Hg, Pb, Cd and as), reasons for toxicity.</p>	

Reference Books :

- Purcell, K.F & Kotz, J.C. *Inorganic Chemistry* W.B. Saunders Co, 1977.
- Huheey, J.E., *Inorganic Chemistry*, Prentice Hall, 1993.
- Lippard, S.J. & Berg, J.M. *Principles of Bioinorganic Chemistry*, Panima Publishing Company 1994.
- Cotton, F.A. & Wilkinson, G, *Advanced Inorganic Chemistry*. Wiley-VCH, 1999
- Basolo, F, and Pearson, R.C., *Mechanisms of Inorganic Chemistry*, John Wiley & Sons, NY, 1967.
- Greenwood, N.N. & Earnshaw A., *Chemistry of the Elements*, Butterworth-Heinemann, 1997.
- Vogel, A.I. *A Textbook of Quantitative Inorganic Analysis*, ELBS. 1978.

COURSE-10

Course Code	EDU244A						
Course Title	INORGANIC CHEMISTRY- II LABORATORY						
Hours	L:0, T:0, P:2						
Credits	1						
Type	Core Course						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Perform the Isometric titrations.						
	CO2: Prepare the Inorganic Salts.						
	CO3: Estimate Gravimetric analysis.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP

Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	<p>It will include the following activities:</p> <p>(A)Iodo / Iodimetric Titrations</p> <p>Estimation of Cu (II) and K₂Cr₂O₇ using sodium thiosulphate solution (Iodimetrically).</p> <p>Estimation of (i) arsenite and (ii) antimony in tartar-emetic iodimetrically</p> <p>Estimation of available chlorine in bleaching powder iodometrically.</p> <p>(B)Inorganic preparations</p> <p>Cuprous Chloride, Cu₂Cl₂</p> <p>Preparation of Manganese (III) phosphate, MnPO₄.H₂O</p> <p>Preparation of Aluminium potassium sulphate KAl (SO₄)₂.12H₂O (Potash alum) or Chrome alum.</p> <p>Gravimetric Analysis</p> <p>Estimation of nickel (II) using Dimethylglyoxime (DMG).</p> <p>Estimation of iron as Fe₂O₃ by precipitating iron as Fe (OH)₃.</p>						CO1, CO2, CO3

COURSE-11

Course Code	EDU246						
Course Title	STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS						
Hours	L:4, T:0, P:0						
Credits	5						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Describe basic body plan and modifications in flowering plant CO2: Distinguish between types of tissue system in monocot and dicot Plants CO3: Explain the concept and types of Pollination. CO4: Comprehend the meaning of Double fertilization, types of Ovules and seed formation.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%

Examination Mode	Theory	
Syllabus	Unit 1	CO1
	The basic body plan of a flowering plant. Diversity in plant form in annuals, biennials and perennials. Root system: Tap root and adventitious root system and their various types; structural and anatomical modifications. Stem: Modifications of aerial and underground stem Leaf: Venation, phyllotaxy, simple and compound leaves, functions and modifications; internal structure (dicot and monocot leaves).	
	Unit 2	
	Tissue systems: Meristematic, shoot apex, root apex; simple and complex permanent tissues, special tissues; internal structure of primary dicot stem & root (<i>Helianthus</i>); secondary growth in dicot stem & root (<i>Helianthus</i>); internal structure of monocot stem & root (<i>Zea mays</i>); differences between dicot stem and monocot stem; differences between dicot root and monocot root.	CO2
	Unit 3	CO3
	Flower: As a modified shoot, functions; structure of anther and pistil; structure and development of male and female gametophytes. Types of pollination, advantages and disadvantages of self and cross-pollination; contrivances for self and crosspollination, types of cross-pollination, characters of flowers pollinated by different agencies.	
	Unit 4	CO4
	Double fertilization and its significance; different types of ovules and embryo-sacs. Seed formation: Development of endosperm and embryo. Fruit development and parthenocarpy. Significance of seed: ecological adaptation and dispersal strategies.	

Reference Books :

- Bhojwani, S.S. and Bhatnagar, S.P., The Embryology of Angiosperms, 5th edition. Vikas Publishing House Pvt. Ltd., Delhi, 2009.
- Pandey, S.N., Chadha, A., Plant Anatomy and Embryology, Vikas Publishing House Pvt. Ltd., Delhi, 1996.
- Rudall, P.J., Anatomy of Flowering Plants - An Introduction to Structure and Development, Cambridge University Press, USA, 2007
- Singh, V., Plant Anatomy and Embryology of Angiosperms, Global Media Publications, Delhi 2010.
- Singh, V., Pande, P.C. and Jain, D.K., A Text Book of Botany: Structure Development and Reproduction in Angiosperms, Rastogi Publications, Meerut, 2013.

- COURSE-12**

Course Code	EDU256A						
Course Title	STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS LABORATORY						
Hours	L:0, T:0, P:2						
Credits	1						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Observe different types of Modifications found in leaf ad underground stem						
	CO2: Examine the differences between Monocot and Dicot plants.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	It will include the following activities: Modifications of underground stem and leaf modifications Study through permanent slides: i. V.S. dicot leaf ii. V.S. monocot leaf T.S. dicot stem & root (Helianthus) T.S. monocot stem & root (Zea maize) Sectioning to differentiate between monocot and dicot roots						CO1, CO2
Note: To make the students familiar with plants, (preferably pertaining to syllabus) the teachers are required to organize excursions to forests and hills.							

COURSE-13

Course Code	EDU254						
Course Title	ANALOG SYSTEM AND APPLICATION						
Hours	L:4, T:0, P:0						
Credits	4						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Explore the operation and characteristics of Semiconductors.						
	CO2: Explain the characteristics, construction and operation of junction transistors.						
	CO3: Design and analyse analog amplifiers and various Signal Processing circuits.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1: SEMICONDUCTOR DIODES						CO1
	Semiconductor materials, doping, Energy Level Diagram, Carrier transport in semiconductors: Conductivity and Mobility, Concept of Drift velocity						
	Barrier Formation in PN Junction Diode, Static and Dynamic Resistance, Current Flow Mechanism in Forward and Reverse Biased Diode and its applications, Zener diode and voltage regulation						CO2
	Unit 2 : JUNCTION TRANSISTORS						
Bipolar Junction transistors: n-p-n and p-n-p Transistors, Current components in transistors, Characteristics of CB, CE and CC Configurations, Current gains α and β Relations between α and β , Load Line analysis of Transistors						CO2	
DC Load line and Q- point. Physical Mechanism of Current Flow, Active, Cut off and Saturation Regions, Amplifiers: Transistor Biasing and Stabilization Circuits, Fixed Bias and Voltage Divider Bias, FET, MOSFET							

	Unit 3 :AMPLIFIERS	CO3
	Amplifiers, Classification of Class A, B & C Amplifiers, coupled amplifiers: Two stage R Coupled amplifier and its frequency response. Feedback in Amplifiers: Effects of Positive and Negative Feedback on Input Impedance, Output Impedance, Gain, Stability, Distortion and Noise.	
	Unit 4 OPERATIONAL AMPLIFIER	CO4
	Operational Amplifiers Characteristics of an Ideal and Practical OpAmp (IC 741), Open-loop and Closed-loop Gain, Frequency Response, CMRR, Slow Rate, and concept of Virtual ground	
	Inverting and non-inverting amplifiers applications of Op Amps Adder, Sub tractor, Differentiator, Integrator and Log amplifier.	

Reference Books :

- J. Millman, and C. C. Halkias, Electronic Devices and Circuits. New Delhi: Tata McGraw Hill, 1983
- J. D. Ryder, Electronic Fundamentals and Applications. New Delhi: Prentice Hall, 2004.
- M. S. Tyagi, Introduction to Semiconductor Materials and Devices, Singapore: John Wiley & Sons Inc., 1991
- M. S. Shu Introduction to Electronic Devices, Singapore: John Wiley & Sons Inc., 2000
- B. G. Streetman and S. Banerjee, Solid State Electronic Devices, New Delhi: Prentice Hall India, 5thEdn, 2001.
- S. Salivahanan and N.S. Kumar, Electronic Devices & circuits, 3rdEdn., New Delhi: Tata McGraw-Hill, 2012.
- R.A. Gayakwad, OP-Amps and Linear Integrated Circuit, 4thEdn., New Delhi: Prentice Hall, 2000.
- A.S. Sedra, K.C. Smith, A.N. Chandorkar, Microelectronic circuits, 6thEdn., Oxford: Oxford University Press, 2014.

COURSE- 14

Course Code	EDU257A
Course Title	DIGITAL SYSTEMS AND APPLICATION LABORATORY
Hours	28 L:0, T:0, P:2
Credits	1
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Design various analogue circuit components such as resistors ,capacitors and operational amplifiers.

	CO2: Create and design analogue circuits including filters, amplifiers and oscillator						
	CO3: Observe analog Signal Processing techniques such as modulation and demodulation.						
	CO4: Perform an experiment of V-I characteristics of PN junction diode, solar cells and Zener diode						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	<p>It will include the following activities:</p> <p>To study V-I characteristics of PN junction diode, and Light emitting diode.</p> <p>To study the V-I characteristics of a Zener diode and its use as voltage regulator.</p> <p>To study (a) Half-wave Rectifier and (b) Full-wave Bridge Rectifier and investigate the effect of C, L and π filters.</p> <p>To study the current voltage characteristics of the Tunnel diode.</p> <p>Study of V-I & power curves of solar cells, and find maximum power point & efficiency.</p> <p>To study the characteristics of a Bipolar Junction Transistor in CE, CB and CC configurations.</p> <p>To study the various biasing configurations of BJT.</p> <p>To design a CE transistor amplifier of a given gain (mid-gain) using voltage divider bias.</p> <p>To study the frequency response of voltage gain of a RC-coupled transistor amplifier.</p> <p>To design a phase shift oscillator of given specifications using BJT.</p> <p>To study the characteristics of Junction Field Effect Transistor (JFET).</p> <p>To study the characteristic of Metal Oxide Semiconductor Field Effect Transistor (MOSFET).</p> <p>To study the frequency response of voltage gain of a RC-coupled transistor amplifier.</p> <p>To design a Wien bridge oscillator for given frequency using an op-amp.</p> <p>To design a phase shift oscillator of given specifications using BJT.</p> <p>To study the Colpitts's oscillator.</p> <p>To design a digital to analog converter (DAC) of given specifications.</p> <p>To study the analog to digital convertor (ADC) IC.</p> <p>To design an inverting amplifier using Op-amp (741, 351) for dc voltage of given gain</p> <p>To design inverting amplifier using Op-amp (741, 351) and study its frequency response</p>						CO1, CO2, CO3, CO4

	<p>To design non-inverting amplifier using Op-amp (741,351) & study its frequency response</p> <p>To study the zero-crossing detector and comparator</p> <p>To add two dc voltages using Op-amp in inverting and non-inverting mode</p> <p>To design a precision Differential amplifier of given I/O specification using Op-amp.</p> <p>To investigate the use of an op-amp as an Integrator.</p>	
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COURSE-15

Course Code	EDU234						
Course Title	READING AND REFLECTING ON TEXTS						
Hours	L:2, T:0, P:0						
Credits	2						
Type	Core Course						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Develop advanced skills in analyzing and interpreting stories and narrative excerpts from a variety of literary genres.						
	CO2: Examine texts to uncover deeper meanings and explore narrative techniques of literary texts.						
	CO3: Reflect on the ideas expressed in the texts.						
	CO4: Plan, draft, edit, and present a piece of writing related to their understanding of the text.						
Examination Type	Theory						
Assessment Tools		Assignment/ Project Work					ABL/PBL/AT T
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1

	<ul style="list-style-type: none"> • Types of text-narrative, expository, descriptive, empirical, conceptual, ethnography, polity documents, fieldnotes. • Reflective reading-concept, components and factors. • Stories and excerpts from narratives (any one) <ul style="list-style-type: none"> o How I Taught My Grandmother to Read and other Stories- Sudha Murthy-Puffin. Books, 2004 o Tales from the Indian Jungle-Kenneth Anderson- Rupa & Co. 2001 o Tales of the Open Road- Ruskin Bond- Penguin UK-2006 o Encounters with Animals- Gerald Durrel-Penguin-2012 	
	<p>Unit 2</p> <p>Excerpts from the following: § The Diary of a Young Girl: Anne Frank, Random House. § The man who planted trees- Jean Giono, Chelsea Green Pub. § ‘I have a Dream’ Texts of speech delivered on Aug 28, 1963-Martin Luther King (Text and You tube version available.)</p>	CO2
	<p>Unit 3</p> <p>Essays /Excerpts from literary texts (any one or two) §The Elephant, the Tiger and the Cellphone-Shashi Tharoor, Penguin, India. §Nine Lives- In Search of the Sacred in Modern India-William Dalrymple, Bloomsbury, London. §Running in the Family- Michael Ontage, Bloomsbury, London. §Interpreter of Maladies- (Title Story)-Jhumpa Lahari, Mariner Books.</p>	CO3
	<p>Unit 4</p> <p>Essays/Excerpts from Educational and Scientific Texts (Choose any three) § Medium of education (The selected works of Gandhi-Vol.6), Nava Jeevan Publication. § A Brief History of Time- Stephen Hawking, Random House. § Fall of a Sparrow- Salim Ali, Oxford. § Education and world peace. In Social responsibility, (Krishnamurti, J.) Krishnamurti Foundation. § National curriculum framework – 2005. NCERT § Civilization and progress. In Crisis in civilization and other essays. (Tagore, R.) Rupa & Co. § RTE Act, 2009</p>	CO4

COURSE-16

Course Code	EDU272						
Course Title	LANGUAGE ACROSS THE CURRICULUM						
Hours	L:2, T:0, P:0						
Credits	2						
Type	Core Course						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Discuss the concerns for language in context to learners.						
	CO2: Describe the role of teacher in developing strategies for curriculum transaction.						
	CO3: Develop the concept of communication competencies in various aspects of language.						
	CO4: Appreciate the role of language laboratory.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	CONCERNS FOR LANGUAGE IN CURRICULUM • Varied language contexts of the learners: Dialect, Regional Varieties and Standard Language • Understanding Multilingualism in the classroom: Challenges and Strategies • Home language and School language.						
	Unit 2						CO2
	LANGUAGE AND CURRICULUM TRANSACTION • Classroom Discourse- developing strategies for using oral language in the classroom • Discussion as an approach for learning; • The nature of questioning in the classroom- types of questions and the teacher’s role.						
	Unit 3						CO3

	DEVELOPING COMMUNICATION COMPETENCIES- READING AND WRITING <ul style="list-style-type: none"> • Nature of Expository texts vs. Narrative texts; Transactional vs. Reflexive texts; Schema theory; Text structures; • Examining Content Area Textbooks; Reading Strategies- such as Scanning, Skimming and Reading for Extracting Information. • Making Reading-Writing connections: Note-making, Summarizing. 	CO4
	Unit 4	
	LANGUAGE LABORATORY <ul style="list-style-type: none"> • Language laboratory– the role of language laboratory in developing language skills, • Planning and installing of language laboratory- a basic requirement of language laboratory lab, Effective use of language lab. 	

Reference Books :

- Anderson, R.C. (1984). Role of the Readers Schema in Comprehension, Learning and Memory. In R.C. Anderson, J. Osborn & R.J. Tierney (ed.) Learning to Read in American schools: Based Readers and content texts. Hillsdale, Lawrence Erlbaum Associates: New Jersey.
- Applying a Vygotskian Model of Learning and Development in B. Spode (ed.) Handbook of research on the education of young children. Macmillan: New York.
- Armbruster, Bonnie B. (1984). The Problem of & quot; Inconsiderate Text & quot;; In Duffy, G. G. (ed.) Comprehension Instruction, Perspectives and Suggestions. Longman: New York.
- Butler, A. and J. Turn bill, (1984). Towards Reading-Writing Classroom Primary English Teaching Association Cornell University: New York.
- Freedman S. W. and A. H. Dyson (2003). Writing in Flood J. et. al. Handbook of Research on Teaching English Language 102 Arts: Lawrence Erlbaum Associates Inc: New Jersey, USA.
- Kumar Krishna (2007). The Childs Language and the Teacher. National Book Trust: New Delhi.

COURSE-17

Course Code	NCC 202A
Course Title	Training: Drill, Map Reeding, Field and Battle Craft
Hours	L:0, T:0, P:2
Credits	2
Type	Departmental Elective

Course Outcomes	On the completion of the course, the student will students will be able to :						
	CO1 : Perform foot drills and follow the different words of command						
	CO2 : Fire a weapon effectively with a fair degree of marksmanship.						
	CO3 :Undertake point-to-point navigation and take part in route marches by day and night.						
	CO4 :Use of bearing and service protractor and locate the places and objects on the ground.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	0%	0%	80%	20%
Examination Mode	Practical						
Syllabus	Unit 1 : Drill						CO1
	Foot Drill- Drill ki Aam Hidayaten, Word ki Command, Savdhan, Vishram, Aram Se, Murdna, Kadvar Sizing, Teen Line Banana, Khuli Line, Nikat Line, Khade Khade Salute Karna Parade Par, Visarjan, Line Tod, Tej Chal, Tham aur Dhire Chal, Tham. Foot Drill Dahine, Baen, Aageaur Piche Kadam Lena. Tej Chal se Murdna, Tej Chal se Salute Karna, Tej Kadam Taal aur Tham, Tej Kadam Taal se Kadam Badalna. Teeno Teen se Ek File aur ek file se Teeno Teen Banana. Arm Drill.						
	Rifle ke saath Savdhan, Vishram aur Aram se. Rifle ke saath Parade Par aur Saj, Rifle ke saath Visarjan, Line Tod. Bhumi Shastra aur Uthao						
	Shastra, Bagal Shastra aur Baju Shastra. Salami Shastra. Squad Drill with Arms						
	Ceremonial Drill. Guard Mounting.						
	Unit 2 : Map Reading						CO2
	Definition of Map, Conventional signs, Scale and Grid System, Topographical forms and technical terms, Relief, Contours and gradients, Cardinal points and types of North, Magnetic Variation and Grid Convergence. Protractor Bearing and its conversion methods. Service protractor and its uses. Prismatic compass and its uses and GPS. Navigation by compass and GPS.						
	Setting of Map. Findings North and Own Position. Map to Ground. Ground to Map. Google Maps & applications						CO3
	Unit 3 :Field Craft & Battle Craft						

	<p>Introduction of Field Craft & Battle craft, Judging Distance, Method of Judging Distance. Indications of landmarks and Targets. Intro, Definitions, Types of Ground, Indication of Landmarks, Methods of hidden of targets, difficult targets. Observation. Camouflage. Concealment. Fire and Move Capsule. Field signal- with hand, with Weapons, Signal with Whistle. Field signals as means of giving orders. Field signals by day, Field signals by night</p> <p>Section Formation. Fire control orders. Types of fire control orders. Fire and Movement- when to use fire and movements tactics, Basic considerations, Appreciation of ground cover, Types of cover, Dead ground, Common Mistakes, Map and air photography, Selection of Fire position, and fire control. Knots, Lashing, and Stretchers.</p>	
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COURSE-18

Course Code	EDU 292
Course Title	Preparing School Map
Hours	L: T: P:1
Credits	1
Type	Core Course
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: The purpose of preparing school maps will help in framing and managing classroom problems encountered during field experience. By consciously identifying classroom situations, writing brief descriptions, and discussing these in class, students develop important habits of how to reflect on classroom events.</p> <p>CO2: To help schools optimize the allocation of resources by strategically planning the location of classrooms, laboratories, libraries, recreational areas, and other facilities.</p>
Examination Type	Practical

Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL
Weightage	0%	0%	0%	0%	0%	100%	0%
Examination Mode	Practical						
Syllabus	Some points that can be covered are: Overall view of the school and classroom Kind of learning environment <ul style="list-style-type: none"> • Seating arrangements • Safety equipment's in this room • Danger points in the room • Interruptions during teaching- learning process • Teachers dealing with the interruptions Each pupil teacher will prepare a report and will submit it to the concerned teacher. This report will be evaluated and grades will be awarded.						

