St Mary's College

NEP Guidelines
And
Syllabus (Major/Minor, MDC, VAC, SEC, AEC)

GUIDELINES FOR THE IMPLEMENTATION OF FYUG NEP 2020 SYLLABUS BY COLLEGES

1. **Establishment of an NEP Cell**
   Every college needs to create a NEP CELL to implement the new syllabus and appoint a Coordinator. This Cell will be the liaison point between the College and NEHU for proper coordination of the implementation of NEP. The Cell shall be the repository of all the information about the NEP and undertake the activities of creating awareness among the teachers and students for the smooth implementation.
2. **Student Counsellor**
   Colleges must appoint student counsellors from the faculty of each department to help the students in choosing various subjects, change of subjects and other related matters. The role of these Counsellors is very crucial for the implementation of the new syllabus.
3. **Major and Minor Subject**
   Proper counselling to the students is required during the initial days of starting of the programme. Under FYUG, at the beginning of the 1st Semester, a student shall select one Major subject and one Minor subject. Once selected, the Major and Minor subjects shall be continued till the completion of the UG programme, unless interchanged in the 3rd Semester.
4. **Change of Minor to Major**
   This is permissible only at the beginning of the 3rd Semester, subject to the fulfilment of certain conditions as laid down in the relevant regulation.
5. **Multi-Disciplinary Course (MDC)**
   Colleges will offer MDC courses from the basket of ten (10) courses based on availability of resources. At least one course must be offered from each of the AVAILABLE disciplines (i.e., Arts, Science, and Commerce) in a college. The student's choice of anMDC course will be guided by the relevant regulation.
6. **Skill Enhancement Course (SEC)**
   Colleges will offer SEC courses out of the basket of courses approved by NEHU. At least one course must be offered by each college. Priorities should be given to the requirementsof the students while offering a SEC course.
7. **Ability Enhancement Course (AEC)**
   All the colleges will offer English as an AEC course. The colleges will also offer MIL courses approved by NEHU as AEC course as per the need of the students and availability of faculty.
8. **Value Added Course (VAC)**
   The VAC-140 in the 1st Semester is compulsory for all colleges. In the 2nd Semester, colleges must offer at least one course from the basket of VAC courses approved by NEHU.

NOTE:

Core Course for Multi-Disciplinary Programme: Along with FYUG programme, colleges may offer Multi-Disciplinary UG Programme. All the major courses of FYUG are considered as Core Courses for Multi-Disciplinary UG Programme. Students need to select one combination of three subjects from the approved list. Students should be counselled by the Student Counsellor to select right combination.

FOUR YEAR UNDER GRADUATE (FYUG)PROGRAMME UNDER NEW EDUCATION POLICY, 2020

(1st and 2nd Semester)

Date of approval in Academic Council - 02.06.2023

STRUCTURE OF THE SYLLABUS, FYUG PROGRAMME, NEP 2020

(Example- Subject: Economics Major and History Minor)

1ST SEMESTER

COURSE CATEGORY	COURSE CODE	CREDIT	TOTAL CONTACT HOURS	REMARK
MAJOR	ECO-100*	4	60/75	
MINOR	HIS-100	4	60/75	Student to choose one course from other department
MDC		3	45	Student to choose one course out of the offered courses by the college under each category
AEC		3	45	Student to choose either English or any MIL and continue the same in 2nd Semester.
SEC				Student to choose one course out of the offered courses by the college under each category
VAC	VAC-104	3	45	Compulsory
Total		**20**		

2ND SEMESTER

COURSE CATEGORY	COURSE CODE	CREDIT	TOTAL CONTACT HOURS	REMARK
MAJOR	ECO-150	4	60/75	
MINOR	HIS-150	4	60/75	Student to choose one course from other department
MDC		3	45	Student to choose one course out of the offered courses by the college under each category
AEC		3	45	Student to continue the same as chosen in the 1st Semester.
SEC				Student to choose one course out of the offered courses by the college under each category
VAC		3	45	Student to choose one course out of the offered courses by the college under each category
Total		**20**		

NOTE: ALL MAJOR AND MINOR COURSES ARE THE CORE COURSES FOR MULTIDISCIPLINARY PROGRAMME

MAJOR/CORE PAPERS SEMESTER I & II

		Semester I		Semester Ii	
NO	**Subject**	**Course Code**	**Name Of The Course**	**Course Code**	**Name Of The Course**
1	Botany	Bot-100	Plant Diversity - I Algae, Bryophytes And Pteridophytes	Bot-150	Plant Diversity -Ii Gymnosperms And Paleobotany, Angiosperm Morphology, Plant Anatomy
2	Chemistry	Che-100	Introductory Chemistry-I	Che-150	Introductory Chemistry-Ii
3	Clinical Nutrition And Dietetics	Cnd-100	Basic Nutrition	Cnd-150	Human Physiology
4	Commerce	Com-100	Accounting For Business	Com-150	Principles Of Management
5	Computer Application	Bca-100	Problem Solving And Programming In C	Bca-150	Internet Technology WithPhp And Mysql
6	Economics	Eco-100	Microeconomic S I	Eco-150	Macroeconomics I
7	Education	Edu-100	Introda Ction To Education	Edu-150	Foundation Of Education

8	English	Eng-100	Introduction To English Literature	Eng-150	British Poetry: Milton To The Present
9	Geography	Geo-100	Introduction To Human Geography	Geo-150	Introduction To Physical Geography
10	History	His-100	History Of India: Earliest Times To The Post Vedic Period	His-150	History Of India: Maurya To Post Gupta Period
11	Home Science	Hsc-100	Introducto Ry Home Science	Hsc-150	Introductory Home Science 2
12	Khasi	Kha-100	Ka Maitphang Ïa Ka Litereshor Khasi	Kha –150	Poitri, Sawangka Bad Parom Mutdur
13	Mathematics	Mth-100	Fundamental Mathematics-I	Mth-150	Fundamental Mathematics-Ii

14	Philosophy	Phi-100	Understanding Philosophy	Phi-150	Ethics
15	Physics	Phy-100	Mathematical Physics, Properties Of Matter And Waves	Phy-150	Electricity And Magnetism, Optics And Electronics
16	Political Science	Pol-100	Political Theory	Pol-150	Indian Political System
17	Sociology	Soc-100	Introduction To Sociology	Soc-150	Principles Of Sociology
18	Zoology	Zoo-100	Taxonomy And Animal Diversity	Zoo -150	Functional And Comparative Anatomy

BOTANY

The Botany curriculum provides students with a comprehensive understanding of plants, incorporating subject knowledge, technical skills, and interdisciplinary components. It equips them with cutting-edge technologies used in plant science research and emphasizes the social and environmental importance of plants. Students gain awareness of plants' role in maintaining ecological balance, conserving biodiversity, and mitigating environmental challenges. The curriculum also highlights the economic relevance of plants in sectors like agriculture, horticulture, and pharmaceuticals. By integrating these elements, the curriculum prepares students as well-rounded professionals capable of addressing complex challenges, contributing to scientific advancements, and making informed decisions for the benefit of society, the environment, and the economy.

ProgrammeOutcomes(POs): Expected outcome of the programme:

1. Gain comprehensive understanding of different branches of Botany: Systematics, evolution, ecology,developmental biology, physiology, biochemistry, plant interactions, morphology, anatomy, reproduction, genetics, and molecular biology.
2. Acquire competence in analytical and technical skills relevant to plant sciences.
3. Develop abilities in plant identification, experimental design, database utilization, and statistical analysis.
4. Conduct short research projects using various tools and techniques in plant sciences, fostering a scientific and research-oriented mindset.

BOT-100: PLANT DIVERSITY–I:ALGAE, BRYOPHYTES AND PTERIDOPHYTES

(Contact Hours: 75, Credits: 4)

Course Objectives (Cos):

This paper aims to provide students with a comprehensive understanding of the lower groups of plants, enabling them to grasp the interrelationships and evolutionary affinities among these plant groups. Additionally, it will equip students with proficiency in experimental techniques for analyzing and studying these plant groups.

Learning Outcomes (LOs):

Afterthecompletionofthecourse,thestudentswillbeableto:

1. Acquire knowledge regarding the classification, diversity, and life cycles of various groups of algae, including their economic significance.
2. Develop a critical understanding of the morphology, anatomy, reproduction, and life cycles of bryophytes.
3. Gain a critical understanding of the morphology, anatomy, reproduction, and life cycles of pteridophytes.

4. Understand the ecological and economic uses of archegoniate plants.

5. Demonstrate proficiency in employing experimental techniques and methods for the appropriate analysis of algae, bryophytes, and pteridophytes.

Unit – I: Algae

1. Salient features of algae and Classification by Fritsch (1935) with characteristic features of each class.
2. Range of thallus and reproductive structures in algae.
3. Life cycles of *Chara*, *Oedogonium*, and *Polysiphonia*.
4. Economic importance of algae.

Unit – II: Bryophytes Salient features of bryophytes and classification by Proskauer (1957).

1. Origin and range of gametophytic structures in Bryophytes.
2. Life cycle of *Marchantia*, *Anthoceros* and *Funaria*.
3. Economic importance of Bryophytes.

Unit- III: Pteridophytes

1. Salient features of pteridophytes and classification by Smith (1955).
2. Types of stelar structures in Pteridophytes.
3. Life cycle of *Lycopodium* and *Selaginella.*
4. Economic importance of Pteridophytes.

Unit - IV: Practical

1. Study of vegetative and reproductive parts with the help of temporary preparations of all genera prescribed in Paper BOT-100-T.
2. Dissection, sectioning, drawing, description and identification of the specimens covered in the preparations.
3. Spotting: Includes those specimens not covered in experiments 1 and 2.
4. Field visit to nearby areas to observe different groups of plants prescribed in the theory syllabus.

Suggested Readings:

1. Bold, H.C. and Wynne, M.J. (1978). Introduction to Algae: Structure and Reproduction. Prentice Hall, New Jersey.
2. Bux, F. and Chisti, Y. (2018). Algae Biotechnology: Products and Processes. Springer, International Publishing, Cham.
3. Geissler, P and Greene, S.W. (1982). Bryophyte Taxonomy: Methods, Practices and Floristic Exploration. J Cramer, Germany.
4. Hait, G., Bhattacharya, K. and Ghosh, A.K. (2011). Textbook of Botany. Volume 1. New Central Book Agency (P) Ltd., New Delhi.
5. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West Press Pvt. Ltd., New Delhi.
6. Lee, R.E. (2008). Phycology. Fourth Edition. Cambridge University Press.

7. Mitra, J.N., Mitra, D. and Chaudhuri, S.K. (2023). Studies in Botany. Volume I. 10th Revised Edition. Moulik Library, Kolkata.
8. Pandey, B.P. (2017). Botany for degree students. Biodiversity. S. Chand & Company Ltd., New Delhi.
9. Shaw, A.J. and Goffinet, B. (2000). Bryophyte Biology. Cambridge University Press.
10. Stevenson, R.J., Bothwell, M.L. and Lowe, R.L. (1996). Algal Ecology: Freshwater Benthic Ecosystems. Academic Press, Cambridge.
11. Van den Hoek, C., Mann, D.G. and Jahns, H.M. (1995). Algae. An Introduction to Phycology, Cambridge University Press.
12. Vanderpoorten, A. and Goffinet, B. (2009). Introduction to Bryophytes. Cambridge University Press.
13. Vashishta, P.C., Sinha, A.K., and Kumar, A. (2006). Botany for degree students. Pteridophyta (Vascular Cryptogams). S. Chand & Company Ltd., New Delhi.
14. Vashishta, B.R., Sinha, A.K., and Singh, V.P. (2010). Botany for degree students. Part-I Algae. S. Chand & Company Ltd., New Delhi
15. Vashishta, B.R., Sinha, A.K., and Kumar, A. (2010). Botany for degree students. Part-III Bryophyta. S. Chand & Company Ltd., New Delhi.

BOT-150: PLANT DIVERSITY–II: GYMNOSPERMS, PALAEOBOTANY, ANGIOSPERM MORPHOLOGYAND ANATOMY

(Contact Hours: 75, Credits: 4)

Course Objectives (Cos):
This paper provides an overview of the higher groups of plants, focusing on the interrelationships and evolutionary pathways that connect them. By studying this topic, students will develop a comprehensive understanding of how different plant groups are related to each other and how they have evolved over time. Through exploring the interconnections and evolutionary trajectories of higher plant groups, students will gain valuable insights into the diversity and complexity of the plant kingdom, enriching their knowledge of plant biology and evolution.