SEMESTER -5
COURSE OUTLINE
COURSE-1

Course Code	EDU301						
Course Title	PHYSICAL CHEMISTRY-II						
Hours	L:4, T:0, P:1						
Credits	4						
Type	Core Course						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Explain the concept of Phase Equilibrium and Surface Chemistry CO2: Determine Chemical Kinetics and Conductance CO3: Analyze the quantitative aspects of Electrochemistry CO4: Illustrate the Characteristic, laws and significance of Photochemistry						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT

Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	Phase Equilibria <ul style="list-style-type: none">• Concept of phases, components and degrees of freedom, phase diagram for one component systems. Phase diagrams for systems of solid-liquid equilibria involving eutectic, congruent and incongruent melting points. Three component systems, water- chloroform-acetic acid system.• Binary solutions: fractional distillation of binary miscible liquids (ideal and nonideal), azeotropes, CST. Nernst distribution law. Surface chemistry <ul style="list-style-type: none">• Physical adsorption, chemisorption, adsorption isotherms. nature of adsorbed state.						
	Unit 2						
	Chemical Kinetics Order and molecularity of a reaction, differential and integrated form of rate expressions up to second order reactions, experimental methods of the determination of rate laws, Temperature dependence of reaction rates; Arrhenius equation; activation energy. Collision theory of reaction rates. Enzyme catalysis, Michaelis-Menten mechanism, acid-base catalysis						CO2
	Conductance Arrhenius theory of electrolytic dissociation. Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes. Molar conductivity at infinite dilution. Kohlrausch law of independent migration of ions. Debye-Hückel-Onsager equation						
	Unit 3						CO3
	Electrochemistry Quantitative aspects of Faraday’s laws of electrolysis, rules of oxidation/reduction of ions based on half -cell potentials. Chemical cells, reversible and irreversible cells with examples. Electromotive force of a cell and its measurement, Nernst equation; Standard electrode (reduction) potential and its application to different kinds of half-cells. Application of EMF measurements in determining (i) free energy, enthalpy and entropy of a cell reaction, (ii) equilibrium constants, and (iii) pH values, using hydrogen, quinone-hydroquinone, glass and SbO/Sb2O3 electrodes. Qualitative discussion of potentiometric titrations (acid-base, redox, precipitation).						
	Unit 4						CO4

	<p>Photochemistry</p> <p>Characteristics of electromagnetic radiation, Lambert-Beer's law and its limitations, physical significance of absorption coefficients. Laws, of photochemistry, quantum yield, actinometry, examples of low and high quantum yields, photochemical equilibrium and the</p> <p>differential rate of photochemical reactions, photosensitized reactions, quenching. Role of photochemical reactions in biochemical processes, photo stationary states, chemiluminescence</p>	

Reference Books :

- Peter Atkins & Julio De Paula, Physical Chemistry 9th Ed., Oxford University Press, 2010).
- Castellan, G. W. Physical Chemistry, 4th Ed., Narosa, 2004.
- McQuarrie, D. A. & Simon, J. D., Molecular Thermodynamics, Viva Books Pvt. Ltd.: New Delhi, 2004.
- Engel, T. & Reid, P. Physical Chemistry 3rd Ed., Prentice-Hall, 2012.
- Assael, M. J.; Goodwin, A. R. H.; Stamatoudis, M.; Wakeham, W. A. & Will, S.
- Commonly Asked Questions in Thermodynamics. CRC Press: NY, (2011).
- Zundhal, S.S. Chemistry concepts and applications Cengage India, 2011.
- Ball, D. W. Physical Chemistry Cengage India, 2012.
- Mortimer, R. G. Physical Chemistry 3rd Ed., Elsevier: NOIDA, UP, 2009.
- Levine, I. N. Physical Chemistry 6th Ed., Tata McGraw-Hill, 2011.
- Metz, C. R. Physical Chemistry 2nd Ed., Tata McGraw-Hill, 2009.
- Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi, 2011.
- Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed.;
- McGraw-Hill: New York, 2003.
- Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co.: New York, 2003

COURSE-2

Course Code	EDU 303A
Course Title	PHYSICAL CHEMISTRY-II LABORATORY
Hours	L:0, T:0, P:2
Credits	1
Type	Core Course

Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Determine the Critical Solution Temperature of phenol water system. CO2: Verify the Freundlich and Langmuir isotherms for adsorption of acetic acid CO3: Perform the Conductometric Titrations and Potentiometric titrations for acid and bases.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	<p>It will include the following activities:</p> <ol style="list-style-type: none"> 1. Determination of critical solution temperature and composition of the phenol-water system and to study the effect of impurities on it. 2. Distribution of acetic/ benzoic acid between water and cyclohexane. 3. Study the kinetics of the following reactions. Integrated rate method: Acid hydrolysis of methyl acetate with hydrochloric acid, b. Saponification of ethyl acetate. 4. Verify the Freundlich and Langmuir isotherms for adsorption of acetic acid on activated charcoal. <p>Conductometry</p> <ol style="list-style-type: none"> 1. Determination of equivalent conductance, degree of dissociation and dissociation constant of a weak acid. 2. Perform the following conductometric titrations: <ol style="list-style-type: none"> a. Strong acid vs. strong base b. Weak acid vs. strong base c. Mixture of strong acid and weak acid vs. strong base d. Strong acid vs. weak base <p>Potentiometry</p> <p>Perform the following potentiometric titrations:</p> <ol style="list-style-type: none"> 1. Strong acid vs. strong base 2. Weak acid vs. strong base 3. Dibasic acid vs. strong base 4. Potassium dichromate vs. Mohr's sal. 						CO1, CO2, CO3

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COURSE-3

Course Code	EDU 345A						
Course Title	ANALYSIS						
Hours	L: 5 , T: 0, P:0						
Credits	5						
Type	Departmental Elective						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Analyze the improper integrals and explain the usage of Reimaan integration</p> <p>CO2: Illustrate double and triple integrals.</p> <p>CO3: Define series of functions and learn about different types of convergence.</p> <p>CO4: Work out various theorems related to convergence and learn about Fourier series</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%		5%
Examination Mode	Theory						
Syllabus	Unit 1: Reimaan integration and Improper integrals <ul style="list-style-type: none"> Riemann integral, Integrability of continuous and monotonic functions. The fundamental theorem of integral calculus. Mean value theorems of integral calculus Improper integral and their convergence, Comparison tests, Beta and Gamma functions. Continuity, derivability and integrability of an integral of a function of a parameter 						CO1
	Unit 2: Double and triple integration						CO2

	<ul style="list-style-type: none"> Double and triple integrals, Fibonis theorem without proof, change of order of integration in double integrals Volume of gionin space , triple integral sinspherical and cylindrical coordinates , substitution in multiple integrals 	
	Unit 3: Sequences and series of function <ul style="list-style-type: none"> Sequences and series of function , point wise and uniform coverage, caucy criterion for uniform convergence, weierstrass m-test, Abel's and Dirichlet's tests for uniform convergence and continuity , uniform convergence and differentiation. 	CO3
	Unit 4: <ul style="list-style-type: none"> Weierstrass approximation theorem , power series, interval of convergence of power series, Abel 's and Tyler's theorem for power series Fourier series, Fourier expansion of piece wise monotonic functions. 	CO4

Reference Books:

- Apostol,T.M.(1985).Mathematical Analysis. Norosa Publishing House, New Delhi.
- Goldberg,R.R.(1970).Real Analysis. Oxford & IBH Publishing Co.,New Delhi.
- Lang,S.(1983).Under graduate Analysis. Springer-Verlag, New York.
- Narayan, S. (2000).A Course of Mathematical Analysis .S. Chand & Co., New Delhi.
- Jain, P.K. & Kaushik, S.K. (2000).An Introduction to Real Analysis. S. Chand & Co., New Delhi.

COURSE-4

Course Code	EDU309
Course Title	THEORY- CELL BIOLOGY, GENETICS AND EVOLUTION
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Explain cell theory and its structure CO2: Classify different types of cell organelles and discuss about cell cycle CO3: Describe Mendelian laws with the help of examples CO4: Cite about the various theories of evolution in connection to dinosaur and evolution of man

Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	• Cell theory; Protoplasm and its properties, Definition, history, prokaryotic and eukaryotic cells, virus, viroid's, mycoplasma, Electron microscopic structure of eukaryotic cell, Plasma membrane – Different models of plasma membrane.						
	Unit 2						CO2
	• Cell organelles: Structure and functions of Endoplasmic Reticulum • Structure and functions of Golgi apparatus, Lysosomes, Ribosomes, Mitochondria, Nucleus • Chromatin - Structure and significance, Chromosomes - Structure, types, functions • Cell-cycle; Mitosis; Meiosis; Theory of chiasma formation. Cytoskeleton and Cell Movement: • Structure and organization of actin filaments; actin, myosin and cell movement; intermediate filaments; microtubules						
	Unit 3						CO3
	• Genetics– I: Mendel's work on transmission on traits, Principles of inheritance, Incomplete dominance and co dominance, Lethal alleles, Epistasis, Pleiotropy • Genetics – II: Sex determination, Sex linked inheritance, Linkage and crossing over, Extrachromosomal inheritance, Human karyotyping						
	Unit 4						CO4
	• Genetics– I: Mendel's work on transmission on traits, Principles of inheritance, Incomplete dominance and co dominance, Lethal alleles, Epistasis, Pleiotropy • Genetics – II: Sex determination, Sex linked inheritance, Linkage and crossing over, Extrachromosomal inheritance, Human karyotyping						

Reference Books :

- Cell and Developmental Biology by Sastry, Singh & Tomar – (Rastogi Publications, 2008).
- Karp, G. 2010. Cell and Molecular Biology: Concepts and Experiments. 6th Edition. JohnWiley & Sons. Inc.
- De Robertis, E.D.P. and De Robertis, E.M.F. 2006. Cell and Molecular Biology. 8th edition. Lippincott Williams and Wilkins, Philadelphia.
- Cooper, G.M. and Hausman, R.E. 2009. The Cell: A Molecular Approach. 5th edition. ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA.
- Becker, W.M., Kleinsmith, L.J., Hardin, J. and Bertoni, G. P. 2009. The World of the Cell. 7th edition. Pearson Benjamin Cummings Publishing, San Francisco.
- Cell and Molecular Biology by P.K. Gupta – (Rastogi Publications, 2008).
- Cell Biology by C.B. Powar – (Himalya Publishing House, Bombay).
- Cell Biology by De Robertis et al – (W.B. Saunders, Philadelphia).
- A Textbook of Cytology by R.C. Dalela and S.R. Verma – (Jaiprakashnath & Co., Meerut).
- Cell Biology by J.D. Burke – (Scientific Book Agency, Calcutta)
- Cell Biology: A molecular approach by R.D. Dyson – (Allyn & Bacon, Boston).
- Cell Biology by R.M. Dowben – (Harper & Row, New York).
- Cell function by L.L. Langley – (Affiliated East West Press, New Delhi).
- Cytology by C.D. Darlington.
- Genes (Vol. I – VII) by Levin B. – CBS Publishers.
- Cell and Molecular Biology by De Robertis EDP & De Robertis EMI. Jr (1996) – Holt WBSaunders International.
- Essentials of Molecular Biology by Feirfelder I (1997) – Narosa Publ. New Delhi.
- Cytology, Genetics & Evolution by Gupta PK (1992) – Rastogi Publications.
- Principles of Biochemistry by Lehninger AL, Nelson DL & MM Cor (1993) – Kalyani Publishers, New Delhi.
- Cytology & Cytogenetic by Swanson CP (1972) – MacMillan Co.
- Animal Cytology and Evolution by MJD White – Cambridge University Press.
- Evolutionary Biology by B.S. Tomar & S.P. Singh – (Rastogi Publications, 2008). The origin of life by K. John – (Reinhold Publishing Corp).
- The evolution of Man by G.W. Lasker – (Holt, Rinehart & Winston).
- Organic Evolution by R.S. Lull – (MacMillan).
- Evolution by J.M. Savage (Holt, Rinehart and Winston)
- Genetics and Evolution by RL Kochhar (S. Nagin & Co, New Delhi 1970)
 - a. Evolution in Action by J. Huxley (New American Library, New S. Nagin & Co, New Delhi 1970).
- The Origin of Species by D.I. Charles (Collier Book, New York, 1966).
- Evolution by Ayala F.G, Stebbins G.L & Valentine J. (1965) – Sinauer Associates.
- Animal Evolution by Carter GS (1960) – Sedgenick and Johnson Ltd.

COURSE-5

Course Code	EDU311A
Course Title	CELL BIOLOGY, GENETICS AND EVOLUTION LABORATORY

Hours	L:0, T:0, P:2						
Credits	1						
Type	Departmental Elective						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills :</p> <p>CO1: Prepare the slides of Bacterial and Eukaryotic cell along with its organelles.</p> <p>CO2: Identification of Barr Bodies, Blood groups, and Karyotype of man.</p> <p>CO3: Observe various phenomena in Drosophila</p> <p>CO4: Illustrate Meiotic studies in Cockroach and solve problems on Pedigree analysis</p>						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	<p>It will include the following activities:</p> <ul style="list-style-type: none"> • Microscope: Simple and compound microscope, working mechanism and maintenance • Study of bacterial and eukaryotic cell. • Slides of sub cellular components (Cell organelles) • Erythrocyte plasma membrane permeability. • Study of Karyotype and Idiogram of man. • Study of Barr Bodies in human buccal epithelial cells. • Identification of blood groups (ABO) and Rh factor in man. • Drosophila culture and life cycle. • Sexual Dimorphism in Drosophila, Identification of wild or mutant varieties. • Study of salivary gland chromosomes of Drosophila • Problems on pedigree analysis. • Meiotic studies of testes of cockroach. 						CO1, CO2, CO3

COURSE-6

Course Code	EDU305
Course Title	PLANT PHYSIOLOGY, BIOCHEMISTRY AND BIOTECHNOLOGY
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective
	On the completion of the course, the student will gain the following knowledge and skills :

Course Outcomes	CO1: Explain assimilation of different mineral nutrient and transport of water, solute and sugar in plants CO2: Elaborate the basics of enzymology, structure of proteins, metabolism of lipid and nitrogen CO3: Explain the importance of photosynthesis and respiration in plants CO4: Discuss the role of plant growth hormones and basics of plant tissue culture.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	<ul style="list-style-type: none">Plant Water Relations: Importance of water to plant life; imbibition, diffusion, osmosis, plasmolysis and deplasmolysis, concept of osmotic potential, water potential and its components; absorption of water, active and passive mechanism of water absorption; transport ofMineral Nutrition: Essential macro and micro elements and their role; mineral uptake; mechanism of mineral uptake.						
	Unit 2						CO2
	<ul style="list-style-type: none">Nitrogen and Lipid Metabolism: Biological nitrogen fixation; ammonia assimilation; structure and function of lipids; fatty acid biosynthesis; β-oxidation; saturated and unsaturated fatty acidsProteins: Classification, role and structure (primary, secondary and tertiary) synthesis of amino acids.Basics of Enzymology: Discovery and nomenclature; classification, structure, properties, factors affecting enzyme activity, mechanism of enzyme action.						
Unit 3						CO3	
<ul style="list-style-type: none">Photosynthesis: Significance, historical aspect; photosynthetic pigments; action spectra and enhancement effects; concept of two photosystems, cyclic and non-cyclic photophosphorylation; Calvin cycle; C4 pathway; photorespiration; factors affecting photosynthesis;Respiration: ATP—The biological energy currency; aerobic and anaerobic respiration; Krebs 's cycle; electron transport mechanism (Chemi-osmotic theory); redox potential; Respiratory quotient							

	Unit 4	CO4
	<ul style="list-style-type: none"> • Growth and Development: Definitions; phases of growth and development; kinetics of growth, factors affecting growth; seed dormancy, seed germination and factors of their regulation; plant movements; the concept of photoperiodism; Plant Hormones—auxins, gibberellins, cytokinin's, abscisic acid and ethylene, history of their discovery, biosynthesis and mechanism of action; photo morphogenesis. • Biotechnology: Functional definition; basic aspects of plant tissue culture; cellular totipotency, differentiation and morphogenesis. 	

Reference Books :

- Dennis, D.T., Turpin, D.H. Lefebvre, D.D. and Layzell (eds.): Plant Metabolism (2nd Edition), Longman, Essex, England, 1997.
- Galston, A.W. Life Processes in Plants, Scientific American Library, Springer- Verlag, New York, U.S.A., 1989.
- Hopkins, W.G. Introduction to Plant Physiology, John Wiley & Sons, Inc., New York, U.S.A., 1995.
- Salisbury, F.B. and Ross, C.W.: Plant Physiology (4th Edition), Wadsworth Publishing Co., California, USA, 1992.
- Srivastava, H.N. Plant Physiology, Biochemistry & Bio-technology, Pradeep Publication, Jalandhar, 2008.

COURSE-7

Course Code	EDU307 PLANT PHYSIOLOGY, BIOCHEMISTRY AND BIOTECHNOLOGY
Course Title	DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS LABORATORY
Hours	L:0, T:0, P:2
Credits	1
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Demonstrate the phenomenon of osmosis, transpiration pull, plasmolysis and Deplasmolysis.

	CO2: Demonstrate the factors affecting the process of Photosynthesis. CO3: Test the presence of starch, protein, amino acids and perform chemical analysis of plant ash. CO4: Analyse the rate of Transpiration and osmotic pressure.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	<p>It will include the following activities:</p> <ol style="list-style-type: none"> 1. To determine osmotic pressure of cell sap by plasmolytic method 2. To demonstrate osmosis through animal membrane/potato osmoscope. 3. To demonstrate plasmolysis and deplasmolysis. 4. To demonstrate transpiration, pull. 5. To compare the rate of transpiration from the two sides of a leaf using: <ol style="list-style-type: none"> a. Vaseline method. b. Cobalt chloride method. 6. To demonstrate the mechanism of opening and closing of stomata. 7. To demonstrate the path of ascent of sap. 8. To demonstrate that light is necessary for photosynthesis. 9. To demonstrate evolution of oxygen during photosynthesis in an aquatic plant. 10. To demonstrate aerobic respiration using flask method. 11. To demonstrate anaerobic respiration in germinating seeds or yeast. 12. To demonstrate phototropism. 13. To demonstrate geotropism using clinostat. 14. To separate chlorophyll pigments by solvent method. 15. To perform chemical analysis of plant ash for K⁺, Ca²⁺, Fe⁺⁺, Fe⁺⁺⁺, B³⁺, Mn²⁺, S²⁻ and Mg²⁺. 16. To test for the presence of starch, proteins, amino acids and reducing sugars in plant material. 						CO1, CO2, CO3, CO4

Course Code	EDU313						
Course Title	SOLID STATE PHYSICS						
Hours	L:4, T:0, P:0						
Credits	4						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Describe the arrangement of atoms in crystal lattice						
	CO2: Discuss Elementary Lattice dynamics						
	CO3: Explain Various Free Electron Theories						
	CO4: Comprehend the concepts of Elementary Band Theory						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1 :SOLIDS						CO1
	Amorphous and Crystalline Materials, Lattice Translation Vectors, Lattice with a Basis – Central and Non-Central Elements, Unit Cell, Types of Lattices- hexagonal close packed structure. FCC and BCC structure, simple crystal structure, Miller Indices, Reciprocal Lattice, Reciprocal lattice to SC, BCC and FCC lattice, Brillouin Zones, Diffraction of X- rays by Crystals, Bragg 's Law, Atomic and Geometrical Factor						
	Unit 2 :ELEMENTARY LATTICE DYNAMICS						CO2
Lattice Vibrations and Phonons, Linear Monoatomic and Diatomic Chains, Acoustical and Optical Phonons, Qualitative Description of the Phonon Spectrum in Solids, Dulong and Petit 's Law, Einstein and Debye theories of specific heat of solids							

Course Code	EDU313						
Course Title	SOLID STATE PHYSICS						
Hours	L:4, T:0, P:0						
Credits	4						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Describe the arrangement of atoms in crystal lattice						
	CO2: Discuss Elementary Lattice dynamics						
	CO3: Explain Various Free Electron Theories						
	CO4: Comprehend the concepts of Elementary Band Theory						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1 :SOLIDS						CO1
	Amorphous and Crystalline Materials, Lattice Translation Vectors, Lattice with a Basis – Central and Non-Central Elements, Unit Cell, Types of Lattices- hexagonal close packed structure. FCC and BCC structure, simple crystal structure,Miller Indices, Reciprocal Lattice, Reciprocal lattice to SC, BCC and FCC lattic, Brillouin Zones, Diffraction of X- rays by Crystals, Bragg ‘s Law, Atomic and Geometrical Factor						
	Unit 2 :ELEMENTARY LATTICE DYNAMICS						CO2
Lattice Vibrations and Phonons, Linear Monoatomic and Diatomic Chains, Acoustical andOptical Phonons, Qualitative Description of the Phonon Spectrum in Solids, Dulong and Petit ‘s Law, Einstein and Debye theories of specific heat of solids							

Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Explore electrical and thermal properties of solid by measuring their conductivity and resistivity.						
	CO2: Determine the crystal structure of solids using x-ray diffraction						
	CO3: Analyse the optical properties of materials including absorption and transmission						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	It will include the following activities:						CO1, CO2, CO3
	<ol style="list-style-type: none"> 1. To measure the Magnetic susceptibility of Solids. 2. To determine the Coupling Coefficient of a Piezoelectric crystal. 3. To draw the BH curve of Fe using Solenoid & determine energy loss from Hysteresis. 4. To measure the resistivity of a semiconductor (Ge) with temperature by four-probe method (room temperature to 150oC) and to determine its band gap. 5. To determine the Hall coefficient of a semiconductor sample. 6. To study temperature coefficient of resistance of Cu. 7. To measure the thermal conductivity and thermal diffusivity of a conductor. 8. To determine the value of Stefan's Constant of radiation. 9. To measure magnetic volume susceptibility of liquid FeCl2/MnSO solution by Quincke 'smethod. 10. To measure dielectric constant of a non-polar liquid and its applications. 11. To study the reverse saturation current to a PN junction diode at various temperatures and to find out the approximate value of the energy gap. 						

COURSE-10

Course Code	EDU 331						
Course Title	Understanding ICT and its uses in Teaching And Learning						
Hours	L: 4 , T: 0, P:0						
Credits	4						
Type	Core Course						
Course Outcomes	<p>On the completion of the course, the student will be able to:</p> <p>CO1: Appreciate the historical development of various educational media.</p> <p>CO2: use various digital technologies (hardware and software) for creating resources and providing learning experiences for all types of learners(including differently abled.</p> <p>CO3: Use various ICTs for project based/ problem based constructivist learning environment.</p> <p>CO4: Explain the use of ICT in authentic and alternative assessment.</p> <p>CO5: Understand the social , economic and ethical issues associated with the use of ICT</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%
Examination Mode	Theory						
Syllabus	<p>Unit 1:</p> <ul style="list-style-type: none"> • Introduction to information and communication technology • Use of technology in education : In retrospect • Information and communication technology: meaning nature and advantages. • Recent development in ICT • Cloud computing • E- BOOKS • Mobile learning • One to one computing • Ubiquitous Learning • Small classrooms • Google groups • Google classrooms • Google docs • Kindle 						CO1
	Unit 2:						CO2

	<p style="text-align: center;">ICT and Pedagogy</p> <ul style="list-style-type: none"> • Approaches to integrating ICT in teaching and learning: technological pedagogical content knowledge (TPCK) • Subject specific ICT tools for creating and facilitating learning • Subject specific online resources and their use • Designing technology integrated learning experiences • ICT integrated Unit plan–Use of Web 2.0 for creating constructivist learning environment. • Assistive technology for children with special needs: Tools and processes; Universal Design for Learning (UDL). • ICT for Pedagogical Innovations • Project/problem-based learning (PBL): Role of ICT in developing technology integrated PBL unit • Web Quest and virtual field trips: Concept, process and use in the classroom • Multiple intelligence in classroom: ICT tool and applications • Mobile learning and related applications • Open Educational Resources– Meaning and importance, various OER initiatives • Massive Open Online Courses (MOOC)-Concept and use • Flipped classrooms: Meaning and Possibilities. 	
	<p>Unit 3: ICT FOR ASSESSMENT</p> <ul style="list-style-type: none"> • ICT - Use of Microsoft Office / Libre Office: Document File, Powerpoint • Electronic assessment portfolio–Concept and types; • e-portfolio tools • Creating and use of electronic rubrics for assessment • Online and offline assessment tools- rubrics , survey tools, puzzle makers , test generators, reflective journal, question bank. • ICT applications for CCE • Learning analytics and feedback. 	CO3
	<p>Unit 4: ICT FOR MANAGEMENT</p> <ul style="list-style-type: none"> • ICT initiatives and standards • ICT for personal management : e-mail, task, events, diary, networking • ICT for educational administration Scheduling, record keeping, student information, electronic grade book , connecting with parents and community. 	CO4

Reference Books:

- Bharihok,D.(2000).*Fundamentals of Information Technology*. Pentagon Press:New Delhi.
- CEMCA(2014).*Technology Tools for Teachers*, Common wealth Educational Media Center for Asia, 13/14 Sarva Priya Vihar,New Delhi.
- David,M.(2009).*Project Based Learning-Using Information Technology*-Second Edition. Viva Books: New Delhi.
- Laxman Mohanty ,Neeharika Vora (2008). *ICT strategies for schools- a guide for school administrators*. Sage Publications: New Delhi.
- Manoj Kumar Dash (2010). *ICT in teacher development*, Neel Kamal Publications: New Delhi.
- MHRD-GOI (2004 and revised 2010)National ICT @ School Scheme, Department of School Education and literacy, MHRD,Govt.of India,New Delhi
- MHRD-GOI(2012) National Mission on Education through ICTs(NME-ICT),Department of Higher Education, MHRD, Govt. of India,New Delhi

COURSE-11

Course Code	EDU392A						
Course Title	ELECTIVE ENGLISH- V						
Hours	L: 4 , T: 0, P:0						
Credits	4						
Type	Core Course						
Course Outcomes	<p>On the completion of the course, the student will be able to:</p> <p>CO1:Examine drama as a literary genre, dissecting its form, themes, characters, and cultural context.</p> <p>CO2: Critically analyze, interpret, and appreciate English novels, while nurturing higher-order thinking and literary insights.</p> <p>CO3: Develop students’ understanding and appreciation of short stories while fostering critical thinking, communication and creatively through analysis, discussion and creative exercises.</p> <p>CO4: Develop abilities in formal and informal communication through adept panel discussions and oral presentations</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%

Examination Mode	Theory	
Syllabus	Unit 1: <ul style="list-style-type: none"> Drama: Arms and Man by G.B.Shaw 	CO1
	Unit 2: <ul style="list-style-type: none"> Novel: Untouchable by Mulk Raj Anand 	CO2
	Unit 3: Short story <ul style="list-style-type: none"> The Lottery Ticket by Anton Chekov The Blue Umbrella by Ruskin Bond 	CO3
	Unit 4: Functional English Conversation: formal and informal panel discussion, group discussion and oral presentation.	CO4

Reference Books:

- Koneru, Aruna. Professional Communication. Delhi: McGraw, 2008. Print.
- English Literature, Its History and Its Significance for the Life of the English-speaking World by William J. Long.
- Hewings, M. (2007). Advanced English Grammar. New Delhi: Cambridge University Press India Ltd.
- Rao, V. K. (2007). Peculiar English. New Delhi: Neelkamal Publications.
- Sharma G. L. (2008). Glimpse of English Poetry. Chandigarh: Publication Bureau, Punjab University.
- Tickoo, C. & Kumar, J. S. (2000). Writing with a Purpose. New Delhi: Oxford University Press.

COURSE-12

Course Code	EDU3947A						
Course Title	ELECTIVE HINDI- V						
Hours	L:5, T:0, P:0						
Credits	5						
Type	Departmental Elective						
Course Outcomes							
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT

	<p>चतमेमदजंजपवदे बवदकनबजमक इल जीम जमंबीमतण जीम तमउंपदपदह चवतजपवद पूसस इम बवअमतमक पद जीम वितउ वि पदकपअपकनंसप्रमक मेपवदंस वता पीपबी पूसस पदबसनकमरु १. किसी महान हिन्दी कवि की जीवनी तथा आत्मकथा लिखें। २. दिए गए अलंकारों का प्रयोग से संबंधित कतरन रजिस्टर तैयार करें। मअंसनंजपवद ैबीमउम जीम मअंसनंजपवद पूसस इम हैमक वदरु पद्ध जीमवतल चंचमत पूसस बवदेपेज वि ६० उंतो ;३ व्तमकपजेद्ध म्पहीज सवदह देूमत नमेजपवदे वि १५ उंतो मंबी पूसस इम मेजए जांपदह जूव तिवउ मंबी विविनत नदपजे वि जीम लससंडनेए वनज वि पीपबी जीम बंदकपकंजमे पूसस इम तमुनपतमक जव जजमउचज वदम तिवउ मंबी नदपजण ;१५ग४ त्र ६० उंतोद्धण पपद्धैनचमतअपेमक मेपवदंस वतारु चतवरमवज वताए जमंउ चतमेमदजंजपवदेए पदकपअपकनंस जमतउ चंचमते दक पेहदउमदज ;२० उंतोरु १ व्तमकपजेद्धण १५८ पपपद्ध प्दजमतदंस मेउमदज हैमक वद जमतउपदंस मगंउपदंजपवदेए जजमदकंदबमए बसेंतववउ पदजमतंबजपवदेए दंच जमेज मजवण ;२० उंतोरु १ व्तमकपजेद्धणैनहहमेजमक त्मंकपदहे १. चतुर्वेदी राजेश्वरप्रसाद, (२००८) हिन्दी व्याकरण उपकार प्रकाशन, आगरा। २. साहनी एस.बी, शर्मा आर. पी (२००७) सर्वोत्तम हिन्दी व्याकरण, साहनी प्रकाशन, आगरा। ३. राजाराम कल्पना (२००९) निबंध बोध, स्पेक्ट्रम बुक्स प्रा. लि., दिल्ली। ४. गुप्त गणपतिचन्द्र (२००८), साहित्यिक निबंध, लोकभारती प्रकाशन, इलाहबाद। ५. गुलाटी यश (२००७), बृहत् साहित्यिक निबन्ध, सूर्यभारती प्रकाशन, दिल्ली। ६. नगेन्द्र हरदयाल (२००९) हिन्दी साहित्य का इतिहास, मयूर पेपरबैक्स, नोयडा</p>	
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COURSE-13

Course Code	EDU377
Course Title	ELECTIVE PUNJABI- V
Hours	L:5, T:0, P:0
Credits	5
Type	Departmental Elective

Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%
Examination Mode	Theory						
Syllabus	<p>UNIT- I</p> <p>ਬਿਜਲੀ ਦਾ ਵਿਵਰਣ — ਡੰਡ; ਗ/ਗੋ ਦਕ ਠ। ਦ/ਠ ਡਟਡਦਨਕੋਓਹਨਖ ਭ(ਜ਼) ਆਗਏਕਬਹੁਤ ਗਜ਼ਕਿਪਹ ਏਕਡਟਯਕੋਕ ਸ'ਅ ਕਿਪ{ ਏਟਕਠ। ਧਕ ਜ?.</p> <p>— ਡਟਕੋਖ ਦ/ ਸੈਸਹਪਪਗਾਜ ਗਤਰਾਂਕਟ / ਭ(ਜ਼ ਠ। ਘਕੋਭਕ ਜ?.</p> <p>— ਗਜ਼ਕਿਪਹ ਘਕਠਕ ;ਜਪਜਜਹ ਡਟ;ਓਕੋਗੋਟਏ ;ਗ?ਦਕ ਏਭਕ ਜ?. — ਡਟਨਕਏਥ ਡਟਗੁ ਟਕਏਖ ਦ/ ਘ/ਦਖ ਪਕੋ/ ਕਿਰੋ(ੲ ਏਟਕਠ। ਧਕ ਜ?.</p> <p>ਗਕਮਏਤਾ ੧ੳ ਆਗਏ ਕਬਹੁਤ ਗਜ਼ਕਿਪਹ ਏਡਟਸਕ ਦਕ ਨਡਯਨ?ਭ ੨ੳ ਗ?ਕੋਭਕ ੩ੳ ਡਬਗਹ ੪ੳ ਡਟਨਕਏਥ ਲ ਡ;ਯਖਸ ਏ; — ਆਏਕਬਹੁਤ ਗਜ਼ਕਿਪਹ ਏਕਡਟ ਯਕੋਕ (;ਜਗਕਓ) ਨਸੋ ਡ;ਜਣ ਗਪਬਹੁਤ/ਠਭ ਡਪਠੋ', ਗਜ਼ਕਿਪ :{ਭਹਟੋਡ;ਹ, ਜਵਹਰਤਬੂ ਨਟਿ-ੀ — ਆਗਏ ਕਬਹੁਤ ਗਜ਼ਕਿਪਹ ਏਕਡਟ ਯਕੋਕ ਡਟੁ ਗਤ;ਜਰ ;ਕਡਜਸ ਡਟਨਕਡੇਨਕ ਪ ਮਓਰਕਸ — ਆਏਕਬਹੁਤ ਗਜ਼ਕਿਪਹ ਏਕਡਟ ਯਕੋਕ ਡਟੁ'ਅ ਡਭੋਯਕੋਸ ਡਏ;/ ਏਟਹ ਦਕ ਹਿਟਭ ਪ ਮਓਰਕਸੂ ਨਟਿ-ੀ ੧੦ ਮਓਰਕਸ ਏਡਟਸਕ ਦਕ ਏ/ਅਦੋਹ ਘਕਟ ਖਿ ;ਕੋ ਨਟਿ-ੀ — ਗ?ਕੋਭਕ (ਬਰਘਰ ੩੦੦ ਠਪਦ) ('ਭੋਹ ;। ਘਕਨ ਹਿਟਭ ਦੇਠਭ ਨਸ/ ਹਿਟਭ ਦ / ਜਬਦ/ ਚ। ਬਦ/ ਡਟਡਠਨਕ ਭਕਬ ;ਜਪਜਡਯਸ) ('ਦ' ਡਟੁ'ਅ ਏ'ਝਹ ਡਝਏ) ਪ ਮਓਰਕਸ — ਡਬਗਹ ਦਹ 'ਐਬ ਕਿਧ ਗਸ਼ਕਪ ਲ ਡਬਗਹ ਦਹ ਗਡੇਘਕਠਕ, ਭਿਾ ਸ/ ਡਟਏਕ; ('ਦ' ਡਟੁ'ਅ ਡਝਏ) ਪ ਮਓਰਕਸ ੂ ਨਟਿ-ੀ੩ ੧੫੨ — ਡਟਨਕਏਥ ਲ ਡ;ਯਖਸ ਟਕਏਜਠ, ਭਖਟ ਟਕਏਜਠ ਸ/ ਡਏਡੇਨਕ ਟਕਏਜਠ ਦਹ ਗਡੇਘਕਠਕ ਸ/ ਗਸ਼ਕਪ — ਡਟਜਕੋਏ ਗਤਠਭ ਭ' ਲ ਗ/ਗੋ ;? ਟਬ'ਅ ਠ। ਗੋ'ਏਸ ;ਜਣਬਗਕ ਦ / ਨਯਕੋ ਸ/ ਜਹ ;ਜੇ/ਗ ;ਟਕਬ ਗ। ਸ/ ਕਿਧ. (ਡਝ; :{ਡਭ' ਡਟਗੁ'ਅ ਏ। ਬ ਨਗਮ ਗਤਠਭ ਗ। ਗਸ਼/ ਕਿਧ ਡਭਿਥਖ ਡਟਗੁ'ਅ ਗਜ਼ਿ ਏਭ/ ਜ'ਧਰ/. ਡਝਭਥਖ ਡਟਗੁ'ਅ ਦ' ਡਟਜਕਡੇਏ ਡਟਨਕਏਥ ਦ/ ਗਤਠਭ ਜ'ਧ/ ਬਕ+ਹ ਜਭ) ੧੦ ਮਓਰਕਸ ਓਵੋਲਿਉਟੀਨੋਂ ਸਚਹਏਮਏ ਿ ਠਹਏਰੇ ਪਓਪਏਰ 'ਲਿਲ ਚੋਨਸਸਿਟੋਡ ਏਗਿਹਟ ਤੁਏਸਟੋਨਿਸ ਿ.ਏ. ਟੋ ਤੁਏਸਟੋਨਿਸ ਡਰੋਮ ਏਓਚਹ ਨਟਿ 'ਟਿਹ ਨਿਟਏਰਨਓਲ ਚਹੋਚਿਏ. ਠਹਏ ਸਟੁਦਏਨਟਸ 'ਲਿਲ ਬਏ ਰਏਤੁਰਿਏਦ ਟੋ ਓਟਏਏਮਪਟੋਨਏ ਤੁਏਸਟੋਨਿ ਡਰੋਮ ਏਓਚਹੋਡ ਟਹਏ ਡ੍ਰੋਰੁ ਨਟਿਸ (੪੦ ਮਓਰਕਸ: ੨ ਛਰਏਦਟਿਸ). ਿ) ਨਿਟਏਰਨਓਲ ਓਸਸਏਸਸਮਏਨਟ 'ਲਿਲ ਬਏ ਬਓਸਏਦੋਨ ਟਏਰਮਨਿਓਲ ਏਏਮਨਿਓਟੋਨਿਸ, ਓਟਏਨਦਓਨਚਏ, ਚਲਓਸਸਰੋਮ ਨਿਟਏਰਓਚਟੋਨਿਸ, ਏਟਚ. (੧੦ ਮਓਰਕਸ: ੦.੫ ਛਰਏਦਟਿ).</p> <p>ਸੁਗਗਏਸਟਏਦ ਭੋਕਸ: ੧. ਹਰਕੀਰਤ ਸਿੰਘ (ਡਾ.), ‘ਕਾਲਜ ਪੰਜਾਬੀ ਵਿਆਕਰਨ’, ਪੰਜਾਬ ਸਟੇਟ ਯੂਨੀਵਰਸਿਟੀ ਟੈਕਸਟ ਬੁੱਕ ਬੋਰਡ,ਚੰਡੀਗੜ੍ਹ ਗਿਆਨੀਲਾਲ ਸਿੰਘ , ੧੯੯੯. ੨. ਸੁਖਵਿੰਦਰ ਸਿੰਘ ਸੰਘਾ(ਡਾ.), ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਕਾਦਮੀ, ਜਲੰਧਰ, ੧੯੯੭ ੩. ਜੱਸਲ ਕਵਲਜੀਤ, ‘ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਦੇ ਕੁਝ ਪੱਖ’, ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਹਾਲ ਬਾਜ਼ਾਰ,ਅੰਮ੍ਰਿਤਸਰ,੨੦੧੨. ੪. ਪੰਜਾਬੀ ਸੰਚਾਰ ਯੋਗਤਾ ਅਭਿਆਸ,</p>						CO1 CO2 CO3 CO4

	ਪੰਜਾਬ ਸਟੇਟ ਯੂਨੀਵਰਸਿਟੀ ਟੈਕਸਟ ਬੁੱਕ ਬੋਰਡ, ਚੰਡੀਗੜ੍ਹ। ਪ. ਬਰਾੜ ਬੂਟਾ ਸਿੰਘ (ਡਾ.), ‘ਪੰਜਾਬੀ ਵਿਆਕਰਨ, ਸਿਧਾਂਤ ਅਤੇ ਵਿਹਾਰ’, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ ਲੁਧਿਆਣਾ, ੨੦੦੮. ਏ. ਧਾਲੀਵਾਲ ਪ੍ਰੋਮ ਪ੍ਰਕਾਸ਼ ਸਿੰਘ (ਡਾ.) ‘ਸਿਧਾਂਤਕ ਭਾਸ਼ਾ ਵਿਗਿਆਨ’, ਮਦਾਨ ਪਬਲਿਕੇਸ਼ਨਜ਼, ਪਟਿਆਲਾ, ੨੦੦੨. ੭. ਅਗਨੀਹੋਤਰੀ, ਵੇਦ, ਪਰਿਚਾਇਕ ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਦੀਪਕ ਪਬਲਿਸ਼ਰਜ਼, ਜਲੰਧਰ, ੧੯੮	
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COURSE-14

Course Code	EDU373						
Course Title	Pedagogy of Language- I (English)						
Hours	L: 4 , T: 0, P:0						
Credits	4						
Type	Departmental Elective						
Course Outcomes	<p>On the completion of the course, the student will be able to:</p> <p>CO1: Explain the function and status of English language.</p> <p>CO2: Identify the constitutional provisions and policies of language education</p> <p>CO3: Describe the various approaches and theories of language learning and teaching</p> <p>CO4: Develop language skills (listening, speaking, reading and writing) with the help of storytelling, situational conversation, role plays etc.</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						

Syllabus	<p>Unit 1:</p> <p>Nature and Role Of Language</p> <ul style="list-style-type: none"> • Meaning, Characteristics, Functions of Language; Principles of Language Teaching • Nature of English Language, Aims and Objectives of Teaching English in India, Status of English language in the global and Indian context, Factors affecting Language Learning (Physiological, Psychological and Social) 	CO1
	<p>Unit 2:</p> <p>Role And Position Of Languages – Constitutional Provisions And Policies Of Language Education</p> <ul style="list-style-type: none"> • Teaching English in bilingual / multilingual context- teaching English as a second language and educational policy in India • Constitutional provisions and policies of language education, difference between language as school subject and language as a medium of instruction. 	CO2
	<p>Unit 3:</p> <p>Language teaching – an overview</p> <p>Different approaches / theories to language learning & teaching – grammar translation method, audio – lingual method, total physical response , whole language, communicative language teaching, natural approach, deductive method, inductive method, multilingual pedagogical approach, constructive approach.</p>	CO3
	<p>Unit 4:</p> <p>Linguistic Behaviour and System And Developing Language Skills</p> <ul style="list-style-type: none"> • Linguistic system- Introduction to Phonetics • Grammar in context; vocabulary in context • Acquisition of language skills - listening, speaking, reading and writing • Listening and Speaking- Sub skills of listening: Tasks; Materials and resources for developing the listening and speaking skills: story telling, dialogues, situational conversations, role plays, simulations, speech, games and contexts, language laboratories, pictures, authentic materials and multi-media resources 	CO4

	<ul style="list-style-type: none"> • Reading-Sub skills of reading Importance of understanding the development of reading skills; reading aloud and silent reading; extensive and intensive reading; Study skills including using thesauruses • Writing – stages of writing, process of writing, formal and informal writing such as poetry, short story, letter, diary, notice, article, report, dialog, speech, advertisement etc. reference skill, study skill and higher order skill 	
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Reference Books:

- Beaumont, M. 1996. The Teaching of Reading Skills in Second/Foreign Language. Patras: The Hellenic Open University.
- Cummins, J. and Swain, M. 1986. Bilingualism in Education. London: Longman.
- Ellis, R. 1985. Understanding Second Language Acquisition. Oxford: Oxford University Press.
- Prabhu, N.S. 1987. Second Language Pedagogy. Oxford; New York: Oxford University Press.
- Krashen, Stephen. 1989. We acquire vocabulary and spelling by reading: Additional evidence for the input hypothesis. Modern Language Journal 73:4. Pp. 440-64.
- Kumar, Krishna, 2011. The Child's Language and the Teacher, a Handbook, New Delhi, National Book Trust India.