Learning Outcomes (LOs):Upon completion of the course, students will be able to:

1. Develop a critical understanding of the morphology, anatomy, and reproduction of Gymnosperms and Angiosperms.
2. Gain knowledge about the geological history of the Earth and the life forms that existed during prehistoric periods.
3. Comprehend the process of fossil formation and recognize different types of fossils.
4. Understand the fundamental concepts of plant morphogenesis and the development of organs.
5. Analyze the variations in morphology and internal structures among different parts of plants and across various plant groups, supporting the concept of evolution.
6. Demonstrate proficiency in utilizing experimental techniques and methods for the appropriateanalysis of Gymnosperms.

7. Master the techniques for preparing double-stained specimens and studying anomalous growth in angiosperms.

Unit–I:Gymnosperms and Paleobotany

1. Salient features and classification of gymnosperms by Coulter and Chamberlain (1910).
2. Phylogenetic relationship and affinities of gymnosperms.
3. Life cycle of *Cycas*, *Pinus*, and *Gnetum*.
4. Economic importance of gymnosperms.
5. Geological time scale; Fossil formation and plant fossil types.

Unit–II: Angiosperm Morphology

1. Leaf morphology: Phyllotaxy and venation.
2. Types of stipules, bracts and inflorescence.
3. Floral morphology: Forms of calyx, corolla, and their aestivation.
4. Types of stamens and carpels.
5. Types of fruits, ovule forms, and placentation.
6. Types of seeds: albuminous and exalbuminous

Unit- III: Plant Anatomy

1. Organization of apical meristem.
2. Types of stomata in angiosperms.
3. Components of xylem and phloem with their functions.
4. Concept of primary and secondary growth; Secondary growth in stem and root of dicots.
5. Anomalous secondary growth in *Bignonia* and *Dracaena*.
6. Root-stem transition.

Unit - IV: Practical

1. Study of vegetative and reproductive structures of all prescribed gymnosperms by preparing temporary stained slides (dissection, sectioning, drawing, description, and identification up to genus).
2. Study of fossils through slides or specimens.
3. Sectioning and observation of placentation types, ovule structure, and anther through temporary preparations.
4. Study of permanent slide preparation by double staining techniques (Safranin and Haematoxylin or Safranin and fast green).
5. Anatomical studies of anomalous secondary structures of *Bignonia* and *Dracaena* by temporary double staining techniques (Safranin and Haematoxylin or Safranin and fast green).
6. Spotting: Includes those groups and sections not covered in the preparations.

Suggested Readings:

1. Beck, B. (1988). Origin and Evolution of Gymnosperms. Columbia University Press.
2. Bhatnagar, A. K. and Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi.
3. Bhattacharya, K., Hait, G. and Ghosh, A.K. (2015). A Textbook of Botany. Volume II. New Central Book Agency (P) Ltd., New Delhi.

4. Bhojwani, S.S. and Bhatnagar, S.P. (2000). The Embryology of Angiosperms. Vikas Publishing House.
5. Crang, R., Lyons-Sobaski, S., and Wise, R. (2018). Plant anatomy: A concept-based approach to the structure of seed plants. Springer.
6. Dickison, W.C. (2000). Integrative Plant Anatomy. Harcourt Academic Press, USA.
7. Evert, R.F. (2006). Esau's Plant Anatomy: Meristems, Cells, and Tissues of the Plant Body: Their Structure, Function, and Development. John Wiley and Sons, Inc.
8. Fahn, A. (1990). Plant Anatomy. Pergamon Press.
9. Mauseth, J.D. (1988). Plant Anatomy. The Benjamin/Cummings Publisher, USA.
10. Mishra, S. R. (2010). Textbook of Palaeobotany. Discovery Publishing House Pvt Ltd.
11. Mitra, J.N., Mitra, D. and Chaudhuri, S.K. (2023). Studies in Botany. Volume I. 10th Revised Edition. Moulik Library, Kolkata.
12. Pandey, B.P. (2017) A Texbook of Botany: Angiosperms. S. Chand& Company Pvt Ltd.

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CHEMISTRY

Preface

The FYUG syllabus for Chemistry has been framed as per NEP-2020 guidelines. This undergraduate course in Chemistry has been addressed to the students enrolled for 3-year UG Major and Multidisciplinary program, 4-year UG Honours, and Honours with the Research program of the University at the beginning of their careers. This course aims to disseminate knowledge in the field of academic, research, and professional development of students. The course in Chemistry has been divided into three sections, one each in Inorganic, Organic, and Physical Chemistry. The course on Inorganic Chemistry covers the basic understanding ofatomic models, periodic properties of elements, and chemical bonding. A unit has been devoted to elementary knowledge of the nucleus and nuclear reactions. The course also covers theoreticaland practical aspects of qualitative and quantitative analysis. A large part of Organic Chemistryis concerned with reactions leading to the formation and breaking of carbon-carbon bonds and the synthesis of various organic compounds including natural products. It also aims to impart knowledge to the students on the various oxidation and reduction methods for the modification of functional groups. Emphasis has been given to learning the scope and limitations of the reactions and the effect of structure on reactivity and selectivity. The course on Physical Chemistry includes the determination of structure and the geometrical arrangement of atoms in solids, the liquefaction of gases, and a quantitative relation between the heat capacities of a substance at constant pressure and constant volume. It aims to introduce the students to thermodynamic parameters and state functions and develop the basic concepts of thermodynamics and the direction of spontaneous change. The course also covers some elementary ideas on the kinetics of the reaction and the feasibility of a given reaction.

Programme Outcomes

At the end of the programme, the students are expected to have sound knowledge of fundamental concepts of inorganic, organic, and physical chemistry. The acquired hands-on training will enable the students to analyze and identify various ions and functional groups.

CHE-100: INTRODUCTORY CHEMISTRY – I

(Contact Hours: 75, Credits: 4)

Objective*: The main objective of this course is to demonstrate scientific understanding of the structure of matter and its physical and chemical transformations so that students will be able to apply appropriate theories to predict chemical structure, reactivity, and physical properties. It would also provide students with hands-on training in qualitative analysis of various inorganic ions.*

Learning outcomes*: The contents assignments and assessments of this course are aligned to understand the fundamental concepts of chemistry in all three branches viz. inorganic, organic, and physical chemistry. Also, they will learn inorganic qualitative analysis to identify the acidic and basic radicals present in inorganic salts.*

PART-A (Theory)

Unit I: Inorganic Chemistry-I Marks: 7 (Internal); 18 (End Sem.) 15 hours

(a) Structure of Atom: Bohr's Atomic model and its limitations, De- Broglie's matter waves, Heisenberg's Uncertainty principle, Schrodinger's wave equation and its importance, Physical concepts of Ψ and Ψ^2, Quantum numbers, Shapes of s, p and d orbitals, Principles of electronic configuration: Hund's Rule, Pauli's exclusion Principle, and Aufbau principle, Screening effect and effective nuclear charge.