COURSE-15

Course Code	EDU375
Course Title	Pedagogy Of Language- I (Hindi)
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective
Course Outcomes	<p>On the completion of the course the students will be able to</p> <ul style="list-style-type: none"> • भावी शिक्षकों में हिन्दी शिक्षण के लिए भाषा सम्बन्धी आधारभूत योग्यताओं का विकास करना। • भावी शिक्षकों में हिन्दी भाषा शिक्षण सम्बन्धी योग्यताओं का विकास करना। • भावी शिक्षकों में हिन्दी शिक्षोपरान्त अपेक्षित कुशलताओं का विकास करना। • भावी शिक्षकों में हिन्दी सम्बन्धी विभिन्न कक्षोत्तर भाषिक एवम् साहित्यिक क्रियाओं के आयोजन की क्षमता का विकास करना। <p>सहायक सामग्री के निर्माण एवम् प्रयोग की कुशलता का विकास करना।</p>

Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	UNIT-I भाषा-अर्थ, आधार एवं <ul style="list-style-type: none"> • प्रकृति देवनागरी लिपि की • विशेषताएं एवं सीमाएँ • हिन्दी भाषा का महत्त्व-मातृभाषा एवम् राष्ट्रीय • भाषा के रूप में हिन्दी शिक्षण के सामान्य एवम् स्तरानुकूल ;विशिष्ट उद्देश्य • भाषा शिक्षण के सामान्य सि(न्त एवं सूत्रा 						CO1
	UNIT-II बोलचाल की शिक्षा-महत्त्व उद्देश्य एवं विधियाँ <ul style="list-style-type: none"> • उच्चारण की शिक्षा-महत्त्व, उच्चारण दोष के कारण, उपाय व्याकरण शिक्षण-महत्त्व, उद्देश्य एवं विधियाँ • लेखन शिक्षण-महत्त्व, उद्देश्य एवं विधियाँ 						CO2
	UNIT- III गद्य शिक्षण-उद्देश्य, सोपान <ul style="list-style-type: none"> • एवम् विधियाँ पद्य • शिक्षण-उद्देश्य, सोपान एवम् विधियाँ • वाचन शिक्षण-उद्देश्य, वाचन मन्दता के कारण एवं उपाय 						CO3
	UNIT- IV दृश्य-श्रव्य साधन-प्रयोग एवं महत्त्व <ul style="list-style-type: none"> • पाठ्य-पुस्तक की विशेषताएँ एवं हिन्दी शिक्षण में पाठ्य-पुस्तक का महत्त्व भाषा शिक्षण में पुस्तकालय की उपयोगिता • हिन्दी अध्यापक के गुण • हिन्दी में मूल्यांकन एवं परीक्षाएँ-अभिप्राय, महत्त्व व विविध प्रकार गृहकार्य-स्वरूप, संशोधन प्रक्रिया एवं विधियाँ 						CO4

Reference Books:

- खन्ना, ज्योति ;२००९ई, हिन्दी शिक्षण, धनपतराय एण्ड कम्पनी, नई दिल्ली।
- शर्मा, डी. के. ;१९९९ई, हिन्दी शिक्षण विधियां, टण्डन पब्लिकेशनज, लुधियाना।
- रमन बिहारी लाल ;१९९६-९७ई, हिन्दी शिक्षण, रस्तोगी एण्ड कम्पनी, मेरठ।
- शर्मा, डी. एल. ;१९९२ई हिन्दी शिक्षण, देव नागर प्रकाशन, जयपुर।
- भाटिया के.के. और नारंग, सी. एल. ;१९८९ई, आधुनिक हिन्दी विधियां, प्रकाश ब्रदर्स पब्लिशर, लुधियाना।
- सिन्हा प्रसाद शत्रुघ्न ;१९६४ई, हिन्दी भाषा की शिक्षण विधि, दिल्ली पुस्तक सदन, पटना।
- प्रसाद केशव ;१९७६ई, हिन्दी शिक्षण, धनपतराय एण्ड सन्स, दिल्ली।
- सफाया रघुनाथ ;१९८६-९७ई, हिन्दी शिक्षण विधि, पंजाब किताब घर, जालंधर।
- सूद विजय ;१९९७ई, हिन्दी शिक्षण विधियाँ टण्डन पब्लिकेशन, लुधियाना।
- सिंह सावित्री ;१९९७ई, हिन्दी शिक्षण, लायल बुक डिपो, मेरठ
- क्षत्रिय के ;१९६८ई, मातृभाषा शिक्षण, विनोद पुस्तक मन्दिर, आगरा।
- जीत योगेन्द्र भाई ;१९७२ई, हिन्दी शिक्षण, विनोद पुस्तक मन्दिर, आगरा।
- वर्मा, वैधनाथ प्रसाद ;१९७३ई, हिन्दी शिक्षण, पति, बिहार हिन्दी ग्रन्थ अकादमी, पटना।
- जय जसवन्त सिंह ;१९७७ई, आधुनिक हिन्दी शिक्षण, पति, न्यू बुक कम्पनी, जालन्धर।

COURSE-16

Course Code	EDU377
Course Title	Pedagogy OF Language- I (Punjabi)
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective
Course Outcomes	<p>On the completion of the course the students will be able to</p> <ul style="list-style-type: none"> • ਵਿਦਿਆਰਥੀ ਅਧਿਆਪਕਾਂ ਨੂੰ ਭਾਸ਼ਿਕਾ, ਪੰਜਾਬੀ ਭਾਸ਼ਿਕਾ ਅਤੇ ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਬਾਰੇ ਮੁੱਢਲਾ ਗਿਆਨ ਦੇਣਾ। <ul style="list-style-type: none"> □ ਮਾਤਭਾਸ਼ਿਕਾ ਦੇ ਸਿੱਖਿਆ ਦੇ ਉਦੇਸ਼ਾਂ ਅਤੇ ਸਿਧਾਂਤਾਂ ਦੀ ਸੋਝੀ ਕਰਾਉਣਾ। □ ਭਾਸ਼ਿਕਾ ਹੁਨਰਾਂ ਅਤੇ ਕਿਰਿਆਵਾਂ ਦੀ ਸੁਚੱਜੀ ਵਰਤੋਂ ਅਤੇ ਅਭਿਆਸ ਕਰਨ ਵਿਚ ਸਹਾਈ ਹੋਣਾ। □ ਸੈਕੰਡਰੀ ਸਿੱਖਿਆ ਲਈ ਨਿਰਧਾਰਤ ਪੰਜਾਬੀ ਪਾਠ ਸਮੱਗਰੀ ਵਿਚੋਂ ਮਹੱਤਵਪੂਰਨ ਨੁਕਤਿਆਂ ਦੀ ਚੋਣ ਕਰਨ ਵਿਚ ਸਹਾਇਤਾ ਕਰਨਾ। □ ਪੰਜਾਬੀ ਭਾਸ਼ਿਕਾ ਦੇ ਅਧਿਆਪਨ ਤੇ ਮੁਲਾਂਕਣ ਦੇ ਵਰਤਮਾਨ ਪੱਧਰ ਨੂੰ ਉਚੇਰਾ ਚੁੱਕਣ ਲਈ ਸਾਰਥਕ ਸੁਝਾਅ ਦੇਣਾ।

	<ul style="list-style-type: none"> ਸਾਹਿਤ ਦੇ ਵਿਭਿੰਨ ਰੂਪਾਂ-ਕਹਾਣੀ, ਕਵਿਤਾ, ਲੇਖ ਆਦਿ ਦੇ ਅਧਿਆਪਨ ਢੰਗਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦੇਣਾ। ਬੱਚਿਆਂ ਅੰਦਰ ਪੁਸਤਕਮਾਲਾ ਸ਼ਵੇਚਰਤਾ ਸੰਬੰਧੀ ਗਿਆਨ ਪ੍ਰਾਪਤ ਕਰਨ ਦੀ ਰੁਚੀ ਪੈਦਾ ਕਰਨਾ। ਪੰਜਾਬੀ ਸਾਹਿਤ ਨਾਲ ਸਾਂਝ ਉਤਪੰਨ ਕਰਨ ਲਈ ਵਿਦਿਆਰਥੀ ਅਧਿਆਪਕਾਂ ਅੰਦਰ ਪ੍ਰੇਰਨਾ ਪੈਦਾ ਕਰਨਾ। 						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	UNIT- I <ul style="list-style-type: none"> ਭਾਸ਼ਾ ਦੀ ਪ੍ਰਕ੍ਰਿਤੀ ਅਤੇ ਉਤਪਤੀ ਦੇ ਸਿਧਾਂਤ। ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ। ਲਿਪੀ ਦੇ ਅਰਥ, ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀ ਪ੍ਰਾਚੀਨਤਾ ਤੇ ਅਨੁਕੂਲਤਾ। ਸਿੱਖਿਆ ਦੇ ਖੇਤਰ ਵਿਚ ਮਾਤ-ਭਾਸ਼ਾ ਦੀ ਸਿੱਖਿਆ ਦੇ ਉਦੇਸ਼ ਅਤੇ ਮਹੱਤਵ। 						CO1
	UNIT- II <ul style="list-style-type: none"> ਭਾਸ਼ਾ ਸਿੱਖਿਆ ਵਿਚ ਸੁਣਨ ਅਤੇ ਸਮਝਣ ਦਾ ਮਹੱਤਵ, ਸੁਣਨ ਠੀਕਤੀ ਦੇ ਵਿਕਾਸ ਨਹੀਲੋੜੀਂਦੇ ਅਭਿਆਸ। ਬੋਲਚਾਲ ਦੀ ਸਿੱਖਿਆ ਦਾ ਮਹੱਤਵ, ਅਠੱਧ ਉਚਾਰਣ ਦੇ ਕਾਰਨ ਅਤੇ ਸੁਧਾਰ, ਮੌਖਿਕ ਕਿਰਿਆਵਾਂ (ਵਾਰਤਾਲਾਪ, ਵਾਦ-ਵਿਵਾਦਭਾਂਗ, ਕਹਾਣੀ ਸੁਨਾਉਣਾ)। ਪੜ੍ਹਨਾ ਸਿਖਾਉਣ ਦੀਆਂ ਮੁੱਖ ਵਿਧੀਆਂ ਅਤੇ ਪੜ੍ਹਾਈ ਸਿੱਖਿਆ ਦੀਆਂ ਕਿਸਮਾਂ-ਸੂਖਮਪੜ੍ਹਾਈ ਤੇ ਸਬੂਲਪੜ੍ਹਾਈ (ਉੱਚੀ ਪਾਠ ਤੇ ਮੋਨ ਪਾਠ) ਲਿਖਣ ਕਲਾ ਦਾ ਮਹੱਤਵ, ਲਿਖਣਾ ਸਿਖਾਉਣ ਦੀਆਂ ਅਵਸਥਾਵਾਂ, ਵਿਧੀਆਂ ਅਤੇ ਲਿਖਤੀਕ੍ਰਮ। 						CO2
	UNIT- III <ul style="list-style-type: none"> ਕਵਿਤਾ ਦੀ ਸਿੱਖਿਆ - ਕਵਿਤਾ ਪੜ੍ਹਾਉਣ ਦੇ ਉਦੇਸ਼ ਅਤੇ ਵਿਧੀਆਂ। ਵਾਰਤਕ ਦੀ ਸਿੱਖਿਆ-ਉਦੇਸ਼ ਅਤੇ ਵਿਧੀਆਂ। ਸ਼ਬਦਾਂ ਵਲੋਂ ਦੀ ਸਿੱਖਿਆ ਦੀਆਂ ਵਿਧੀਆਂ, ਆਪ ਜੋੜਾਂ ਦੇ ਕਾਰਨ ਅਤੇ ਸੁਧਾਰ। ਵਿਆਕਰਣ ਦੀ ਸਿੱਖਿਆ-ਵਿਧੀਆਂ ਤੇ ਭਾਸ਼ਾਈ ਮਹੱਤਤਾ। ਲਿਖਣ ਕਲਾ ਦਾ ਮਹੱਤਵ, ਲਿਖਣਾ ਸਿਖਾਉਣ ਦੀਆਂ ਅਵਸਥਾਵਾਂ, ਵਿਧੀਆਂ ਅਤੇ ਲਿਖਤੀਕ੍ਰਮ। 						CO3

	UNIT- IV □ ਮਾਤ-ਭਾਸ਼ਾ ਦੀ ਪਾਠ ਪੁਸਤਕ-ਮਹੱਤਵ, ਸਿੱਖਿਅਕਤਾ ਅਤੇ ਆਲੋਚਨਾ। □ ਭਾਸ਼ਾ ਪੁਸਤਕਾਲਾ-ਮਹੱਤਵ ਤੇ ਪੜ੍ਹਨ ਰੁਚੀਆਂ ਦਾ ਵਿਕਾਸ। □ ਸ਼ਬਦ-ਸ਼੍ਰੇਣੀ ਸਹਾਇਕ ਸਾਧਨ, ਕਿਸਮਾਂ ਤੇ ਪ੍ਰਯੋਗੀ ਮਹੱਤਵ। □ ਭਾਸ਼ਾ ਯੋਗਤਾਵਾਂ ਦਾ ਮੁਲਾਂਕਣ-ਆਧੁਨਿਕ ਧਾਰਨਾ, ਮਹੱਤਵ, ਪ੍ਰੀਖਿਆ ਅਤੇ ਮੁਲਾਂਕਣ ਵਿਚ □ ਫਰਕ, ਮੁਲਾਂਕਣ ਦੇ ਸਾਧਨ ਅਤੇ ਰਸ਼ੀ ਦੀਆਂ ਕਿਸਮਾਂ। □ ਪਾਠ ਯੋਜਨਾ-ਉਦਾਹਰਣਾਂ ਅਤੇ ਤਿਆਰੀ (ਕਵਿਤਾ, ਕਹਾਣੀ, ਨਿਬੰਧ, ਵਿਆਕਰਣ, ਵਾਰਤਕ) □ ਭਾਸ਼ਾ ਸਿੱਖਿਆ ਦਾ ਅਧਿਆਪਕ।	CO4
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Reference Books:

- ਪੰਜਾਬੀ ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ : ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।
- ਪੰਜਾਬੀ ਠੇਠਾ ਰੂਪ ਅਤੇ ਠੇਠਾ ਜੋੜ ਕੋਠੀ : ਡਾ. ਹਰਕੀਰਤ ਸਿੰਘ।
- ਮਾਤ-ਭਾਸ਼ਾ ਦੀ ਸਿੱਖਿਆ ਵਿਧੀ : ਡਾ. ਜਸਵੰਤ ਸਿੰਘ ਜਸ।
- ਪੰਜਾਬੀ ਤੇ ਸਾਹਿਤ ਅਧਿਆਪਕ : ਡਾ. ਇੰਦਰਦੇਵ ਸਿੰਘ ਨੰਦਰਾ।
- ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀ ਉਤਪਤੀ ਅਤੇ ਵਿਕਾਸ - ਕਿਰਪਾਲ ਸਿੰਘ ਕਸੇਲ, ਪਰਮਿੰਦਰ ਸਿੰਘ, ਗੋਬਿੰਦ ਸਿੰਘ ਲਾਂਬਾ ਲਾਹੌਰ ਬੁੱਕ
- ਠੇਠਾ, ਲੁਧਿਆਣਾ।
- ਮੱਧਕਾਲ ਦੀ ਚੋਣਵੇਂ ਪੰਜਾਬੀ ਕਵਿਤਾ - ਡਾ. ਪ੍ਰੀਤਮ ਸਿੰਘ (ਸੰਪਾ.) ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਚੰਡੀਗੜ੍ਹ।
- ਪੰਜਾਬੀ ਅਧਿਐਨ ਦੇ ਮੁਢਲੇ ਸੰਕਲਪ - ਜੀਤ ਸਿੰਘ ਜੋਗੀ, ਵਾਰਸ ਠਾਹ ਫਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ - 1999
- ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਲਿਪੀ ਅਤੇ ਵਿਆਕਰਣ-ਡਾ. ਠੇਠਾ ਦੇਵ ਸਿੰਘ ਗਿੱਲ ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, 2006।

COURSE-17

Course Code	EDU379A
Course Title	PEDAGOGY OF MATHEMATICS - I
Hours	L: 4 , T: 0, P:0
Credits	4
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will be able to: CO1: Explain the nature and scope of mathematics. CO2: Recognize the need for establishing aims and objectives in learning mathematics to stimulate curiosity. CO3: Explore the methods and techniques of learning mathematics. CO4: Develop insights upon curriculum and pedagogical analysis for teaching of Mathematics.

Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1: Nature and scope of Mathematics <ul style="list-style-type: none"> • Meaning, Nature & Characteristics of Mathematics; • Values of Teaching Mathematics. • Relationship of mathematics with other disciplines. • Contribution of Mathematicians - Aryabhata, Ramanujan, Euclid, Pythagoras. • Relevance of Mathematics in ancient India. • Difference between teaching of mathematics and Science 						CO1
	Unit 2: Aims And Objectives Of Learning Mathematics <ul style="list-style-type: none"> • Knowledge and understanding through Mathematics. • Nurturing Curiosity, Creativity and Aesthetic Sense through mathematics. • Need of establish in general objectives of Teaching mathematics. • Study of aims and general objectives of teaching mathematics viz. objectives of school educational levels (Primary, Secondary using Bloom's Taxonomy) 						CO2
	Unit 3: Exploring Learners, Methods And Techniques Of Teaching Mathematics <ul style="list-style-type: none"> • Cultivating Learner Sensitivity like intuition, encouraging learner for probing,raising queries relating mathematics to real life situation. • Appreciating dialogue and cooperative learning among peer group • Methods of Teaching: Mathematics: Inductive—Deductive, Analytic—Synthetic, Lecture cum Demonstration,Problem Solving ,Laboratory. • Techniques of teaching Mathematics-Assignments, Drill work-Oral and Written, Cooperative Learning. 						CO3

	Unit 4: School Mathematics Curriculum And Approaches And Strategies In Teaching And Learning Of Mathematical Concepts <ul style="list-style-type: none"> Objectives of Curriculum, principles for designing Curriculum at different stages of schooling. Some highlights of Curriculum like vision of school mathematics. Construction of Syllabi in various disciplines of mathematics foreg. Algebra, Geometry etc. Pedagogical Analysis of various topics in mathematics-Algebra, trigonometry, stats and probability etc. 	CO4
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Reference Books:

- Aggarwal,J.C.(2008).Teaching of Mathematics. New Delhi: Vikas Publishing House Pvt Ltd.
- Bagyanathan,D.(2007).Teaching of Mathematics. Chennai :Tamil Nadu Text Book Society.
- Bishop,G.D.(1965).Teaching Mathematics in the Secondary School .London: Collins Publication.
- Bolt,B.,& Hobbs, D.(2005).101Mathematical Projects. New Delhi: Cambridge University Press.
- Butter,C.H.,&Wren,F.L.(1965).TheTeaching of Secondary Mathematics .London: McGraw Hill Book Company.
- Dececco,J.P.,&Crawford,W.(1977).The Psychology of Learning and Instruction. New Delhi: Prentice Hall of India Private Ltd.
- Ediger,M.,&BhaskaraRao,D.B.(2004).Teaching Mathematics Successfully. New Delhi: Discovery Publishing House.

COURSE-18

Course Code	EDU381
Course Title	PEDAGOGY OF BIOLOGICAL SCIENCE- I
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Discuss the nature and scope of science and biology.

	CO2: Acquire and develop skills in reference to biological sciences. CO3: Explore learners in different areas of biological sciences. CO4: Comprehend pedagogical shift, approaches and strategies of learning biology.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1 :NATURE AND SCOPE OF SCIENCE AND BIOLOGY						CO1
	<ul style="list-style-type: none">• Nature of Science, scope and importance of Biological Science.• History of biological sciences.• Interdisciplinary linkages of Biological Science with other disciplines.• Significance of inquiry, observation and experiments in biological science.• Relationship of biology education with environment and its sustenance.• Importance of Values and teaching of science						
	Unit 2 : AIMS AND OBJECTIVES						CO2
	<ul style="list-style-type: none">• Meaning of Aims and objectives of Teaching Science.• General and Specific Objectives with special reference to Bloom Taxonomy and Revised Bloom Taxonomy.• Unit Planning and Lesson Planning in Biological Science.• Development of scientific attitude and temper among learners.• Curricular concerns and its development with reference to biological sciences.• Content selection and its organization; Understanding of facts, principles and its application biological principles with cognitive abilities and development of learners						
	Unit 3 : EXPLORING LEARNERS						CO3

	<p>Methods of Teaching Science - Lecture Method, Demonstration Method, Lecture cum Demonstration, Discussion Method, Project method, Heuristic Method, Inductive and Deductive Method, Laboratory and problem solving Method.</p> <ul style="list-style-type: none"> • Skills of Teaching Science. • Important discoveries and inventions in the area of Biology and its impact on the curriculum • Stimulation of creativity and inventiveness in the area of biological science among learners • Organization of activities in the area of biological sciences like discussion, debate, drama and various other curricular experiences (poster making, essays, slogans, etc.), observing specific days involving learners • Nurturance of creative talents among learners through activities in various club activities in the area of Science, preparing learners for Science Exhibitions, Fairs and other gatherings at local/districts/state and national level 	
	<p>Unit 4 : PEDAGOGICAL SHIFT IN BIOLOGICAL SCIENCE, APPROACHES AND STRATEGIES OF LEARNING BIOLOGY</p> <ul style="list-style-type: none"> • Pedagogical shift from science as a fixed body of knowledge to the process of constructing knowledge; Pedagogical shift in nature of science, knowledge, learners, learning and teachers, assessment, science curriculum and planning teaching -learning experiences (taking examples from science/ Biology, such as Photosynthesis, Life Processes, Diversity in Living Organisms, Biotechnology etc.) • Pedagogical Analysis: Meaning and its steps. • Approaches and strategies of learning Biology: Expository approach, investigation, projects, peer interactions, collaborative approach, experiential learning, concept mapping and self- learning, etc., designing learning experiences with all these approaches 	CO4

COURSE-19

Course Code	EDU383
Course Title	PEDAGOGY OF PHYSICAL SCIENCE- I
Hours	L:4 T:0, P:0
Credits	4
Type	Departmental Elective

Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Examine nature of science as a process of constructing knowledge and as an interdisciplinary area of learning						
	CO2: Develop scientific attitude and temper and design learning objectives for different content areas in physical science.						
	CO3: Comprehend science topics through dialogue, discussion and argumentation						
	CO4: Analyse the NCERT science textbooks and discuss the various approaches and strategies for teaching-learning process in physical sciences						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1 :NATURE OF SCIENCE						CO1
	<ul style="list-style-type: none">• Science as a domain of inquiry, as a dynamic and expanding body of knowledge, science as interdisciplinary area of learning (e.g., Thermodynamics, Biomolecules Surface Chemistry, etc.),• Science as a process of constructing knowledge; Scientific methods: a critical view, How science works; Role of science teacher.• Science and society- Physical science and society; physical science for environment, health, peace and equity.• Contribution of eminent scientists- Isaac Newton, John Dalton, J.C. Bose, Albert Einstein Niels Bohr, C.V. Raman, V. Ramakrishan, etc.• Paradigm Shift in Physical Science.						
	Unit 2 :AIMS AND OBJECTIVES OF LEARNING PHYSICAL SCIENCE						
	<ul style="list-style-type: none">• Knowledge and understanding through science; Nurturing process skills of science, developing scientific attitude and scientific temper.• Nurturing curiosity, creativity and aesthetic sense and imbibing in science (Secondary Stage)/Physics and Chemistry (Higher Secondary stage).• General and Specific Objectives with special reference to Bloom Taxonomy and Revised Bloom Taxonomy.• Identifying and writing learning objectivities for different content areas in Science/ Physics/ Chemistry consistent with the cognitive development of learners (e.g., Mechanics, Heat, Electricity, magnetism, Light, Acids, Bases and Salts, Thermodynamics, Metallurgy, Physical and Chemical changes, Nature and state of Matter, etc.); Learning objectives in constructivist perspective						
						CO2	

	Unit 3 :EXPLORING LEARNERS, APPROACHES AND STRATAGIES OF LEARNING PHYSICAL SCIENCES	
	<ul style="list-style-type: none"> • Each learner in unique; Motivating them to being his/her previous knowledge gained inScience/ Physics and Chemistry into classroom; Naive concepts, Involving learners n teaching-learning process through dialogue, discussion, argumentation. • Negotiating and mediating learning in Physical Science; Encouraging learners to raise and ask questions, creating the habit of listening to learners • Methods of Teaching: Lecture cum discussion Method, Laboratory Method, Heuristic Method, Project Method, Problem solving Method. • Approaches and Strategies- Essential components of all approached and strategies,selecting appropriate approach and strategy, Constructivist approach; Collaborative learning approach, Problem solving approach; Concept mapping; Experiential learning. 	CO3
	Unit 4 :SCHOOL SCIENCE CURRICULUM AND PEDAGOGICAL SHIFT	
	<ul style="list-style-type: none"> • From subject-centered to behaviorist to constructivist approach to curriculum development;Review of NCERT and a state syllabus; recommendations of NCF son science curriculum. • Trends of NCERT syllabi; NCERT Textbook review; Moving from textbooks to teaching-learning materials; Teacher as a curriculum developer. • Pedagogical shift in nature of science, knowledge, learners, learning and teachers, assessment, science curriculum and planning teaching -learning experiences (taking examples from science/ Physics/Chemistry, such as Solutions, Chemical Equilibrium, Electrochemistry, Mechanical and Thermal Properties of Matter, Reflection, Refractions,Waves optics, etc • Need of inclusion in all aspects of teaching- learning of physical sciences –sciencecurriculum, approaches, ICT and professional development of teachers. 	CO4

Reference Books :

- Textbook for B.Ed. Pedagogy of Science: Physical Science Part I & Part II. National Councilor Educational Research and Training, 2013.

COURSE-20

Course Code	NCC203A						
Course Title	PERSONALITY DEVELOPMENT AND LEADERSHIP						
Hours	L: 4 , T: 0, P:0						
Credits	4						
Type	Departmental Elective						
Course Outcomes	<p>On the completion of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Develop a sense of time management and social skills. • Understand the life history & leadership qualities of personalities who have contributed in Nation Building and Literature. • Understand the role of NCC cadets as 2nd line Defence in 1965 War. • Develop awareness about various types of Natural and man made disasters. • Know about Armed Forces. • Expected Learning Outcomes. • Effectively Manage time. • Develop the qualities of social skills • Imbibe leadership qualities. • Do group discussions effectively. <p>Contribute in environmental awareness and conservation activities</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	0%	0%	0%	0 %	100%	0	0%
Examination Mode	Theory						
Syllabus	Unit 1: Personality Development I <ul style="list-style-type: none"> • Introduction to Personality Development, Factors influencing / shaping personality, Time Management and Interview Skills 						CO1
	Unit 2: Personality Development II <ul style="list-style-type: none"> • Intra & Interpersonal skills – Self- Awareness -& Analysis, Empathy, Critical & creative thinking, 						CO2

	Decision making, and problem-solving , Group Discussions – Social Skills & Time management. Self- Awareness, Emotional intelligence, Critical and Creative Thinking, Decision – Making, and Problem Solving.	
	Unit 3: Leadership Development (Contact Hrs.3). <ul style="list-style-type: none"> Indicators of good leadership, leadership, and motivation. Leadership traits, moral values and character traits. Case study-Ratan Tata, Ravinder Nath Tagore, Roll of NCC Cadets in the 1965 war. 	CO3
	Unit 4: Disaster management <ul style="list-style-type: none"> Assistance during natural disasters, Dos' and Dont's for NCC cadet performing Disaster Management Duties. Natural Disasters. Man Made Disasters. Fire Services and Fire Fighting. Disaster Management Organization NDMA and NDRF, type of Disaster 	CO4

COURSE-21

Course Code	EDU 391						
Course Title	Observing PTM and Participation in PTM						
Hours	L: T: P:1						
Credits	1						
Type	Core Course						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: TO develop observational skills among participants to effectively analyze the dynamics, communication patterns, and interactions between parents and teachers during PTMs.</p> <p>CO2: To equip participants with skills to address parental concerns, questions, and feedback constructively and proactively during PTMs.</p> <p>CO3: To recognize and respect the cultural diversity and backgrounds of families and understand how cultural differences may influence parent-teacher interactions and expectations during PTMs.</p>						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL

Weightage	0%	0%	0%	0%	0%	100%	0%
Examination Mode	Practical						
Syllabus	<p>Field engagement will be done in consultation with the higher authority and with the consent of the schools. All the types of observational records will be considered: Field notes and Running records</p> <p>Each pupil teacher will prepare a report and will submit it to the concerned teacher. This report will be evaluated and grades will be awarded</p>						

SEMESTER -6
COURSE OUTLINE
COURSE-1

Course Code	EDU302
Course Title	ORGANIC CHEMISTRY-II
Hours	L:4, T:0, P:0
Credits	4
Type	Core Course
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: : Explain the preparation, properties and reactions of Alcohol, Phenol and Ether
	CO2: Discuss the chemistry of carbonyl compounds
	CO3: Describe the Carboxylic acid and its derivatives.
	CO4: Find the synthetic applications and preparation of Nitrogen containing functional groups
Examination Type	Theory

Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1 :ALCOHOLS, PHENOLS, ETHERS AND EPOXIDES						CO1
	<ul style="list-style-type: none">Alcohols: preparation, properties and relative reactivity of 1°, 2°, 3° alcohols, Bouvaelt-Blanc Reduction; Preparation and properties of glycols: Oxidation by periodic acid and lead tetraacetate, Pinacol-Pinacolone rearrangement;Phenols: Preparation and properties; Acidity and factors effecting it, Ring substitution reactions, Reimer–Tiemann and Kolbe ‘s– Schmidt Reactions, Fries and Claisen rearrangements with mechanism;Ethers and Epoxides: Preparation and reactions with acids. Reactions of epoxides with alcohols, ammonia derivatives and LiAlH4						
	Unit 2 :CARBONYL COMPOUNDS						CO2
	<ul style="list-style-type: none">Structure, reactivity and preparation;Nucleophilic additions, Nucleophilic addition-elimination reactions with ammonia derivatives with mechanism; Mechanisms of Aldol and Benzoin condensation, Cannizzaro and Wittig reaction, α haloform reaction and Baeyer Villiger oxidation, oxidations and reductions (Clemmensen, Wolff-Kishner, LiAlH4, NaBH4)						
	Unit 3 :CARBOXYLIC ACIDS AND THEIR DERIVATIVES						CO3
<ul style="list-style-type: none">Preparation and reactions of acid chlorides, anhydrides, esters and amides; Comparative study of nucleophilic substitution at acyl group - Mechanism of acidic and alkaline hydrolysis of esters, Claisen condensation, Dieckmann and Reformatsky reactions, Hofmann-bromamide degradation and Curtius rearrangement							
Unit 4 : NITROGEN CONTAINING FUNCTIONAL GROUPS						CO4	

	<ul style="list-style-type: none"> • Preparation and important reactions of nitro and compounds, reduction of nitroarenes in acidic, neutral and alkaline media. nitriles and isonitriles <p>Amines: Effect of substituent and solvent on basicity; Preparation and properties: Gabriel phthalimide synthesis, Carbylamine reaction, Mannich reaction, Hoffmann 's exhaustive methylation, Hofmann-elimination reaction; Distinction between 1°, 2° and 3° amines with Hinsberg reagent and nitrous acid. Amine salts as phase – transfer catalysts, electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid.</p> <ul style="list-style-type: none"> • Diazonium Salts: Preparation and their synthetic applications. • Preparation of five membered heterocycles – furan, thiophene and pyrrole (Paal-Knorr synthesis). Aromatic characteristics of pyrrole, furan, thiophene and their chemical reactions with particular emphasis on the mechanism of electrophilic substitution 	

Reference Books :

- Morrison, R. T. & Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
- Graham Solomons, T.W. Organic Chemistry, John Wiley & Sons, Inc.

COURSE-2

Course Code	EDU304A
Course Title	ORGANIC CHEMISTRY-II LABORATORY
Hours	L:0 T:0, P:1
Credits	1
Type	Core Course
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Perform various types of Organic Reactions(Acylation, Bromination ,Nitration, Benzoylation, Aldol Condensation)
	CO2: Prepare Oil of Wintergreen from Commercial aspirin Tablet.

Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	%	50%	20%
Examination Mode	Practical						
Syllabus	1. Acetylation of one of the following compounds: amines (aniline, o-, m-, p-toluidines and o-, m-, p-anisidine) β and phenols (- naphthol, vanillin, salicylic acid) 2. Benzoylation of one of the following amines (aniline, o-, m-, p- toluidines and o-, m-, p-anisidine) and β one of the following phenols (-naphthol, resorcinol, p-cresol) by Schotten-Baumann reaction. 3. Oxidation of ethanol/ isopropanol (Iodoform reaction). 4. Bromination of AcetanilideA 5. Nitration of Acetanilide/nitrobenzene 6. Hydrolysis of amides and esters. 7. Semicarbazone of any one of the following compounds: acetone, ethyl methyl ketone, cyclohexanone, benzaldehyde. 8. Aldol condensation 9. Isolation of caffeine from tea leaves 10. Cannizzaro reaction 11. Preparation of oil of Wintergreen from commercial aspirin tablets.						CO1,CO2

COURSE-3

Course Code	EDU306
Course Title	ECOLOGY AND UTILIZATION OF PLANTS
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :

	CO1: Determine the scope, branches of ecology along with different components of ecosystem. CO2: Discuss the concept of Applied and Community Ecology. CO3: Comprehend the concepts of cultivation practices and soil requirement of different types of Crops. CO4: Acquire elementary knowledge and economic importance of different Crops						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	<ul style="list-style-type: none">• Definition, scope, relationship with other sciences.• Plant Environment: Climatic, edaphic, topographic and biotic factors affecting growth and distribution of plants.• Ecosystem: Concept, structure; abiotic and biotic components; trophic levels, food chain, food web, ecological pyramids, energy flow, biogeochemical cycles of carbon, nitrogen and water.						
	Unit 2						CO2
	<ul style="list-style-type: none">• Community Ecology: Community characteristics, frequency, density cover, life forms, biological spectrum; ecological succession – Hydrosere and Xerosere.• Applied Ecology: (a) Air, water and soil pollution and their control. (b) Conservation and management of natural resources (renewable and non-renewable)						
	Unit 3						CO3

	<ul style="list-style-type: none"> • Crop Production: Area of cultivation, soil requirement, cultivation practices and high yielding varieties of: Cereals (Wheat, Rice and Maize); Fibres (Cotton); Vegetables (Potato); Fruits (Mango, Grapes, Lemon); Sugar-yielding plants (Sugarcane); Oil- yielding plants (Groundnut, Mustard); Brief introduction on genetically modified crops. 	
	Unit 4	
	<ul style="list-style-type: none"> • Elementary Knowledge of the following plants (Botanical names, families, part used and economic importance): Wheat, Maize, Rice, Moong, Gram (Food); Teak, Shisham, Deodar, Sal (Timbers); Cotton, Jute, Coir, Flax (Fibres); Fennel, Coriander, Turmeric, Ginger, Mint, Clove (Spices and Condiments); Bamboo, Eucalyptus (Pulp plants); Liquorice, Belladonna, Aconite, Ashwagandha, Arjun, Poppy, Amla (Medicinal plants); Tea and Coffee (Beverages). • Forestry: Forest conservation, wood seasoning and its preservation. 	CO4

Reference Books :

- Kochhar, S.L. Economic Botany in Tropics, 2nd Edition, Macmillan India Ltd., New Delhi, 1998.
- Kormondy, E.J.: Concepts of Ecology, Prentice-Hall of India Pvt. Ltd., New Delhi, 1996.
- Odum, E.P.: Basic Ecology, Saunders, Philadelphia, 1983.
- Sambamurthy, A.V.S.S. and Subramanian, N.S.: A Textbook of Economic Botany, Wiley Eastern Ltd., New Delhi, 1989.
- Sharma, O.P.: Hill 's Economic Botany (Late Dr. A.F. Hill, Adapted by O.P. Sharma), Tata McGraw Hill Co. Ltd., New Delhi, 1996.
- Simpson, B.B. and Conner-Oghorzaly, M.: Economic Botany – Plants in Our World, McGraw Hill, New York, 1986.

Course Code	EDU308A						
Course Title	ECOLOGY AND UTILIZATION OF PLANTS LABORATORY						
Hours	L:0, T:0, P:2						
Credits	1						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Study about Ecological adaptations of Hydrophytes and Xerophytes CO2:Identify different types of crops on the basis of their economic importance. CO3: Determine the Soil pH and water holding capacity of different soil samples.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	It will include the following activities: 1. Study of ecological adaptations in external characters of: 2. Hydrilla, Potamogeton, Ceratophyllum, Vallisneria, Lemna, Eichhornia, Nelumbium, Calotropis, 3. Nerium, Acacia, Zizyphus, Casuarina, Capparis, Asparagus, Ruscus, Opuntia, Euphorbia royleana. 4. Identification and morphology of economically important part/s of crop plants mentioned below: Cereals (wheat, rice); Fibres (cotton); Vegetables (potato); Fruits (mango, grapes, lemon); sugar yielding plants (sugarcane) and oil-yielding plants (groundnut, mustard). 5. To determine soil pH using pH paper/solution/pH meter. 6. To determine water holding capacity of soil.						CO1, CO2, CO3

Course Code	EDU314						
Course Title	NUCLEAR PHYSICS						
Hours	L:4, T:0, P:0						
Credits	4						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Explain various fundamental forces and their role in nucleus stability						
	CO2: Differentiate between various types of radioactive decays.						
	CO3: Determine various nuclear reactions and nuclear models.						
	CO4: Elaborate concept of various radiation detectors						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1 :NUCLEAR PROPERTIES						CO1
	• Historical overview of nuclear physics, Constituents of nucleus, non-existence of electrons in nucleus, Nuclear charge and mass, nuclear radius, spin, parity, angular momentum, magnetic moment, electric quadrupole moment, binding energy, binding energy per nucleon and its observed variation with mass number of the nucleus, explanation of the binding energy curve, qualitative discussion of two-body nuclear forces.						
	Unit 2:RADIOACTIVE DECAYS						CO2

	<ul style="list-style-type: none"> Radioactive decay law, decay constant and half-life; methods of measurement of half-life, Type of decays, Natural radioactivity, chart of nuclides and domain of instabilities, radioactive dating, units for measuring radiations, constituents of Cosmic rays. Beta decays - capture decays, Fermi 's theory, angular momentum and parity selection rules, neutrino and antineutrino, parity violation in β-decay and its experimental verification. Alpha decay: Stability of heavy nuclei against break up, Geiger-Nuttall law, Gamow's explanation, angular momentum and parity in decay, energy release in alpha decay. Gamma transitions: Excited levels, isomeric levels, gamma transitions, multipole moments, selection rules, transition probabilities, internal conversion. 	
	Unit 3 :NUCLEAR REACTIONS AND NUCLEAR MODELS	
	<ul style="list-style-type: none"> Rutherford 's experiment of nuclear transmutation, Types of nuclear reactions, reactions cross section, conservation laws, Kinematics of nuclear reaction, Q-value and its physical significance. Nuclear fission, neutron reactions, Fermi and transuranic elements, chain reactions, Nuclear reactor, reactor criticality, moderators. Liquid drop model, semi-empirical mass formula, condition of stability, evidence for nuclear magic numbers 	CO3
	Unit 4 :INTERACTION AND DETECTION OF RADIATION	
	<ul style="list-style-type: none"> Energy loss of electrons and positrons, Positron annihilation in condensed media, Stopping power and range of heavier charged particles, interaction of gamma rays with matter: Basis of detection of nuclear radiations, Gas-filled detectors, proportional and Geiger-Muller counters, Scintillation detectors, solid-state detectors, solid state nuclear track detectors. 	CO4

Reference Books :

- W. E. Burcham, and M. Jobes, Nuclear and Particle Physics, United Kingdom: Pearson 1995.
- V. K. Mittal, R. C. Verma, and S.C. Gupta, Introduction to Nuclear and Particle Physics. New Delhi: Prentice Hall of India, 2013.
- K. S. Krane Introductory Nuclear Physics, John Wiley & Sons, 1988.
- K. Hyde, Basic Ideas and Concepts in Nuclear Physics United Kingdom: Institute of Physics 2004.
- H. Enge, Introduction to Nuclear Physics, London: Addison-Wesley 1971.
- I. Kaplan Nuclear Physics, New Delhi: Narosa 2002.

COURSE-6

Course Code	EDU316A						
Course Title	NUCLEAR PHYSICS LABORATORY						
Hours	L:0, T:0, P:2						
Credits	1						
Type	Departmental Elective						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills :</p> <p>CO1: Measure the half life of radioactive samples using counting statics.</p> <p>CO2: Summarise and apply the techniques of Gamma ray spectroscopy.</p> <p>CO3: Demonstrate the principles of nuclear detection.</p> <p>CO4: Explore the basic nuclear reactions</p>						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	<ol style="list-style-type: none"> 1. Study the background radiation levels using Radiation meter 2. Characteristics of Geiger Muller (GM) Counter 3. Study of characteristics of GM tube and determination of operating voltage and plateau length using background radiation as source (without commercial source). 4. Study of counting statistics using background radiation using GM counter. 5. Study of radiation in various materials (e.g., KSO₄ etc.). Investigation of possible radiation 6. Different routine materials by operating GM at operating voltage. 7. Study of absorption of beta particles in Aluminum using GM counter. 8. Detection of α particles using reference source & determining its half-life using spark counter. 9. Gamma spectrum of Gas Light mantle (Source of Thorium). 						CO1, CO2, CO3

COURSE-7

Course code	EDU346A
Course title	Abstract Algebra
Hours	L :5, T:0, P:0

Credits	5						
Type	Departmental Elective						
Course outcomes	<p>On the completion of the course , the student will be able to:</p> <p>CO1: Solve group and theorems of isomorphism, homomorphism CO2: Discuss Rings, subrings ,Gaussian and polynomial rings theorems of isomorphism,homomorphism CO3: Elaborate the concept of Vector spaces, bases ,dimension of bases ,quotient spaces CO4: Explain linear transformations range space,null space,converting linear transformation into matrices</p>						
Examination type	Theory						
Assessment tools	Written quiz	Assignment/ project	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%
Examination mode	Theory						
Syllabus	Unit – 1 Groups and sub-groups <ul style="list-style-type: none"> Group , subgroups, cosets, language's theorem, Normal (subgroup and Quotient groups) Simple groups, Homomorphism, Isomorphism theorems Automorphisms, Cayley's theorem, Permutation groups, Alternating group. 						CO1
	Unit-2 Rings <ul style="list-style-type: none"> Rings and their Properties Subrings. Integral domains, Fields, Ideals, Prime and Maximal ideals, Homomorphism, Integral domains. Euclidean domains. The ring of Gaussian Integers, Polynomials rings over rings 						CO2
	Unit-3 Vector Spaces Definition and examples of vector spaces, subs paces, sum and direct sum of subspaces. <ul style="list-style-type: none"> Linear span, linear dependence, independence and their basic properties, Basis, Finitely generated vector spaces, Existence theorem for basic dimensional vector space, Invariance of the number of elements of a basis set, dimension, Existence of complementary subspace of a finite dimensional vector space, dimension of sums of sub spaces. 						CO3
	Unit – 4 Linear transformations <ul style="list-style-type: none"> Linear transformations, algebra of linear transformations, rank and nullity of al near map, inverse of a linear transformation, the space $L(u,v)$, composition of linear maps, matrix associated with a linear map, linear map 						CO4

	associate with matrix, Dimensions of matrix. Rank and nullity of a matrix <ul style="list-style-type: none"> Characteristic roots and characteristic vectors of a matrix, nature of characteristic roots of special types of matrices. Minimal polynomial of a matrix, unitary reduction of Hermitian matrices ,similarity of matrices, 	
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Reference books:

- Herstein,I.N.(2007),Topics in Algebra.2nd Editions,Wiley Eastern Ltd.,New Delhi.
- Artin,M.(1994),Algebra. Prentice Hall of India ,New Delhi.
- Gillian,J.A.(2000),Contemporary Abstract Algebra.Narosa Publishing House,New Delhi.
- Singh,S.&Zameeruddin,Q.(2000),Modern Algebra.7th Edition,Vikas Publishing House,New Delhi.
- Datta,K.B.(2007),Matrix and Linear Algebra.Prentice Hall of India Pvt .Ltd.,New Delhi.
- Hoffman,K.&Kunze,R.(2006),Linear Algebra.2nd Edition,Prentice Hall of India Pvt Ltd,New Delhi.
- Krishnamurthy,V.,Mainra,V.P.&Arora,J.L.(2006),An Introduction to Linear Algebra. East West Press,New Delhi.