(6 marks, 5 hours)

(b) Chemical periodicity: Long form of periodic table, Modern periodic law, Types of elements on the basis of electronic configuration, Periodic variation in properties: atomic and ionic radii, ionization enthalpy, electron gain enthalpy and electronegativity, Diagonal relationships.

(5 marks, 4 hours)

(c) Chemical Bonding : Valence shell electron pair repulsion (VSEPR) theory and shapes of molecules and ions:- BeF_2, CO_2, BF_3, BO_3^{3-}, O_3, H_3O^+, NH_3, H_2O, PCl_3, PCl_5, SF_4, SF_6, Basic idea of valence bond theory and its limitations, Concept of hybridization of orbitals and its implications on bond length, bond energy, bond angles and shapes of molecules with following examples: BeF_2, BF_3, $AlCl_3$, H_3O^+, NH_3, H_2O, PCl_3, PCl_5, SF_4, SF_6, ClF_3, I_3^-, LCAO-MO theory and its application to homonuclear diatomic molecules (H_2, Be_2, N_2, N_2^+, N_2^{2+}, N_2^- N_2^{2-}, O_2, O_2^-, O_2^{2-}, O_2^+ O_2^{2+}), Polarity of covalent bonds and dipole moment, Polarizing power, Polarizability

of ions and Fajan's rule, Concept of lattice energy and Born-Haber cycle (NaCl).

(8 marks, 6 hours)

Unit II: Organic Chemistry-I Marks: 6 (Internal); 19 (End Sem.) 15 hours

(a) Nomenclature, Structure, Bonding, and Properties: Nomenclature of organic molecules (hydrocarbons, halogen compounds, aldehydes, ketones, alcohols, ethers, amines, carboxylic acids, esters, amides and nitro compounds). Hybridisation and its implications on the bondlength, bond energy, bond angles, shape of the molecules with following examples: (i) CH_4, CH_3^-, RNH_2 (ii) C_2H_4, CH_3^+, carbonyl compounds (C=O) and (iii) C_2H_2, R-C≡N, ketene. Nature of covalent bond and its orbital representation in molecules listed above, Electronegativity, Inductive effect, Effect of H-bonding on boiling point and solubility of organic compounds, Conjugation, Resonance, Hyperconjugation (propene and toluene), Heterolytic and homolytic bond cleavage, Electrophiles and nucleophiles, Reactive intermediates: carbocations, carbanions and free radicals.

(8 marks, 6 hours)

(b) Alkanes and Cycloalkanes: Methods of preparation of alkanes (with special reference to mechanism of Kolbe, Würtz, Würtz-Fittig and Corey-House reactions), Chemical reactivity (oxidation and cracking). Mechanism of chlorination, Relative reactivity of halogens towards different types of alkanes. General methods of preparation of cycloalkanes (up to cyclohexane) and their reactions with halogens and HX, Baeyer's strain theory – modifications and its limitations.

(5 marks, 4 hours)

(c) Alkenes and Alkynes: Synthesis and reactivity of alkenes, Markownikoff's rule and anti-Markownikoff's rule, Mechanism of hydrogenation, bromination, hydration, halohydration, hydroboration, oxidation, epoxidation, ozonolysis, hydroxylation and polymerization, Comparative acidity of ethane, ethane and ethyne, Synthesis and reactivity of alkynes: electrophilic addition reactions (halogenation, hydration, HX and HOX), ozonolysis; alkynides (Na, Cu and Ag) and polymerization.

(6 marks, 5 hours)

Unit III: Physical Chemistry-I Marks: 6 (Internal); 19 (End Sem.) 15 hours

(a) States of Matter

(i) Gaseous State-I: Postulates of kinetic theory of gases, Collisions and gas pressure, Average kinetic energy, Root mean square velocity and absolute temperature of gas, Boltzmann constant, Gas laws and kinetic theory, Liquification of CO_2 gas, Real gases - deviation from ideality,

Compressibility factor and its variation with pressure and temperature for different gases, and van der Waals equation of state.

(7 marks, 6 hours)

(ii) Liquid State-I: Qualitative description of the structure of liquids, Physical properties of liquids: vapour pressure, Surface tension, Viscosity, Refractive index (definitions and descriptions). Effect of additive (sodium chloride and ethanol) on surface tension and viscosity of liquid.

(4 marks, 3 hours)

(iii) Solid State-1: Elementary discussion on the types of unit cells, Crystal systems, Crystal defects, Bragg's law.

(3 marks, 2 hours)

(b) **Chemical Kinetics-I:** Rate of reaction and rate constant, Molecularity and order of a reaction, Zero order reaction, Differential and integrated forms of rate equations of first and second order reactions, Pseudo-first order reactions, Determination of order of reactions, Effect of temperature on reaction rates and energy of activation, Effect of catalyst.

(5 marks, 4 hours)

PART-B (Practical)

Unit IV: Inorganic Laboratory-I Marks: 6 (Internal); 19 (End Sem.) 30 hours

Experiment: *Qualitative analysis of inorganic mixtures containing at least five radicals/ions (from the list given below) to be completed - one of the radicals/ions must be interfering (borate, chromate or phosphate).*

List of ions/radicals:

Cations: Pb^{2+}, Cu^{2+}, Bi^{3+}, As^{3+}, Sb^{3+}, Sn^{2+}, Sn^{4+}, Fe^{2+}, Fe^{3+}, Al^{3+}, Ba^{2+}, Cr^{3+}, Zn^{2+}, Mn^{2+}, Co^{2+}, Ni^{2+}, Ca^{2+}, Sr^{2+}, Mg^{2+}, K^{+}, NH_4^{+}.

Anions: Cl^{-}, Br^{-}, I^{-}, SO_4^{2-}, NO_3^{-}, BO_3^{3-}, PO_4^{3-}, CrO_4^{2-}.

Interfering radicals/ions: borate, chromate, phosphate.

End-semester External Evaluation Distribution (Duration: 6 hours)		
1	Qualitative Analysis	12 Marks
2	Viva voce	5 Marks
3	Laboratory record	2 Marks
In-semester Internal Evaluation Distribution		
1	Laboratory attendance and performance	2 Marks
2	Test and Viva voce	4 Marks

Suggested books:

1. Concise Inorganic Chemistry, J. D. Lee, 5th Ed., Wiley India, New Delhi (2014).
2. General and Inorganic Chemistry (Part-I), R. Sarkar, 3rd Revised Ed., New Central Book Agency, India (2011).
3. Vogel's Qualitative Inorganic Analysis, G. Svehla, 6th Revised Ed., Orient Longman, London (1987).
4. Modern Organic Chemistry, M. K. Jain and S. P. Sharma, Vishal Publishing Co.,Jalandhar (2020).
5. Organic Chemistry, J. Clayden, N. Greeves, S. Warren and P. Wothers, Oxford University Press, London (2012).
6. Principles of Physical Chemistry, B. R. Puri, L. R. Sharma and M. S. Pathania, Vishal Publication Co., Jalandhar (2020).
7. Physical Chemistry, P. W. Atkins and De-Paula Atkins, 7th Ed, Oxford University Press, London (2006).
8. University Chemistry Practical, P. C. Kamboj, Vishal Publishing Co., Jalandhar (2009-2010).

Notes:

(i) A candidate must obtain minimum pass marks (which will include both the internal and end-semester marks) stipulated by the University **separately** both in the theory (Part A) and practical components (Part B) to clear the course.

(ii) The marks allotted to each component of different units should be strictly adhered to in making the question paper.

CHE-150: INTRODUCTORY CHEMISTRY – II

(Contact Hours: 75, Credits: 4)

Objective*: The primary objective of this course is to provide a broad foundation in chemistry that stresses scientific understanding and reasoning along with problem solving aptitude. It would also provide the students with the skills required to analyze and comprehend the chemicalcomposition of organic compounds.*

Learning outcomes*: Upon successful completion of this course, the students will have an understanding in the principles and applications of various theories in inorganic, organic, and physical chemistries. Also, they will learn the techniques to identify the functional groups and analyze the organic samples to know their properties.*

PART-A (Theory)

Unit I: Inorganic Chemistry-II Marks: 6 (Internal); 19 (End Sem.) 15 hours

(a) Nucleus and Radioactivity-I: Nuclear particles (neutrons and protons) and concept of mesons and pions, Mass defect and nuclear binding energy (including numerical), Packingfraction, Natural and artificial radioactivity, Radioactive disintegration series, First order rate equation of radioactive disintegration, Half-life and average life period, Group displacement law,Neutron-proton ratio and its implications, Elementary concepts of fusion and fission.

(5 marks, 4 hours)

(b) **Redox reactions:** Electronic concepts of oxidation and reduction, Oxidation number, Common oxidants and reductants, Calculation of equivalent weights of oxidants and reductants, Balancing of redox reactions by ion electron method. *(4 marks, 3 hours)*

(c) Principles of qualitative and quantitative analysis: Solubility product and its application in group separation of cations, Standard solutions: primary and secondary solutions, Concentrations of standard solutions: molarity, molality and normality, Volumetric analysis: redox titrations

(permanganometry, dichromometry and sodium thiosulphate with iodide), iodometric and iodimetric titrations. *(5 marks, 4 hours)*

(d) Acid-base Concept: Arrhenius and Bronsted-Lowry concept, Lewis concept, Solvent system (Franklin) concept and its limitation, Effect of solvent in relative strengths of acids and bases, Levelling and differentiating effect, Relative strengths of acids and bases (pKa and pH concept), HSAB principle.

(5 marks, 4 hours)

Unit II: Organic Chemistry-II Marks: 7 (Internal); 18 (End Sem.) 15 hours

(a) Organic Stereochemistry–I: Concept of isomerism, Types of isomerism, Configurational and conformational isomerism (ethane and butane), Fischer, Newman and Sawhorse projections with suitable examples, Geometrical isomerism, Configuration of geometrical isomers, E and Z nomenclature (including oximes), Optical isomerism: optical activity, chiral carbon atom, enantiomers, diastereomers, R/S nomenclature (with one chiral carbon atom only)

(6 marks, 5 hours)

(b) Aromatic Hydrocarbons and Aromaticity: Molecular orbital picture of benzene, Resonance energy, Aromaticity, Hückel's (4n+2) rule and its application to simple molecules and ions, Electrophilic substitution reactions in aromatic hydrocarbons and general pattern of the mechanism, Effect of substituent groups (activating and deactivating groups, directiveinfluence): mechanism of nitration, sulphonation, halogenation (nuclear and side-chain), formylation (Gattermann and Gattermann – Koch), Friedel – Craft's alkylation and acylation.

(5 marks, 4 hours)

(c) Nucleophilic Substitution Reactions: Nucleophile, Ambident nucleophile (KCN, AgCN, KNO_2, $AgNO_2$), Difference between nucleophiles and bases, S_N1, S_N2, NGP, S_Ni, Factors affecting substitution reactions (structure of substrate, nature of nucleophile, solvent and role of leaving group), Mechanism and stereochemistry of substitution reactions.

(5 marks, 4 hours)

(d) **Elimination reactions:** E^1, E^2, E^1cB mechanism, Orientation in elimination reactions (Saytzeff's and Hoffmann rules). *(3 marks, 2 hours)*

Unit III: Physical Chemistry-II Marks: 6 (Internal); 19 (End Sem.) 15 hours

(a) Thermodynamics-I: Concept of system and surrounding, types of systems, Intensive and extensive properties, Types of processes: isothermal, adiabatic, isobaric, reversible, irreversible and cyclic processes; Thermodynamic functions: state variables and exact differentials, Path functions and inexact differentials, Zeroth law of thermodynamics, Reversibility and maximum work in ideal gas expansion. First law of thermodynamics: Statement, internal energy, enthalpy,

Heat capacity at constant pressure (Cp) and volume (Cv), Concept of heat, Relation between Cp and Cv, Spontaneous processes, Entropy, Second law of thermodynamics, Joule-Thomson coefficient and inversion temperature. (*10 marks, 8 hours)*

(b) **Thermochemistry:** Exothermic and endothermic reactions, Hess's law of constant heat summation, Enthalpy of formation, Standard state, Enthalpy of combustion, Enthalpy of neutralization, Enthalpy of solution, Enthalpy of dilution, Kirchhoff's equations: influence of temperature on ΔH and ΔU of a reaction. *(5 marks, 4 hours)*

(c) **Adsorption and Surface Phenomena:** Physisorption and chemisorption, Adsorption isotherms: derivation and application of Gibbs and Langmuir adsorption isotherm. *(4 marks, 3 hours)*

PART-B (Practical)

Unit IV: Organic Laboratory-I Marks: 6 (Internal); 19 (End Sem.) 30 hours

Experiment*: Systematic qualitative analysis of organic compounds containing one functional group.*

(a) Detection of elements (N, Cl, Br and I)

(b) Determination of one of the following functional groups present in a single organic compound (with systematic reporting)

-COOH, -OH (phenolic), -CHO, >C=O, $-NH_2$ and $-NO_2$

(c) Preparation of the derivative.