COURSE-8

Course Code	EDU310						
Course Title	DEVELOPMENTAL BIOLOGY						
Hours	L:4, T:0, P:0						
Credits	4						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Define the basic concept of cell Biology						
	CO2: Analyse the different stages of early embryonic development						
	CO3: Compare between late and post embryonic development						
	CO4: Determine the implication of developmental biology						
Examination Type	Theory						
Assessment Tools		Assignment/ Project Work					
Weightage	Written Quiz		MSE	MSP	ESE	ESP	ABL/PBL/ATT
	10%	10%	25%	0%	50%	0%	5%

Examination Mode	Theory	
Syllabus	Unit 1	CO1
	<ul style="list-style-type: none"> • Introduction: Historical perspective and basic concepts: Phases of development, Cell-Cell interaction, Pattern formation, Differentiation and growth, Differential gene expression, Cytoplasmic determinants and asymmetric cell division. 	
	Unit 2	CO2
	<ul style="list-style-type: none"> • Early Embryonic Development: Gametogenesis, Spermatogenesis, Oogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal): Changes in gametes, blocks to polysomy; Planes and patterns of cleavage; Types of Blastula; Fate maps (including Techniques); Early development of frog and chick up to gastrulation; Embryonic induction and organizers. 	
	Unit 3	CO3
	<ul style="list-style-type: none"> • Late Embryonic Development: Fate of Germ Layers; Extra- embryonic membranes in birds; Implantation of embryo in humans, Placenta (Structure, types and functions of placenta) • Post Embryonic Development: Metamorphosis- Changes, hormonal regulations in amphibians and insects; Regeneration- Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each); Ageing-Concepts and Theories 	
	Unit 4	CO4
	<ul style="list-style-type: none"> • Implications of Developmental Biology: Teratogens: Teratogenic agents and their effects on embryonic development; In vitro fertilization, Stem cell (ESC), Amniocentesis 	

Reference Books :

- Balinsky B. I. and Fabian B. C. An Introduction to Embryology, V Edition, International Thompson Computer Press, 1981.
- Carlson, R. F. Patten's Foundations of Embryology
- Gilbert, S. F. Developmental Biology, IX Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA, 2010.

- Kalthoff. Analysis of Biological Development, II Edition, McGraw-Hill Publishers, 2008.
- Lewis Wolpert. Principles of Development. II Edition, Oxford University Press, 2002.
- Hafez, E. S. E. Reproduction in Farm Animals, Lea and Fabiger Publishers, 1962.
- Prost, P. J. Apiculture. Oxford and IBH, New Delhi, 1962.
- Sericulture. FAO Manual of Sericulture.
- Singh, S. Beekeeping in India. Indian council of Agricultural Research, New Delhi.
- Srivastava, C. B. L. Fishery Science and Indian Fisheries. Kitab Mahal Publications, India, 1999.
- Developmental Biology by K.V. Sastry & Vinita Shukla – (Rastogi Publications, 2008).
- Introduction to Embryology by B.I. Balinsky – (W.B. Saunders, Philadelphia, 1976).
- Foundations of Embryology by B.M Paten and B.M. Carison.
- Foundations of Animal Development by A.F. Hopper and N.H. Hart (Oxford University Press, New York, 1980).
- Vertebrate Embryology by R.S. McEwen (Oxford & IBM Publishing CO., New Delhi).

COURSE -9

Course Code	EDU312A						
Course Title	DEVELOPMENTAL BIOLOGY LABORATORY						
Hours	L:0, T:0, P:2						
Credits	1						
Type	Departmental Elective						
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :						
	CO1: Construct the whole mounts and sections of developmental stages of frog and chick. CO2: Discuss the developmental stages and life cycle of Drosophila.						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/LP
Weightage	0%	0%	0%	30%	0%	50%	20%
Examination Mode	Practical						
Syllabus	It will include the following activities:					CO1, CO2	

	<ul style="list-style-type: none"> Novel: The English Teacher by R.K. Narayan
	Unit-3 Literary Terms and Concepts: Phonetics, phonology, acoustics, resonance, articulation, tone, nucleus, syllabification, voicing, GIE, RP, ingressive air stream, egressive air stream, connected speech.
	Unit – 4 <ul style="list-style-type: none"> C.V. and Cover Letter Interview Skills Professional letters Report writing and Memo

Reference books

- Koneru, Aruna. Professional Communication. Delhi: Mc Graw, 2008. Print
- Ashby, P. Speech sounds. London: Routledge, 1995. Print.
- Bala subramaniam, T. A Text Book of English Phonetics for Indian Students. India: Macmillan, 1981. Print
- English Literature, Its History and Its Significance for the Life of the English-speaking World by William J. Long.
- Hewings, M. (2007). Advanced English Grammar. New Delhi: Cambridge University Press India Ltd.
- Rao, V.K. (2007). Peculiar English. New Delhi: Neelkamal Publications.
- Sharma, G.L. (2008). Glimpse of English Poetry. Chandigarh: Publication Bureau, Punjab University.
- Tickoo, C. & Kumar, J.S. (2000). Writing with a Purpose. New Delhi: Oxford University Press.

COURSE-11

Course Code	EDU398A
Course Title	ELECTIVE PUNJABI- VI
Hours	L:5, T:0, P:0
Credits	5
Type	Departmental Elective
Course Outcomes	<p>On the completion of the course the students will be able to</p> <p>ਮਲਹਕਫਵਜਡਕਤ – ਇਸ ਪੇਪਰ ਦਾ ਮੰਤਵ ਪੁਰਾਤਨ ਪੰਜਾਬੀ ਕਵਿਤਾ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦੇਣਾ ਹੈ। – ਨਿਬੰਧ ਵਿਧਾ ਦਾ ਅਧਿਐਨ ਡੂੰਘਾ ਕਰਨਾ ਹੈ। – ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ ਦੀ ਗਹਿਨ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ ਹੈ। – ਪੱਛਮੀ ਕਾਵਿ ਠੋਸਤਰ ਨਾਲ ਜਾਣ ਪਛਾਣ ਕਰਾਉਣੀ ਹੈ। –</p>

	ਭਾਗ ਵਿਗਿਆਨ ਦੀ ਜਾਣਕਾਰੀ ਦਾ ਘੇਰਾ ਵਿਠਾਲ ਕਰਨਾ ਹੈ। ਪਾਠਕ੍ਰਮ 1 ਠੋਥਦ ਸਵੇਰਾ (ਸੰਪ: ਹਰਿਭਜਨ ਸਿੰਘ) ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ ਚੰਡੀਗੜ੍ਹ (ਨਿਰਧਾਰਤ ਕਵੀ: ਠਾਹ ਹੁਸੈਨ, ਦਮੋਦਰ, ਹਾਥਿਜ ਬਰਖੁਰਦਾਰ, ਮਿਰਜਾ ਸਾਹਿਬ) 2 ਨਿਬੰਧ ਪ੍ਰਕਾਠ (ਸੰਪਾ) ਕਰਨੈਲ ਸਿੰਘ ਬਿੰਦ ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ ਪੰਜਾਬ ਯੂਨਿ ਚੰਡੀਗੜ੍ਹ। 3 ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (ਆਦਿ ਕਾਲ ਤੋ 1700 ਈ ਤਕ) 4 ਪੱਛਮੀ ਕਾਵਿ ਠਾਸਤਰ 5 ਭਾਠਾ ਵਿਗਿਆਨ						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	UNIT- I 1 ਠੋਥਦ ਸਵੇਰਾ, ਕਾਵਿ ਪੁਸਤਕ ਵਿਚੋ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿਚੋ ਇਕ) 6 ਠਗਾਤ 189 2 ਕਾਵਿ ਪੁਸਤਕ ਵਿਚੋ ਕਵਿਤਾ ਦਾ ਵਿਠਾ ਵਸਤੂ ਦੱਸ ਕੇ ਸਾਰ ਸਪਠਟ ਕਰਨਾ (ਦੋ ਵਿਚੋ ਇਕ) 9 ਠਗਾਤ						CO1
	UNIT- II 1 ਨਿਬੰਧ ਪ੍ਰਕਾਠ ਪਾਠ ਪੁਸਤਕ ਵਿਚੋ ਕਿਸੇ ਇਕ ਵਾਰਤਕ ਅੰਠ ਦੀ ਵਿਹਾਰਕ ਆਲੋਚਨਾ (ਦੋ ਵਿਚੋ ਇਕ) 6 ਠਗਾਤ 2 ਨਿਬੰਧ ਦੀ ਸਾਹਿਤਕ ਪਰਖ (ਦੋ ਵਿਚੋ ਇਕ) 9 ਠਗਾਤ						CO2
	UNIT- III 1 ਠੋਥਦ ਸਵੇਰਾ ਤੇ ਨਿਬੰਧ ਪ੍ਰਕਾਠ ਉਪਰ ਅਧਾਰਿਤ ਲਘੂ ਪ੍ਰਠਨਾਂ ਦੇ ਉੱਤਰ (ਅੱਠਾਂ ਵਿਚੋ ਪੰਜ) 15 ਠਗਾਤ						CO3
	UNIT- IV 1 ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (ਆਦਿ ਕਾਲ ਤੋ 1700 ਈ: ਤਕ) ਸੂਫੀ, ਕਿੱਸਾ ਤੇ ਜੰਗਨਾਮਾ ਸਾਹਿਤ ਵਿਚੋ ਇਤਿਹਾਸ ਨਾਲ ਸੰਬਧਿਤ ਪ੍ਰਠਨ (ਦੋ ਵਿਚੋ ਇਕ) 5 ਠਗਾਤ 2) ਪੱਛਮੀ ਕਾਵਿ ਠਾਸਤਰ : ਓ) ਅਰਸਤੂ ਦਾ ਅਨੁਕਰਣ ਸਿਧਾਂਤ ਅ) ਮਨੋਵਿਠਲੋਠਣੀ ਵਿਧੀ ਏ) ਮਾਰਕਸਵਾਦ (ਦੋ ਵਿਚੋ ਇਕ) 5 ਠਗਾਤ 3) ਭਾਠਾ ਵਿਗਿਆਨ : ਭਾਠਾ ਵਿਗਿਆਨ ਦੀ ਪਰੀਭਾਠਾ, ਖੇਤਰ ਤੇ ਹੋਰ ਵਿਗਿਆਨਾਂ ਨਾਲ ਸੰਬੰਧ ਸਮਾਜ ਵਿਗਿਆਨ ਤੇ ਮਾਨਵ ਵਿਗਿਆਨ (ਦੋ ਵਿਚੋ ਇਕ) 5 ਠਗਾਤ						CO4

Reference Books:

1. ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ। 2. ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ। 3. ਪਰਮਿੰਦਰ ਸਿੰਘ ਤੇ ਕਿਰਪਾਲ ਸਿੰਘ ਕਸੇਲ, 'ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀ ਉਤਪਤੀ ਤੇ ਵਿਕਾਸ', ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ। 4. ਈਸ਼ਰ ਸਿੰਘ ਤਾਂਘ, ਪੱਛਮੀ ਸਮੀਖਿਆ ਦੇ ਸਿਧਾਂਤ, ਦੀਪ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਬਾਲਾ ਸ਼ਹਿਰ। 5. ਸਿੱਧੂ, ਪਰਮਜੀਤ ਸਿੰਘ (ਡਾ.), 'ਮਾਨਵ ਵਿਗਿਆਨਕ ਭਾਸ਼ਾ ਵਿਗਿਆਨ', ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, ੧੯੯੮. ੬. ਹਰਿਭਜਨ ਸਿੰਘ, ਅਧਿਅਨ ਤੇ ਅਧਿਆਪਨ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ ੭. ਧਾਲੀਵਾਲ, ਪ੍ਰੇਮ ਸਿੰਘ (ਡਾ.), ਰੂਪ ਵਿਗਿਆਨ ਅਤੇ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ, ਮਦਾਨ ਪਬਲੀਕੇਸ਼ਨਜ਼, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, ੨੦੦੨. ੮. ਧਾਲੀਵਾਲ, ਪ੍ਰੇਮ ਪ੍ਰਕਾਸ਼ ਸਿੰਘ (ਡਾ.) 'ਸਿਧਾਂਤਕ ਭਾਸ਼ਾ ਵਿਗਿਆਨ', ਮਦਾਨ ਪਬਲੀਕੇਸ਼ਨਜ਼, ਪਟਿਆਲਾ, ੨੦੦੨ ੯. ਬਰਾੜ, ਬੂਟਾ ਸਿੰਘ (ਡਾ.), 'ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਸ਼੍ਰੋਤ ਤੇ ਸਰੂਪ', ਵਾਰਿਸ ਸ਼ਾਹ ਫਾਉਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ ੨੦੧੨.

COURSE-12

Course Code	EDU397A						
Course Title	Elective Hindi-VI						
Hours	L:5, T:0, P:0						
Credits	5						
Type	Departmental Elective						
Course Outcomes	<p>अध्ययन प्रक्रिया के समापन के उपरान्त विद्यार्थी :-</p> <ul style="list-style-type: none"> • साहित्यिक और सामाजिक विषयों पर निबन्ध लेखन का अभ्यास करने हेतु कम से कम पाँच निबन्ध लिखेंगे। • निबन्ध, संस्मरण, जीवनी तथा आत्मकथा जैसे गद्य विधाओं के स्वरूप और तत्वों का वर्णन करेंगे। • गद्य फुलवारी पर आधारित दिए गए प्रश्नों की आलोचना लिखेंगे। • निर्धारित छन्दों का हिन्दी भाषा में प्रयोग करेंगे। • निबन्ध लेखनका हिन्दी भाषा में प्रयोग करेंगे 						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	<p>UNIT-I</p> <p>निबन्ध लेखन ;केवल साहित्यिक और सामाजिक विषयों पर। कुल आठ निबन्धों में से किसी एक पर निबन्ध लिखने के लिये कहा जायेगा। १५ १८७</p>						CO1
	<p>UNIT-II</p> <p>न्दपज प गद्य फुलवारी, सम्पादक डॉ० शहाबुद्दीन शेख, प्रकाशक-राजपाल एण्ड सन्स, नई दिल्ली। केवल निम्नलिखित पाठ निर्धारित है । आसुओं की होली; प्रेमचन्द, अकली; मन्नु भंडारी, चीफ की दावत; भीष्म साहनी, सुभान खाँ; रामवृक्ष वेनीपुरी, भाभी; महादेवी वर्मा, सदाचार का ताबीज; हरिशंकर परसाई, महात्मा गांधी; रामकुमार वर्मा, मैं धोबी हूँ; शिवपूजन सहाय, गप-शप; नामवर सिंह, जमनोत्री की यात्रा; विष्णु प्रभाकर, कदक अंकों की एक सन्दर्भ सहित व्याख्या करनी होगी। कुल दो व्याख्याएँ पूछी जाएंगी। ;ख १०</p>						CO2

	अंकों का एक समीक्षात्मक प्रश्न करना होगा । कुल दो प्रश्न पूछे जाएंगे । १५	
	UNIT- III नन्दपत्र पृ १ हिन्दी साहित्य का इतिहास केवल निम्नलिखित गद्य-विधाओं का उद्भव और विकास : उपन्यास, कहानी, नाटक, निबंध, आत्मकथा, जीवनी, संस्मरण, रेखाचित्र। ८ २ हिन्दी भाषा और उसकी लिपि देवनागरी लिपि : विकास, गुण दोष, सुधार के उपाय ७ अंकों के कुल दो प्रश्न पूछे जाएंगे, जिनमें से केवल एक प्रश्न का उत्तर देना होगा । ७	CO3
	UNIT- IV नन्दपत्र पृ १ छन्द-परिचय- निम्नलिखित छन्द निर्धारित हैं । दोहा, सोरठा, चौपाई, रोला, कुण्डलियां, सवैया, द्रुतविलम्बित, हरिगीतिका, उपेन्द्रवज्रा, इन्द्रवज्रा । ८ २ निमन्त्रण पत्र, प्रेस, विज्ञप्ति, विज्ञापन का प्रारूप तैयार करना (२ प्रश्न पूछे जाएंगे, छात्रों को १ प्रश्न का उत्तर देना होगा)। ७	CO4

Reference Books:

- चतुर्वेदी राजेश्वरप्रसाद, (२००८) हिन्दी व्याकरण उपकार प्रकाशन, आगरा।
- २. साहनी एस.बी, शर्मा आर. पी (२००७) सर्वोत्तम हिन्दी व्याकरण, साहनी प्रकाशन, आगरा।
- ३. राजाराम कल्पना (२००९) निबंध वाध, स्पेक्ट्रम बुक्स प्रा. लि., दिल्ली।
- ४. गुप्त गणपतिचन्द्र (२००८), साहित्यिक निबंध, लोकभारती प्रकाशन, इलाहाबाद।
- ५. गुलाटी यश (२००७), बृहत् साहित्यिक निबन्ध, सूर्यभारती प्रकाशन, दिल्ली।
- ६. नगेन्द्र हरदयाल (२००९) हिन्दी साहित्य का इतिहास, मयूर पेपरबैक्स, नोयडा

COURSE-13

Course code	EDU332
Course title	Understanding self and personality development
Hours	L:4 , T:0 , P: 0
Credits	4
Type	Core Course
Course outcomes	On the completion of the course , the student will be able to: CO1: Gain an insight into the concepts of self and identity. CO2: Evolve themselves as a teacher with professional ethics. CO3: Develop capability to apply knowledge of personality approaches for self and societal growth

	CO4: Reflect critically on factors that shape the understanding of self among learners.						
Examination type	Theory						
Assessment tools	Written quiz	Assignment/project	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%
Examination mode	Theory						
Syllabus	Unit – 1 Understanding of self and personality <ul style="list-style-type: none"> • Concept of Self: Meaning of Self, Self-esteem , Self-identity; Cognitive and Behavioral aspects of Self; Philosophical and Cultural Aspects of Self • Reflections and critical analysis of one’s self and identity and Identifying factors in the development of self and in shaping identity • Concept of Personality: Meaning of Personality; Major Approaches and Five Factor Model 						CO1
	Unit-2 Development of professional self and ethics <ul style="list-style-type: none"> • Understanding and sharing one’s identity and socio-cultural, historical • and political influences in shaping the professional identity and how ethics helpful in professional Development. • Exploring, reflecting and sharing one’s own aspirations ,dreams, concerns and struggles in becoming a teacher • Reflections on experiences,efforts,aspirations,dreams etc. of peers 						CO2
	Unit-3 Coping With Social Complexities: Role of Education <ul style="list-style-type: none"> • Expanding human activities and relations; decreasing unhealthy competition uncertainty and insecurities and the resultant identity conflicts. • Role of education system, school, community and management for organizing curricular and co-curricular activities leading towards coping with social complexities. 						CO3

	Unit – 4 Role of Teacher In Developing Understanding Of Self Among Learners <ul style="list-style-type: none"> • Reflecting on one's own childhood and adolescent years of growing-up. • Facilitating development of awareness about identity among learners. • Developing skills of effective listening, accepting, positive regard etc.as a facilitator. • Understanding the role of a teacher as facilitator and partner in well-being. 	CO4
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Reference books:

- Bhatt,H. *The diary of a school teacher*. An Azim Premji University Publication.
- Retrieved from www.arvindguptatoys.com/arvindgupta/diary-school-teachereng.pdf
- Bhattacharjee,D.K(ed).(2010).*Psychology and Education–Indian Perspectives*, NCERT, NewDelhi
- Dalal,A.S.(ed)(2001).*AGreaterPsychology-AnIntroductiontothePsychologicalthoughtsofSriAurobindo*.Puducherry,Sri AurobindoAshram
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- Goel,D.R.(2005).*Quality Concerns in Education*. Centrefor advanced study in Education- M.S.University of Baroda
- Gulati,S.,andPant,D.(2012).*Education for Values in Schools–A Frame work*. NCERT,New Delhi.

COURSE-14

Course code	EDU380A
Course title	Pedagogy of Mathematics - II
Hours	Hours, L :4 , T: 0 , P:0
Credits	4
Type	Departmental Elective
Course outcomes	On the completion of the course , the student will be able to: CO1: Identify the different learning resources of Mathematics.CO2: Construct lesson plans for effective teaching and learning mathematics. CO3: Analyze the different tools and techniques of assessment. CO4: Comprehend the role of teacher as a researcher through the role of teacher through lifelong learning.