End-semester External Evaluation Distribution (Duration: 6 hours)		
1	Qualitative Analysis	12 Marks
2	Viva voce	5 Marks
3	Laboratory record	2 Marks
In-semester Internal Evaluation Distribution		
1	Laboratory attendance and performance	2 Marks
2	Test and Viva voce	4 Marks

Suggested Books:

1. Inorganic Chemistry, R. L. Dutta, 3rd Ed., The New Book Stall, India (1973).

2. Principles of Inorganic Chemistry, B. R. Puri, L.R. Sharma and K.C. Kalia, 33rd Ed., Vishal Publishing Co. (2019-20).
3. Organic Chemistry, S. N. Mukherjee, S. P. Singh and R. P. Kapoor, Vol I (2017), II (2018) & III (2018), New Age Publishers, India.
4. Basic Stereochemistry of organic molecules, S. Sengupta, 2nd Ed., Oxford University Press, London (2018).
5. Physical Chemistry, P. C. Rakshit (revised by S. C. Rakshit), 6th Ed., Sarat Book House, Kolkata (2014).
6. A Textbook of Physical Chemistry, Vol 1 & 2, K. L Kapoor, 4th Ed. Macmillan Publishers India Ltd. (2011).
7. Vogels Textbook of Practical Organic Chemistry, B. S. Furniss, A. J. Hanaford, P. W. G. Smith and A. R. Tatchell, 5th Ed., John Wiely, New York (1989).

Notes:

(i) A candidate must obtain minimum pass marks (which will include both the internal and end-semester marks) stipulated by the University **separately** both in the theory (Part A) and practical components (Part B) to clear the course.

(ii) The marks allotted to each component of different units should be strictly adhered to in making the question paper.

CLINICAL NUTRITION AND DIETETICS

Programme in Clinical Nutrition and Dietetics: The under graduate programme in Clinical Nutrition and Dietetics aims to inculcate knowledge in the field of nutrition and dietetics. A student will learn in-depth about the physiological changes and nutrition during each stage of the life cycle, therapeutic nutrition, community nutrition, the science of food, food service management and recent advances and developments in the field of nutrition.

Programme Outcome

On completion of the BSc Clinical Nutrition & Dietetics Programme the graduate will be able to:

PO1: Acquire knowledge in nutrition and health.
PO2: Understand the nutritional problems and how to combat malnutrition.
PO3: To develop understanding in various physiological changes during the life cycle. PO4: To apply the knowledge of nutrition and dietetics for prevention and management ofdiet related diseases.

PO5: To understand the concept of community nutrition and how various national andinternational agencies contribute to the upliftment of women and children.

PO6: Understand the role of macro and micro nutrients in human nutrition.

PO7: To understand commercial and non-commercial food service management and its application.

PO8: To acquire knowledge of human metabolism and biochemistry with special reference to energy and nutrients requirement.

PO9: To gain expertise in diet planning in health and disease.
PO10: To understand the science and microbial spoilage of different food groups.

CND-100: BASIC NUTRITION

(Contact Hours: 60, Credits: 4)

Course Objective (COs): To learn, gain knowledge and understanding of foods, nutrients, their recommended allowances, health and the relationship between health and nutrition as well as the cooking methods adopted and its impact on health.

Learning Outcome (LOs):

1. Students will understand the different functions of food and sources of nutrients

2. Students will learn the cooking method and effect of different methods on food and nutrients.

3. Students will understand the recommended dietary allowances (RDA) of nutrients,
4. Students will gain understanding on health and the relationship between health and nutrition.

UNIT –I: Introduction to Nutrition

Definition and types of Nutrition (adequate, optimum and malnutrition) functions of foods. Food as a source of nutrients, food as a source of energy, unit of energy, energy value of food.

UNIT- II: Health

Definition (physical, mental, social and reproductive). Inter-relationship between nutrition and health; visible symptoms of good health. Food guide: Basic food groups, how to use food guide, Balanced diet: Basic principles of meal planning- objectives – steps in meal planning.

UNIT- III: Macro-nutrients

Carbohydrates: Classification, composition, functions, sources, recommended Daily Allowances (RDA) and deficiencies. Protein: Classification, composition, functions, sources, RecommendedDaily Allowances (RDA) and deficiencies. Fats: Classification, composition, functions, sources, Recommended Daily Allowances (RDA) and deficiencies.

UNIT- IV: Methods of Food preparation and its Impact on Nutrients

Principle of cooking, cooking methods (dry heat method, moist heat method, conventional method); Nutrient enhancing methods, advantages and disadvantages of cooking methods, effect of cooking methods on nutrients

Suggested Readings:

1. Agarwal. Anjana, Udipi. A. Shobha. (2014). Textbook of Human Nutrition,1st edition.
2. Chadha, R. (2015). Nutrition: A Life Cycle Approach, Orient Black swan Publication.
3. Katz. L. David, Friedman. S. C. Racheal, Lucan. C. Sean. Nutrition in clinical Practice, 3rdEdition. Walters Kluwer Publication.
4. Mahan, L. K. & Raymond J.L. (2003), Krause's Food & the Nutrition Case Process, 9thedition, and 12th edition, Elsevier.
5. Medeiros. M. Denis and Wildman. E. C. Robert. (2000). Advance Human Nutrition, 4thEdition, Jones and Bartlett Publishers, Inc.
6. Sharma, A. (2020). Principles of Therapeutics Nutrition & Dietetics, 1st Edition, CBS Publishers and distributor.
7. Shrilakshmi. B. (2021). B. Dietetics, 8th Edition, New Age International Reprint
8. Srilakshmi. B. (2010). Nutrition Science, 8th Edition, New Age International reprint.
9. William, S. R. (2017). Basic Nutrition and Diet Therapy, Staci Nix,15th Edition, Elsevier Publication.