Examination type	Theory						
Assessment tools	Written quiz	Assignment/project	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0	5%
Examination mode	Theory						
Syllabus	Unit – 1 LEARNING RESOURCES IN MATHEMATICS <ul style="list-style-type: none"> • Identification and use of learning resources from immediate environment (e.g.Pulleys, Projectiles, shares,Friction) • Using community resources: bringing community to the class and taking class to the community; Pooling of learning resources in school complex/block /district level. • Using laboratory as a learning resource, approaches to laboratory work, planning and organizing laboratory work,safety in laboratories. • Textbook Reviews of Mathematics books. • Pooling of Learning Resources. • Handling hurdles in utilization of resources 						CO1
	Unit-2 PLANNING FOR TEACHING AND LEARNING MATHEMATICS <ul style="list-style-type: none"> • Lesson Planning: Meaning, Need &Importance and Steps of Lesson Planning; Formation of Macro Lesson Plan. • Raising queries and relating mathematics to real life situations • Appreciating dialogue and cooperative learning among peer group; 						CO2
	Unit-3 TOOLS AND TECHNIQUES FOR ASSESSMENT OF LEARNING MATHEMATICS <ul style="list-style-type: none"> • Meaning of Measurement, assessment and evaluation, difference between Measurement and evaluation. • Recording and reporting of learning evidence. • Measurement of student's achievement-CCE, Creation of rubrics and portfolio. • Construction of Achievement test. 						CO3
	Unit – 4 MATHEMATICS: LIFE LONG LEARNING AND PROFESSIONAL DEVELOPMENT OF MATHEMATICS <ul style="list-style-type: none"> • Recreational activities in mathematics riddles puzzles and mathematical club. 						C O 4

	<ul style="list-style-type: none"> • Concept of Vedic Mathematics • Various opportunities for in-service professional development– interaction with peer teachers, reading, attending training programme, membership of professional organisation, sharing through conferences, seminars and Journals, mentoring, teacher sex change programme, acquiring higher qualification, collaborating with universities and other schools etc. • Teacher as a researcher – learning to understand how students learn science: Action research – meaning, selecting problems for action research, developing various format for action research, area of action research 	
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COURSE-15

Course Code	EDU382
Course Title	PEDAGOGY OF BIOLOGICAL SCIENCE- II
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Analyze the curriculum and learning resources of biology at school stage.
	CO2: Plan for transaction of concepts and identify teaching – learning materials related to Biological science.
	CO3: Develop appropriate assessment tools for the evaluation of learning.

	CO4: Discuss various means for professional development of biology teachers.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Unit 1						CO1
	<ul style="list-style-type: none">• Recent trends of Science and Biology Curriculum; Gradual evolution of Biology as a discipline.• Need and significance of learning resources in Biology• Identifying and analyzing age and stage specific learning resources and using them in teaching- learning process of Biology.• Biology Laboratory as a learning resource; Design and components of Biology laboratory.• Use of Science and Biology experiment kits in teaching-learning of Biology.						
	Unit 2						CO2
	<ul style="list-style-type: none">• Use of ICT tools and online resources at various stages of school education; ICT based virtual experiments and simulations as learning resource in Biology; Role of the teacher.• Need of instructional aids for teaching of science.• Limitations and hurdles in the use of various learning resources in Biology.• Planning and organizing activities, experiments, project work and other practical experiences.• Field visits and excursion as learning resource in Biology: Planning, its organization and observation.• Construction of lesson plan in science: need, importance, steps, essentials of good lesson plan						
	Unit 3						CO3

	<ul style="list-style-type: none"> • Concept of Test, Measurement, Assessment and Evaluation. • Purpose and Importance of Evaluation. • Assessment through participation in collaborative learning: peer interaction; group discussions, seminars and presentations by learners on various topics related to biological processes, environment and recent advancements in the area of biological sciences. • Assessment of experimental work in biological sciences (formal experiments in laboratories, activities and projects) • Critical examination of various methods of assessment in biological system • Meaning and Construction of Achievement Test in Science. 	
	Unit 4	
	<p>Various professional developmental programmes for teachers such as in-service teachers' training, seminars and conferences, membership of professional organizations etc. Exploration on ICT based on-line platforms for sharing of teaching-learning practices, Collaborations of schools with colleges, universities and institutes of Higher Education</p> <p>Teacher as a researcher: learning to understand how children learn science including biological sciences.</p> <p>Action research in teaching-learning of Biology.</p> <p>Practicum</p>	CO4

COURSE-16

Course Code	EDU384
Course Title	PEDAGOGY OF PHYSICAL SCIENCE- II
Hours	L:4, T:0, P:0
Credits	4
Type	Departmental Elective
Course Outcomes	On the completion of the course, the student will gain the following knowledge and skills :
	CO1: Identify and use various learning resources in physical science
	CO2: Plan teaching- learning activities in physical sciences
	CO3: Discuss the various tools and techniques of assessment for learning physical science.
	CO4: Elaborate the concept of lifelong learning and professional development of science teachers

Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/ Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
	Unit 1						CO1
	<ul style="list-style-type: none">• Identification and use of learning resources from immediate environment (e.g., Natural pH Indicators, Soaps and Detergents, Baking Soda, Washing Soda, Common Salts, Fruits, Fiber, Pulleys, Projectiles, Lenses and Mirrors, Propagation of Waves in solid, liquid and gas, etc.);• Using community resources: bringing community to the class and taking class to the community; Pooling of learning resources in school complex/ block /district level.• Using laboratory as a learning resource, approaches to laboratory work, planning and organizing laboratory work, safety in laboratories, Physics laboratory, Chemistry laboratory, handling hurdles in utilization of resources.• Print and ICT resources -- Textbooks, Journal and Magazines; Dales cone of experiences; Different forms of ICT and its applications in science education--audio -aids, video -aids, audio-video aids, educational T.V.; Use of computer for simulation, internet and open learning resources.• Integrating ICT in teaching-learning process taking examples (e.g., Acid, Base, Salt, Dual Nature of Radiation, Radioactivity., etc.)						
	Unit 2						CO2

- Need of planning teaching-learning experiences; Identification and organization of concepts – basic principles and factors need to be considered for it; Basic elements of a Physical Science lesson with examples from Science/Physics/Chemistry.
- Facilitating formation of groups; Planning and organizing activities in Physical Science, planning laboratory work and ICT application in learning Science/ Physics/ Chemistry.
- Approaches of lesson planning, Herbartian and RCEM, Prepare lesson plan by using Harbartian and RCEM Approach,
taking examples form Secondary stage (Physical and Chemical Changes, Redox Reaction, Light, Magnetic Effect of Electric current,)

Unit 3

- Using the terms test, examination measurement, assessment an evaluation in proper context; Continuous and Comprehensive Evaluation (CCE) and its features. Assessment (CCE) and its features;
- Performance based assessment; Planning assessment framework, learning Indicators (LIs) and its types, developing LIs f or activity, presentation, group work, assignments etc.
- Tools and technique of assessment of written and oral work, project work, laboratory work, field trips, journal writing, concept map; Assessment of learners with special needs.
 - o Recording and reporting of learning evidences – Measurement of students ‘achievement – marks and grading, Measurement of process skills and aptitude of learners; Portfolio – its role in evaluating student’s performance

CO3

Unit 4

- Preparing learners for lifelong learning by stimulating creativity and inventiveness in Science – debate, discussion, drama, poster making, visit to various places, science club, celebrating specific days, field visits, science exhibitions: benefits and objectives, evaluation of exhibits, exploring linkages with district/ state/ central agencies; Teacher as a lifelong learner.
- Professional development – Teaching as a profession, need for pre- service and in- service professional development programme, major shift in teacher education programme.
- Various opportunities for in-service professional development –interaction with peer teachers, reading, attending training programme, membership of professional organisation, sharing through conferences, seminars and

CO4

Journals, travel, cultivating science hobbies, mentoring, teachers exchange programme, acquiring higher qualification, collaborating with universities and other schools etc.	
<ul style="list-style-type: none"> • Role of reflective practices in professional development– questionnaires, research and portfolio. • Teacher as a researcher – learning to understand how students learn science: Action research – meaning, selecting problems for action research, developing various format for action research, area of action research. 	

COURSE-17

Course code	EDU374						
Course title	Pedagogy of Language – II (English)						
Hours	L : 4 , T:0 , P:0						
Credits	4						
Type	Departmental Elective						
Course outcomes	<p>On the completion of the course , the student will be able to:</p> <p>CO1: Demonstrate mastery in teaching language and literature by comprehending diverse literary forms and crafting activities, and materials for impactful lesson design.</p> <p>CO2: Develop the skills of lesson planning and employ effective teaching strategies.</p> <p>CO3: Proficiently design, assess, and adapt syllabi and textual materials to foster engaging and effective learning experiences. CO4: Comprehend the significance of instructional materials and assessment strategies in the educational</p>						
Examination type	Theory						
Assessment tools	Written quiz	Assignment/ project	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination mode	Theory						
Syllabus	Unit – 1 LANGUAGE, LITERATURE AND AESTHETICS <ul style="list-style-type: none"> • Different creative forms of English Language-Literature, media and translation • Teaching different texts: Poetry, Prose, Drama– Objectives and procedure • Developing tasks, activities and materials for lesson design. 						CO1
	Unit-2 LESSON PLAN						CO2

	<ul style="list-style-type: none"> • Types of planning (i) yearplan (ii) unit plan (iii) individual lesson plan • Instructional Objectives and Specifications for: prose, poetry, grammar and composition • Teaching Skills: Introduction,Explanation,probing question,StimulusVariation and Closing achiever 	
	Unit-3 DEVELOPMENT AND ANALYSIS OF SYLLABUS AND TEXTUAL MATERIALS <ul style="list-style-type: none"> • Language Course Book-Importance, Characteristics and Review • Library-Importance, Management of Library, Role of Language Library in developing reading habits among the students. • Language Curriculum-Meaning, Importance and Principles of Curriculum Construction 	CO3
	Unit – 4 TEACHING – LEARNING MATERIALS AND ASSESSMENT- ITS ROLE AND IMPORTANCE <ul style="list-style-type: none"> • Audio-visual aids,Use of Multimedia in ELT, Online Resources for ELT, ELT and Social Networking • Planning activities such as discussion, debates, workshops, seminar etc.; Language labs. • Techniques of evaluation— oral, written, portfolio; Cloze test,Self-evaluation;Peer evaluation;Group evaluation • Reflecting – Problem solving,creative and critical thinking, Enhancing imagination and environmental awareness, Construction of language test and Blue print. 	CO4

Reference books

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learning;Rowley;New bury house.

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COURSE-18

Course Code	EDU376						
Course Title	Pedagogy of Language- II (Hindi)						
Hours	L:5, T:0, P:0						
Credits	5						
Type	Departmental Elective						
Course Outcomes	<p>On the completion of the course the students will be able to</p> <ul style="list-style-type: none"> • भाषासंज्ञा, संज्ञासूची, संज्ञासूची, संज्ञासूची, संज्ञासूची • भाषासंज्ञा, संज्ञासूची, संज्ञासूची, संज्ञासूची, संज्ञासूची • भाषासंज्ञा, संज्ञासूची, संज्ञासूची, संज्ञासूची, संज्ञासूची • भाषासंज्ञा, संज्ञासूची, संज्ञासूची, संज्ञासूची, संज्ञासूची • भाषासंज्ञा, संज्ञासूची, संज्ञासूची, संज्ञासूची, संज्ञासूची • भाषासंज्ञा, संज्ञासूची, संज्ञासूची, संज्ञासूची, संज्ञासूची • भाषासंज्ञा, संज्ञासूची, संज्ञासूची, संज्ञासूची, संज्ञासूची • भाषासंज्ञा, संज्ञासूची, संज्ञासूची, संज्ञासूची, संज्ञासूची • भाषासंज्ञा, संज्ञासूची, संज्ञासूची, संज्ञासूची, संज्ञासूची • भाषासंज्ञा, संज्ञासूची, संज्ञासूची, संज्ञासूची, संज्ञासूची • भाषासंज्ञा, संज्ञासूची, संज्ञासूची, संज्ञासूची, संज्ञासूची 						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						

Syllabus	<p>UNIT-I हहद४उाचारणशःण</p> <p>१ चारणअवयव/ेथान १ ॐहदं ४कःमानकॐवॐनयाँ वंगककरण (ेवरःयंजन) १ बलाघात, ेवराघात, अनतु ोान अशुोु धउाचारणके कारण, उनके ढकारएवंसुधारके उपाय</p>	CO1
	<p>UNIT-II हहद४शब्दऔरशब्द-रचना</p> <p>१ शब्दऔरउसके ढकारः(क) १ अथ[कःँािाटसे(एकाथकअनेकाथकपयायवाचीवलोम १ (ख) ढयोगकःँािाटसे(सामाॐय, तकनीकः) १ इॐतहासकःँािाटसे(तःसम, तहभव, देशजऔरवदेशी) १ शब्दरचनाः उपसग, [ढयय, संधऔरसमासकःअवधारणऔरशब्दरचनामःइनकःभोा मका १ शब्दिशेतयां, मुहावरे औरलोकोिाेतयःकाभाषा णमःमहःव।</p>	CO2
	<p>UNIT- III पाभ्य॑मपाभ्यसामेी कािींनमाणऔरवःलेषणतथा िींशःणिअधगमसामेी</p> <p>१ पाभ्यचया[, पाभ्य॑मतथापाभ्यपेोतुकःकासंबंध १ पाभ्य॑मकाॐनमा[णएवंपाभ्यपेोतुकोवकास (माॐयमकेतरपर) १ भाषाकःपाभ्यपेोतुककःवशेषताँ १ पाभ्य॑मएवंपाभ्यपेोतुककोवःलेषणएवंमोा यांकन १ रटंतमणाल४सेॐनमतवाद [४उपागमकःऔर टं मीडयाएवंअॐयपठनसामेोी। १ चनामोोहयोगकःएं वःय-ँयसामेोीरेडयो, दरूदशन['म। १ पाभ्यसहगामीयाँ (साँहःयपरषहपरचचा[, वादववाद, कायगो [ःठः, सेमनारइःयाँद)। १ भाषाढयोगशाला। 156</p>	CO3
	<p>UNIT- IV मलयोंकन—इसकःभोोमकाऔरमहःव</p> <ul style="list-style-type: none"> • भाषावकासकःमगॐतऔरमोायोाकं न • सततऔरःयापकमःयाकं न <p>मोायोाकं नकःमवधयोँ-मौखक, खत, ेवमोायोाकनं</p> <ul style="list-style-type: none"> • आपसीमोायोांकन, समहमःयाकं न 	CO4

<p>• Mænjkaevøp-xulomæn, बहुवकऽपीयमæन, सxयअसxयमæनइxयाँद। vf/kxeिाँवधयाँःःयाँयानके साथ- साथपारचचा[छाँ]हवारावयंकरक सीखनाउनकःसहभागताहवाराशऽण।</p> <p>केाादसेऽतककाँहदं 8काँदोरा यकँा कसीएकपाभ्यपेातु तककाँतुलनाकरना। २ण अपनेरा यकाँकेाादसेऽककाँहदं 8काँपाभ्यपेातु तककाँपरें खाबनाना। ३ण ह्यालयपठ्ठकाकाँपरें खाबनाना। ४ण समकाल8नबालसाँह यकाँसमीाकरना। ५ण केााा9केँहदं 8केँमिद्वनपठ्ठकाँसमीाकरना। ६ण मँहलाओकाँ क.ह8ाँ दोपठ्ठकाओकाँसमीाकरना। १५७ ७ण ओहदं 8केँ .ह8ाँ दोदल तसाँह यकारकँा कसीएककृ ँतकाँसमीा। ८ण केााादसेऽतककाँ कसीएककेााकेँ ओहदं 8मिद्वनपठ्ठकाँनमाख्ण। ९ण ह्यालयीअनुभवकायख्णमके दौरानभाषाशणकोलेकरआनेवाल8कँठनाइयपरया मकशोध। १०ण अपनेाँिँहममचलतलोककथालोकगीतकँासकं लनतैयारकरना।</p>	
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Reference Books:

- सतत एवं व्यापक मूल्यांकन, एन.सी.ई.आर.टी. प्रकाशन।
- भोलानाथ पंतवार, (1967) भाषा विचारधारा, इलाहाबाद कताब महल।
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आधुनिक कहहदश शिष्टवर्ग, लखनऊ ध्यान प्रकाशन।
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- भाई योगेंद्रजीत (1994) कहहदश भाषा शिष्टवर्ग, आगरा वनोद पुस्तक मंडिर।
- MkW- t;iky rjaxl ¼2003½ fganh f'k{k.k dh ubZ fn'kk| ubZ fnYyh| lkSE; k izdk'kuA

COURSE-19

Course Code	EDU378
Course Title	Pedagogy of Language- II (Punjabi)
Hours	L:4, T:0, P:0

Credits	4						
Type	Departmental Elective						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	UNIT- I <ul style="list-style-type: none"> ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਵੱਖ-ਵੱਖ ਰੂਪ, ਸਕੂਲੀ ਪਾਠਕ੍ਰਮਾਂ ਵਿੱਚ ਵੱਖ-ਵੱਖ ਰੂਪਾਂ ਦੀ ਪੜ੍ਹਾਈ (ਵਿਸ਼ੇਸ਼ਤਾਸਾਹਿਤ - ਕਵਿਤਾ, ਕਹਾਣੀ, ਨਾਵਲ, ਨਾਟਕ, ਇਕਾਂਗੀ, ਨਿਬੰਧ) (ਪ੍ਰਸਤਾਵਿਤ ਪ੍ਰਸ਼ਨ)(ਲੋਕ ਸਾਹਿਤ ਰੂਪ - ਸੁਹਾਗ, ਘੋੜੀਆਂ, ਸਿੱਠਣੀ, ਢੋਲਾ, ਟੱਪਾ, ਬੋਲੀ, ਮਾਹੀਆ) (ਪ੍ਰਸਤਾਵਿਤ ਪ੍ਰਸ਼ਨ) ਸਕੂਲੀ ਪਾਠਕ੍ਰਮ ਵਿੱਚ ਮੀਡੀਆ ਦੀ ਭੂਮਿਕਾ ੩. ਭਾਸ਼ਾ ਵਿੱਚ ਅਨੁਵਾਦ ਦਾ ਮਹੱਤਵ ਤੇ ਲੋੜ 						CO1
	UNIT- II <ul style="list-style-type: none"> ਕਵਿਤਾ ਤੇ ਵਾਰਤਕ ਅਧਿਆਪਨ - ਮਹੱਤਵ, ਉਦੇਸ਼, ਵਿਧੀਆਂ ਤੇ ਅੰਤਰ। ਨਾਟਕ ਸਿੱਖਿਆ - ਮਹੱਤਵ, ਉਦੇਸ਼ ਤੇ ਵਿਧੀਆਂ, ਕਹਾਣੀ ਦੀ ਸਿੱਖਿਆ - ਕਹਾਣੀ ਸੁਣਾਉਣ ਦੀ ਕਥਾ, ਅਧਿਆਪਨ ਵਿਧੀਆਂ ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ - ਸਭਿਆਚਾਰ ਦੀ ਜਾਣ ਪਛਾਣ, ਮਹੱਤਵ ਅਤੇ ਪਛਾਣ ਚਿੰਨ੍ਹ (ਪ੍ਰਸਤਾਵਿਤਪ੍ਰਸ਼ਨ) 						CO2
	UNIT- III <ul style="list-style-type: none"> ਪਾਠ ਯੋਜਨਾ - ਪਰਿਭਾਸ਼ਾ, ਉਦੇਸ਼, ਮਹੱਤਤਾ, ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਤੇ ਕਿਸਮਾਂ, ਪਾਠ ਯੋਜਨਾ ਦੀ ਤਿਆਰੀ ਸੂਖਮ ਪਾਠ ਯੋਜਨਾਂ ਦੀ ਤਿਆਰੀ ਤੇ ਕੋਸ਼ਲ ਅਧਿਆਪਨ। ਭਾਸ਼ਾ ਸਿੱਖਿਆ ਵਿੱਚ ਸਹਾਇਕ ਸਮੱਗਰੀ-ਅਰਥ, ਮਹੱਤਤਾ, ਕਿਸਮਾਂ ਤੇ ਉਪਯੋਗੀ ਵਰਤੋਂਭਾਸ਼ਾ ਪ੍ਰੋਯੋਗਸ਼ਾਲਾ - ਅਰਥ, ਉਦੇਸ਼, ਮਹੱਤਤਾ, ਵਰਤੋਂ ਦੇ ਢੰਗ। 						CO3
	UNIT- IV <ul style="list-style-type: none"> ਪਾਠਪ੍ਰਸਤਕ, ਪਾਠਕ੍ਰਮ - ਉਦੇਸ਼, ਮਹੱਤਤਾ ਤੇ ਸਿਧਾਂਤ।ਭਾਸ਼ਾ ਸਿੱਖਿਆ ਲਈ ਮੁਲਾਂਕਣ - ਅਰਥ ਤੇ ਵਿਧੀਆਂ, ਨਿਰੰਤਰ ਵਿਆਪਕ ਮੁਲਾਂਕਣ ਦੀ ਧਾਰਨਾ ਅਤੇਪੜ੍ਹਾਈ ਤੋਂ ਦਸਵੀਂ ਤੱਕ ਅੰਕ ਵੰਡ। ਮੁਲਾਂਕਣ ਲਈ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਰੂਪ ਅਤੇ ਪਰਤਵੀ ਸੂਚਨਾ। 						CO4

Reference Books:

	<p>Infantry Weapons</p> <ul style="list-style-type: none"> • Characteristics of Battalion Support Weapons. • Characteristics of Infantry Company support weapons and 5.56M MINSAS Rifle
	<p>Unit-3 Obstacle course training</p> <ul style="list-style-type: none"> • OT Practice-I:-Untimed, Cadets will be familiarized with all the obstacles in the Obstacle Course and briefed about correct method do them, OT Practice-II:Timed practice for all the cadets and record to be maintained

Reference books

- (i) Grooming Tomorrow's Leaders, published by DG,NCC.
- (ii) Youth in Action,published by DG, NCC.