CND-150: HUMAN PHYSIOLOGY

(Contact Hours: 60, Credits: 4)

Course Objective (COs): To learn and gain knowledge and understanding of the structure, function and role of different organs and secretions of the human body.

Learning Outcome (LOs)

1. Students will understand the structure and functions of different organs of the human body.
2. Students will learn the role and mechanism of different secretions in various organ system, Example (Lymphatic system, digestive system, menstruation, urine formation, Blood etc.)
3. Students will gain knowledge on different enzymes and hormones along with their mode of action.

Unit I: Circulatory and Respiratory Systems:

Blood and blood circulation: blood composition, function, clotting; blood groups. Blood vessels: artery, vein, capillary, structure of the heart, cardiac cycle; Lymphatic: Lymph nodes and lymph, pulse.

Respiratory System: Organs of respiration- Structure and functions. Mechanism of respiration.

Unit II: Digestive, Excretory and Cutaneous System:

Digestive System: Organs, Structure and functions, role of digestive juice. Mechanism of digestion.

Excretory System: Organs, structure and function of the Kidney, Formation of urine.

Skin: Structure and functions.

Unit III: Nervous System, Muscle Contraction and Vision:

Nervous system: structure of the nerve cell, nerve fiber, classification of nervous system. Brief account of nerve impulse. Transmission of nerve impulse- reflex action, voluntary action. Meninges and Cerebral spinal fluid.

Muscle contraction; Eye: Structure and function.

UNIT IV: Endocrine and Reproductive Systems:

Endocrine system: structure and functions, hormones-modes of action. Disorder of over and under secretions. Role of hypothalamus; pituitary, thyroid, pancreas and adrenal glands, prostaglandins.

Reproductive system: structure and function of reproductive organs, brief idea of menstruation, puberty and menopause.

Suggested Readings:

1. Agarwal, R.A. 1997. Animal Physiology and Biochemistry, Revised Edition, New Delhi Cambridge University Press.
2. Arora, Mohan P. 2003. Animal Physiology, Himalaya Publishers, Mumbai.
3. Bhaskar, Harsh Vardhan. 2008. Animal Physiology, New Delhi Campus books. ISBN8180300854 Books.
4. Craton Grey and Adams Neil (2012). The Human Body (A family reference guide), Paragon queen street house 1st Publish by Paragon.
5. Goel, K.A.1999. Animal Physiology, Meerut Rastogi Publications: ISBN:8171334539Books.
6. Moyes Christopher D. 2006. Principles of Animal Physiology, New Delhi Dorling Kindersley.
7. SK, S Prema, 2010. Essential of Medical Physiology, 5th edition, J P Publisher.
8. Waugh, A. & Grant, A. (2012) Ross & Wilson: Anatomy and Physiology, 14th Edition, Elsevier.

COMMERCE

COM-100: ACCOUNTING FOR BUSINESS

(Contact Hours: 60, Credits: 4)

Course Objective: To provide general exposure to the students of the various components of business environment in Indian context.

Learning Outcome: Students will be able to:

a. Understand the basic concepts of Accountancy.
b. Understand the system of preparing financial statements of sole traders, partnershipfirms, Hire Purchase, Royalty and consignment accounts.

UNIT -I

Introduction to Financial Accounting: Meaning, Definition and scope of Accounting – Objectives of Accounting – Functions of Accounting – Branches of Accounting – Accounting Principles ,Accounting Standards: Meaning and Objectives, IND AS and IFRS

Final accounts of Sole Trading Concern: Financial statements – Preparation of Trading and Profit and loss account and Balance sheet with adjustments.

UNIT- II

Single Entry: Meaning, Features, Merits and Demerits. Types of Single Entry System. Difference between Single Entry System and Double Entry System. Ascertainment of profit/loss under single entry.

Consignment Accounts: Meaning, Consignor, Consignee, Goods consigned at Cost price and Invoice price, Account Sales. Commission: Types of Commission. Normal and Abnormal loss. Valuation of Stock, Creation of Stock Reserve Account. Problems on Consignment both Cost Price and Invoice Price.

UNIT -III

Partnership Accounts –Nature and types of Partnership including salient feature of Partnership Act 2008. Admission of Partner, Retirement and Death of Partner.

Dissolution of Partnership firm (Garner Versus Murray)

UNIT -IV

Accounting for Hire Purchase System: Meaning – Features of Hire purchase system. Differences between hire purchase and installment system. Calculation of interest. Ascertainment of cash price of an asset. Problems on hire purchase system (excluding repossession of assets)

Royalty Accounts: Meaning and Definition. Terms used: Royalty, Minimum rent, Short workings, surplus royalty, recoupment of short workings.

Stoppage of work due to abnormal causes. Problems on royalty including minimum rent account.

Suggested Readings (Latest Edition)

- S.P. Jain and K.L. Narang, Advanced Accountancy Vol 1 Kalyani publication
- M. Hanif and A.Mukherjee, Financial Accounting, McGraw Hill Publications
- M.C. Sukhla, T.S. Grewal and S.C. Gupta, Advanced accountancy, Sultan Chand and Co.
- S. Kr. Paul, Advanced Accountancy Vol I, World Press, Kolkata
- R.N. Anthony and J.S. Reece, Accounting Principles, Richard Irwin Inc
- Compendium of Statement and Standards of Accounting: The Institute of Chartered Accountants of India, New Delhi

COM-150: PRINCIPLES OF MANAGEMENT

(Contact Hours: 60, Credits: 4)

Course Objective: To acquaint the students with the basic process and principles of management and to make them aware of the important management functions and practices.

Learning outcome: Students will:

a. Be familiarize with extant management concepts, theories and practices
b. Develop a theoretical and applied understanding of managing organizations.