COURSE-21

Course Code	EDU 392						
Course Title	Pre- Internship						
Hours	L: T: P:4 weeks						
Credits	4						
Type	Core Course						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Elaborate about the activities to be carried out during school internship programme.</p> <p>CO2: Observe classroom teaching, various school activities and gain insight of the multiple roles of the teacher.</p> <p>CO3: Develop skill in content analysis, preparing TLM and observing classroom processes.</p> <p>CO4: Plan and implement teaching learning activity in the classroom.</p>						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL
Weightage	0%	0%	0%	0%	0%	100%	0%

Examination Mode	Practical	
Syllabus	<p>(The Internship Committee formulated by the Institute will prepare a Schedule for execution of Pre- Internship Tasks)</p> <ul style="list-style-type: none"> • During the four-week duration, the student teachers are oriented to the school internship programme. • For the first two weeks, they will be provided training in core teaching skills, content analysis, preparing Teaching Learning Material (TLM), writing observation records, Reflective Journals, conducting Action Research and Case Study, organizing school activities and their reporting, developing Achievement Tests, administering and analyzing. Student teachers will also write lessonplans and take up peer teaching. • For the next two weeks, student teachers will be placed in the schools. They will observe the classes being handled by the regular teachers as well as their peers. Every student teacher will teach at least one lesson in each teaching subject and reflection the teaching. <p>Modes of Learning Engagement</p> <ul style="list-style-type: none"> • Pre internship will be carried out both in the Institute and the School. • First two weeks they will be exposed to theoretical knowledge about internship and receive information on various activities that are required to be carried out by the student teachers. • Student teachers will get hands on experience on performing certain tasks which they are expected to perform in the school. • In the beginning they learn to teach in a simulated condition by teaching their peers. • Next two weeks, student teachers are attached to the school on full time basis, observe the teaching by the regular classroom teacher, teach at least one lesson in each teaching subject, involve in all the activities of the school and learn to understand the school. • Student teachers keep a record of all the work carried out by them in the school (Details to be worked out). 	

SEMESTER -7
COURSE OUTLINE
COURSE-1

Course Code	EDU 491						
Course Title	Internship						
Hours	L:0 T:0 P:14 weeks						
Credits	14						
Type	Core Course						
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Observe the classes of regular teachers and peers and learn about teaching learning process and classroom management.</p> <p>CO2: Develop skill in planning and teaching in actual classroom environment.</p> <p>CO3: Reflect, learn to adapt and modify their teaching for attaining learning outcomes of students.</p> <p>CO4: Maintain a Reflective Journal.</p> <p>CO5: Acquire skill in conducting Action Research/ Case Study.</p> <p>CO6: Inculcate organizational and managerial skills in various school activities.</p> <p>CO7: Create and maintain resources for teaching and learning in internship schools.</p>						
Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL
Weightage	0%	0%	0%	0%	0%	100%	0%
Examination Mode	Practical						
Syllabus	<p>The student teachers will perform the following in the school attached to her/him.</p> <p>A) Delivery of lessons</p> <ul style="list-style-type: none"> The student teachers will deliver a minimum of 40 lessons including two criticism lessons (one at the end of 9th week and the other during the last week of the teaching assignment) in each Pedagogy course. In total they will teach 80 lessons in two Pedagogy courses (Preferably 20 lessons for Upper Primary classes and 20 for Secondary classes in each Pedagogy course). The student teachers will visualize details of teaching learning sequences, keeping all considerations in view. They will also involve themselves in discussion, reflection, reconsideration and consolidation after each lesson as well as at the end of the unit. <p>B) Practicum</p>						

- Preparation, administration and analysis of achievement tests in two Pedagogy courses.
- Conducting Action Research/ Case Study
- Observing ten lessons of a regular teacher and ten lessons of peers in each Pedagogy course and preparing an Observation record.
- Preparing and using teaching aids in each Pedagogy course.
- Writing a Reflective Journal
- Organizing any two co-curricular activities and reporting.
- Preparing a suggestive comprehensive plan of action for improvement of some aspects of the school, where they have been teaching during Internship.
- Reporting on activities conducted with the community.
- Any other activity given under Suggested School Activities can be studied after consultation with the Faculty, in charge of learning to function as a teacher (School Internship).

SUGGESTED SCHOOL ACTIVITIES

- Organizing cultural, literary, sports and games activities
- Framing of time table
- Organizing Morning Assembly
- Maintenance of school discipline
- Maintenance of school records, library and laboratories
- Providing Guidance and Counseling services
- Studying the role of community in school improvement
- School Mapping
- Water Resource Management in schools
- Mass awareness of social evils and taboos
- Organizing educational fair, exhibition, club activities, nature study and field trip. (Any other activity/ activities decided by the Institute)

Modes of Learning Engagement

- Internship tasks will be carried out as a part of the in-school 'practice. A mentor/cooperating teacher and supervisor of the Institute will guide the student teacher periodically.
- Student teachers will observe at least 10 lessons of regular classroom teacher and 10 lessons of their

	peers. <ul style="list-style-type: none"> • Adequate classroom contact hours - a minimum of 40 lessons including two criticism lessons in each Pedagogy course preferably 20 lessons for Upper Primary classes (VI-VIII and 20 lessons for Secondary classes (IX and X) for subject based teaching – learning will be under taken in consultation with the school authorities. • A Reflective Journal will be maintained by the student teacher in which she/he records her/his experiences, observations and reflections on classroom experiences. • A portfolio will be maintained by the student teachers which includes lesson plans, resources used, assessment tools, student observations and other records. • Student teachers will always work in liaison with the regular teachers in the schools involving themselves in all the school activities and conducting at least two activities. • The Institute in consultation with the schools will prepare the details of the internship programme for each of the schools 	
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COURSE-2

Course Code	EDU 493
Course Title	Working with Community
Hours	L:0 T:0 P:2weeks
Credits	2
Type	Core Course
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Acquaint themselves with the factors working in the society/ community i.e. knowledge of social realities.</p> <p>CO2: Develop the dignity of labour among them.</p> <p>CO3: Arouse their interest in the social and economic reconstruction of the country.</p> <p>CO4: Make themselves aware of the educational problems and needs of the society.</p> <p>CO5: Work with the community in the interest of the learner and their learning outcomes.</p> <p>CO6: Develop their personality through community service.</p>

Examination Type	Practical						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL
Weightage	0%	0%	0%	0%	0%	100%	0%
Examination Mode	Practical						
Syllabus	<p>METHODOLOGY</p> <p>The students will spend 2 weeks at a stretch during the academic year in the identified village. Separate activities will be undertaken every year out of the following or given by the Institute.</p> <p>Suggested Activities</p> <ul style="list-style-type: none"> • Shramdaan and beautification • Study of educational scenario of a community. Reporting the profile of each Institution/NGO/social organization, which is directly or indirectly concerned with educational /literacy programme. • Micro planning exercises for assessing the educational status of the community • Organization of “Nukad Natak” “Cultural Programmes”, “Rallies” etc. for motivating the villagers for sending their wards to schools. • School mapping exercises for assessing the educational need of the community. • Study of enrolment, stagnation and dropout problems. • Exploring the community resources and finding means and ways of using them for betterment of school. • Survey of nearby community (adopted community) and assessing its educational needs, social needs etc. • Conducting awareness programmes in the community-like Environment conservation, tree plantation, watershed management, health programmes like vaccination, polio drop etc. AIDS awareness, electoral awareness, road safety, human rights, women rights etc. • Organization of Literacy programmes in the community • Cleanliness drives in the community and awareness about their needs • Character building programmes • Developing healthy food habits among the community • Conducting Vocational training programmes for self-employment. • Promoting peace oriented values in the community. • Remedial teaching work for poor and needy in the 						

	<p>community.</p> <ul style="list-style-type: none"> • Action Research regarding local problems in consultation with the community. • Promoting peace oriented values in the community. Conducting Adult Education programmes • Assistance and working with local community in actual relief work whenever needed. • Training of community in First Aid. • Helping the children with special needs. • Conducting Vocational training programmes for self-employment. <p>MODES OF LEARNER ENGAGEMENT Proposed activities of the programme will be organized keeping in view the budgetary provision and the time of duration along with the required available facilities at the time of organization of the programme. MODES OF INTERNAL ASSESSMENT Internal assessment of Punctuality, Regularity, Discipline, Cooperation and Performing Arts will be done through observation of the students and viva- voce will be conducted on their experiences and written report prepared by the student teachers.</p>	
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Semester VIII

Outline of the Courses

Course 1

Course Code	EDU403
Course Title	SCHOOL AND CLASSROOM MANAGEMENT
Hours	L:4, T:0, P:0
Credits	4
Type	Core Course
Course Outcomes	<p>On the completion of the course the students will be able to</p> <p>CO1: Explain the various principles of school and classroom management.</p> <p>CO2. Enlist the physical resources of the school and importance of their maintenance</p> <p>CO3: Define the significance of institutional planning and school organization.</p>

	CO4: Describe the importance of organizing co-curricular activities.						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	UNIT- I CLASSROOM MANAGEMENT <ul style="list-style-type: none"> • Concept, Principles, and Approaches to Classroom management, Factors affecting classroom management • Teacher as effective Manager • Types of Educational Management- Autocratic, Democratic, Lassie- Fair Supervision 						CO1
	UNIT- II MANAGEMENT OF SCHOOL RESOURCES <ul style="list-style-type: none"> • Concept of Resources, Management of the Physical Resources- School Building, Library, Labs. Hostels and the Playground • Management of the Human Resources- Interpersonal and Intergroup relations, Teacher- Taught relationship, Relationship with the Head, Administrator Portrait lighting techniques 						CO2
	UNIT- III SCHOOL ORGANIZATION AND MANAGEMENT <ul style="list-style-type: none"> • School as an organization: Meaning, Objectives and Principles of school organization, • Institutional Planning: Meaning, objectives, characteristics, and advantages of institutional planning. • Norms and conditions of opening a school according to CBSE 						CO3
	UNIT- IV MECHANISM FOR CO-ORDINATED FUNCTIONING IN SCHOOL <ul style="list-style-type: none"> • Co-curricular Activities: Meaning, Importance, Principles of organizing co-curricular activities (Especially Morning Assembly, NSS, NCC, Field trips). • School Records and Registers: Need and Importance, Types, Characteristics and Maintenance. 						CO4

	• Biometric Attendance System: Concept, Significance and Challenges in Indian context.	
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Reference Books:

- Bob Moon and Patricia Murphy (Ed). (1999). The curriculum in Context. London. Paul Chapman Publishing.
- Chryshochoos, N.E. (1998). Learner Needs and Syllabus Design. M.A. Dissertation. England. School of English. The University of Durham.
- D.J. Flinders and S.J. Thorton (eds). (1997). My Pedagogic Creed. New York. The Curriculum Studies Reader, Routledge.
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- Mathur, S.S. (1990): Educational Administration and Management. The Indian Press, Ambala.
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- Sharma, T. S. (2005). School Management and Administration. Patiala: Shaheed-EAzam Printing Press.
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- The Report of Education Commission. (1964-66). MHRD Govt. of India.
- Tyler, R.W. (1949). Basic Principles of Curriculum and Instruction. Chicago. University of Chicago Press.

Course -2

Course Code	EDU404
Course Title	CURRICULUM DEVELOPMENT

Hours	L:4, T:0, P:0						
Credits	4						
Type	Core Course						
Course Outcomes	<p>On the completion of the course the students will be able to</p> <p>CO1: Conceptualize the meaning and different approaches of curriculum development.</p> <p>CO2: Elaborate the different theories, models and reforms in the development of curriculum.</p> <p>CO3: Analyse the steps and design of curriculum.</p> <p>CO4: Explain the role of organisation in implementation and evaluation of curriculum.</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0	50%	0%	5%
Examination Mode	Theory						
Syllabus	<p>UNIT- I CONCEPT OF CURRICULUM</p> <ul style="list-style-type: none"> • Meaning and concept of curriculum; Types of curriculum: Core, Hidden, Null and Latent; foundations of curriculum i.e., Philosophical, Sociological, Psychological, Historical. • Types of Curriculum: Subject- Centered/ Traditional curriculum, Activity- Based curriculum, Basic Education Curriculum. • Approaches: Discovery Approach: Characteristics, Purpose of role of teacher; Humanistic Curriculum Approach; Characteristics, Purpose of role of teacher. • Changing paradigms in education: Cognitivism, behaviorism, constructivism, connectivism. • Activity- based curriculum. Discovery Approach, 						CO1
	<p>UNIT- II BASICS OF CURRICULUM DEVELOPMENT</p> <ul style="list-style-type: none"> • Need, Importance and Process of Curriculum development • Principles and Theories of curriculum development • Models of curriculum development 						CO2

	<ul style="list-style-type: none"> • Stage Specific Curriculum-Pre-primary, Primary, Secondary, Higher Secondary • Curriculum reforms in India; National Curriculum Frameworks; Syllabus, textbook, differentiated curriculum, Contextualized Curriculum 	
	UNIT- III CURRICULUM DEVELOPMENT AND CURRICULUM DESIGN Steps of Curriculum Development <ul style="list-style-type: none"> • Process of Curriculum Development. • Formulating aims and objectives. • Criteria for selecting knowledge and representing knowledge in the form of different subjects. • Organizing fundamental concepts and themes vertically across levels and integrating themes within (and across) different subject. • Selection and organization of learning situations. Curriculum Design: Concepts, Steps and Models: Tyler's, Wheelers's, Kerr's	CO3
	UNIT- IV CURRICULUM IMPLEMENTATION AND EVALUATION <ul style="list-style-type: none"> • Role of MHRD, NCERT and the States in curriculum reform. • Teachers 'role in generating dynamic curricular experiences through: • Need and evaluation of effective curriculum construction with reference to existing pedagogies and instructional approaches, teacher training, textbooks and instructional materials. 	CO4

Reference Books:

- Aggrawal, J.C., & Gupta, S. (2005). Curriculum Development. New Delhi: ShipraPublisher.
- Candra, A. (1977). Curriculum Development and Evaluation in education. New Delhi: SterlingPublishers.
- Darji, D.R., & Lulla, B.P. (1967). Curriculum development in secondary schools of Baroda. Baroda: SadhanaPress.
- Erickson, H.L. (2007). Concept based curriculum and instruction for the thinking classroom California; CorwinPress.
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- Kumari, S. & Srivastava, D.S. (2005). Curriculum and Instruction. New Delhi: ShipraPublishers.
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- Tata, H. (1962). Curriculum development theory & practice. New York: Harcourt, Brace & WorldInc.

Course-3

Course Code	EDU406						
Course Title	CREATING AN INCLUSIVE SCHOOL						
Hours	L:4, T:0, P:0						
Credits	4						
Type	Core Course						
Course Outcomes	<p>On the completion of the course the students will be able to</p> <p>CO1: Comprehend the concept of special, integrated and inclusive education</p> <p>CO2: Describe and differentiate between visual, hearing and speech impairment.</p> <p>CO3: Identify the various learning disability and their educational provisions.</p> <p>CO4: Elaborate different forms of mental and locomotor disability.</p>						
Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%

Examination Mode	Theory	
Syllabus	UNIT- I INCLUSIVE EDUCATION change content <ul style="list-style-type: none"> Inclusive Education: Concept, Importance, Role of a Special Educator, Special Classroom. Issues and Changing trends in Special and Inclusive Education. Role of a psychologist in dealing with the problems of Exceptional children. 	CO1
	UNIT- II AUDIO- VISUAL IMPAIRMENT <ul style="list-style-type: none"> Visual Impairment: Concept, Characteristics, Causes, Categories, Behavioral Indicators and Education of the Visually Impaired. Hearing Impairment: Concept, Characteristics, Causes, Categories, Behavioral Indicators and Education of Hearing impaired. Speech Impairment: Concept, Characteristics, Causes, Types, Behavioral Indicators and Education of Children with Speech Impairment 	CO2
	UNIT- III LEARNING DISABILITY Attention Deficit Hyperactivity Disorder (ADHD): Concept, Educational & Psychological Strategies <ul style="list-style-type: none"> Cognitive & Behavioral Therapies to treat ADHD children. Autism Spectrum Disorders: types, Identification and Educational Programmes. Learning Disability (Dyslexia, Dyscalculia, Dysgraphia, Dyspraxia, Aphasia): educational provisions 	CO3
	UNIT IV <ul style="list-style-type: none"> Mental Retardation and Locomotor Disabilities Mental Retardation: Concept, Characteristics, Causes, Classification, Educational provisions and Therapeutic Interventions The distinction between children with Learning Disabilities, Slow Learners and children with Mental Retardation Leprosy Cured, Neurological and Locomotor Disabilities: Definition, Causes, Characteristics, 	CO4

	Classification, and Educational Programmes.	
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Reference Books:

- Baine, D. (1988) Handicapped Children in Developing Countries, Assessment, Curriculum and Instruction. University of Alberta:Alberta.
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- SubbaRao, T.A. (1992) Manual on Developing Communication Skills in Mentally Retarded Persons. Secunderabad: NIMH.
- Taylor, R.L. (1993) Assessment of Exceptional Students: Educational and Psychological Procedures. Boston: Allyn

Course-4

Course Code	EDU495
Course Title	Gender School and Society
Hours	L:4, T:0, P:0
Credits	4
Type	Core Course
Course Outcomes	On the completion of the course the students will be able to CO1: Identify the various theories on gender and education CO2: Explain the concept of masculinity and femininity. CO3: Identify gender inequality in school, School curriculum, Text book, classroom processes, and student teacher interaction. CO4: Enumerate the impact of conflict and violence on the lives of women.

Examination Type	Theory						
Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL/ATT
Weightage	10%	10%	25%	0%	50%	0%	5%
Examination Mode	Theory						
Syllabus	Gender Studies: Concept and Theories <ul style="list-style-type: none"> • Meaning of gender equality, need & importance • Theories on Gender and Education. <ul style="list-style-type: none"> (i) Symbolic Interaction Theory (ii) Gender Schema Theory (iii) Cognitive Development Theory (iv) Conflict Theory 						CO1
	UNIT- II GenderIssues <ul style="list-style-type: none"> • Concept of gender Patriarch, Masculinity and Feminism, Issue of muscularity and familiarity • Equity and equality: Psychological and sociological perspective Emergence of gender specific roles, cross cultural perspective 						CO2
	UNIT- III Gender Inequalities and strategies for change <ul style="list-style-type: none"> • Gender Inequality in School: School curriculum, Text book, classroom processes, and student teacher interaction • Strategies for change: policy and management in the school 						CO3
	UNIT- IV Gender and Sexuality <ul style="list-style-type: none"> • Understanding sexuality (sexual orientation and sexual identity- third gender) and the relationship between power and sexuality. • Violence against women- empirical examples of the graded violence against women, the impact of conflict and violence on thelives of women, efforts to deal with the issue of violence against women. • Legal (sexual and reproductive) rights of women. 						CO4

Reference Books:

- Bhattacharjee, Nandini (1999). Through the looking-glass: Gender Socialisation in a Primary
- Bordia, A. (2007). Education for gender equity: The Lok Jumbish experience, p 313-329
- Chatterji, S. A. (1993). The Indian Women in perspective, New Delhi: Vikas Publishing
- Devendra, K. (1994). Changing status of women in India, New Delhi: Vikas Publishing House
- Geetha, V. (2007). Gender. Stree: Calcutta.
- Gender Analysis of State Policies: A case study of Chhattisgarh- Dr. Sen Ilina.
- Ghai, Anita (2008). Gender and Inclusive education at all levels. In Ved Prakash & K. Biswal
- Learning, Livelihoods, and Social Mobility: Valuing Girls' Education in Central India. Peggy Froerer, Brunel University, Anthropology and Education.
- National University of Educational Planning and Administration: New Delhi. Jeffery, P. and R. Jefferey (1994). Killing My Heart's Desire: Education and Female
- Ruhela, S. (1988). Understanding the Indian Women today; Delhi: Indian Publishers Distributors
- Thakur, H. K. (1988). Women and Development planning (Case study of Nauhatta Block), New Delhi: Vikas Publishing House

COURSE-5

Course Code	EDU 494
Course Title	Post Internship Engagement with the Field Task
Hours	L: T: P: 1 week
Credits	1
Type	Core Course
Course Outcomes	<p>On the completion of the course, the student will gain the following knowledge and skills:</p> <p>CO1: Encouraging interns to reflect on their internship experience, identify key learnings, and assess their personal and professional growth.</p> <p>CO2: Providing a platform for interns to receive constructive feedback on their performance during the internship, as well as guidance on areas for improvement and further development.</p> <p>CO3: Cultivating a growth mindset among interns, encouraging them to embrace challenges, learn from setbacks, and continuously strive for improvement in their professional practice.</p>
Examination Type	Practical

Assessment Tools	Written Quiz	Assignment/Project Work	MSE	MSP	ESE	ESP	ABL/PBL
Weightage	0%	0%	0%	0%	0%	100%	0%
Examination Mode	Practical						
Syllabus	<ul style="list-style-type: none"> • Post Internship is organized for a day mainly for reflection and review of internship programme as a whole, to facilitate the understanding of the effectiveness of various activities undertaken during the internship. The tasks include the following: • Seeking reactions from students, teachers, Heads and teachers of cooperating schools and supervisors of the Institute. • Exhibition of the Teaching Learning Material used by the student teachers during the internship. • Any other activity decided by the Institute. • Inviting suggestions for improving the programme. 						