Unit – I: Introduction

Meaning, characteristics and significance of Management
Functions of Management
Theory base of Management – Classical (Taylor and Fayol); Neo Classical (Mayo and Barnard); Modern (Systems and Contingency theory); Contemporary (Drucker and Porter)

Unit – II: Planning and Organizing

Planning – Meaning and characteristics; Planning premises and planning process; Need for planning; Barriers to effective planning; Decision making in planning
Organizing – Meaning, characteristics and significance; Principles of organising; Formal and Informal organization; Organizational structure and types (Departmentation, Project, Matrix and Network); Delegation v/s Decentralization

Unit – III: Staffing and Directing

Staffing – Meaning, characteristics and significance; Factors affecting staffing decisions Directing – Meaning, characteristics and significance; Motivation concept and theories (Maslow,Herzberg and McGregor); Leadership concept and styles (Likert and Blake & Mouton);Communication concept, types, process, barriers and remedies

Unit – IV: Controlling

Controlling – Meaning, characteristics and significance; Process of Controlling; Traditional techniques (Financial statements, Budgetary control and Break even analysis) and Modern techniques (Management Audit, PERT& CPM and MIS); Planning and Controlling linkage

Suggested Readings (latest editions)

- Bose, Chandra, Principles of Management and Administration, PHI, New Delhi.
- Chandan, JS, Management Concepts and Strategies, Vikas, New Delhi.
- Drucker, Peter, The Practice of Management, Allied Publishers, New Delhi.
- Koontz & O'Donnell, Principles of Management, Tata McGraw Hill, New Delhi.
- Prasad & Gulshan, Principles & Practice of Management, Sultan Chand & Sons, New Delhi
- Robbins, Organizational Behavior, PHI, New Delhi.
- Mahajan & Mahajan, Management Principles and applications. Vikas Publications
- Gupta & Sharma, Principles and Practice of Management, Kalyani Publications

COMPUTER APPLICATION

Preface

Bachelor of Computer Application (BCA) is an undergraduate degree program that focuses on computer applications and information technology. The BCA curriculum is designed to provide students with a strong foundation in computer science and its applications. The programme covers different courses such as programming languages, database management, algorithms, data structures, computer networks, software engineering, web development, mathematics/statistics etc.The programme includes practical training in the form of internships or projects. This practical exposure helps students gain hands-on experience and apply the theoretical knowledge they have acquired.

After completing the BCA course, graduates can explore various career opportunities. They can work as software developers, web developers, database administrators, system analysts, IT consultants, network administrators, and more. BCA graduates are in demand in industries such as IT companies, software development firms, e-commerce companies, banking and finance, healthcare, and government organizations.

Program Outcome (POs):

The expected outcome of the programmeare-

1. Students will be able to understand the fundamental concepts of Computer Science (applications) and programming.

2. Students will be able to create and implement effective algorithms and data structures.

3. Students will be able to develop software applications using different programming languages like C, java, C++, and Python.

4. Students will be able to write code that is easily maintainable, reusable, and extensible.

5. Students will be able to understand and apply various software development methodologies.

6. Students will be able to identify and apply appropriate software testing techniques and tools to improve performance and reliability.

7. Students will be able to develop mobile applications, web applications using HTML, CSS, JavaScript, and databases.

8. Students will be able to understand and utilize various software development tools and technologies like Integrated Development Environments (IDEs) and version control systems (VCS) like Git etc.

9. Students will be able to stay updated with the latest trends and advancements in the IT industry and continuously improve skills and knowledge through self-learning.

BCA-100: PROBLEM SOLVING AND PROGRAMMING IN C

(Contact Hours: 75, Credits: 4)

Course Objectives (COs):

The objective of the course is to introduce the fundamentals of C programming language and develop the skills for solving problems using this language.

Learning Outcome (LOs):

After completion of this course, a student will be able to

- Understand Problem solvingtechniques through flowcharts and algorithm along with IDEand Compilers for C.
- Step-by-stepanalyses and develop a program to solve real world problems. Understand and Apply Variable, Conditional Statements, Loops, Functions, pointers, structures in C.

OutlineofthePaper

UNIT	Topic	Hours	External Marks	Internal Marks
I	CBasic Concepts	15	18	19
II	Functions, Arrays	15	19	
III	Pointers, Structure and Union	15	19	
IV	Practical	30	19	6
Total		**75**	**75**	**25**

UNIT-I: C Basic Concepts (Theory) 15 Hours

C Fundamentals: Algorithms, Flow charts, Development of algorithms, The C character set, identifiers and keywords, Data types, constants, variables and arrays, declarations, symbolic constants, Operators (Arithmetic, unary, relational, logical, bitwise, assignment, conditional operator)

I/O functions: Header files (Stdio.h, Conio.h) getch(), getche(), getchar(), putch(), putchar(), scanf(), printf(), gets(), puts(), clrscr()

Control statements: Decision making and branching (if..else, switch); looping (while, do .. while, for), Jumping (break, continue, goto), Nested loops.

UNIT-II: Functions, Arrays (Theory) 15 Hours

Functions: Overview (definition, declaration), defining and accessing a function, function prototypes, call by value, call by reference, recursion, Advantages and disadvantages of recursion over iteration, Storage classes (Automatic, Register, External, Static), String functions (strcmp (), strlen (), strrev (), strcat (), strcpy(), toupper (), tolower ()), Math functions (sqrt (), abs (), sin (), cos (), Standard function- exit ().

Arrays (1D and 2D): Declaration of array, accessing elements of the array, Array for inter function communication (1D and 2D), passing elements to (function, data values, address, array),processing an array, passing array to a function, arrays and strings, searching for a value in an array (Linear search, Binary search).

UNIT-III: Pointers, Structure and Union (Theory) 15 Hours

Pointers: Pointer declarations, passing pointer to a function, arrays of pointers, pointer and 1D and 2D arrays, function pointers (calling a function using a function pointer, passing functions toother functions, pointer to function, functions returning pointers), Memory allocation in C, dynamic memory allocation.

Structure and Unions: Defining a structure, processing a structure, users defined data types, structure and arrays, structures and pointers, passing structures to a function, self-referential structures, bit fields in structures, union, Union of structures, Enumerations, typedef.

UNIT-IV: Practical involved the concepts from UNIT-I to UNIT-III. 30 Hours

Suggested Practical Assignments (Questions may not be restricted to this list)

BASICPracticals:

1. Write a program to display a text message on the Display Screen.
2. Write a program to find out the sum of two integer values and display the result on the screen. Input the two values from the keyboard.

3. Write a program to find out the greatest of three numbers.
4. Write a program for swapping the two numbers with / without using another variable.
5. Write a program to find whether the given year is a leap year or not (use % modulus operator)
6. Write a program to find out the real roots of quadratic equation, $Ax^2+Bx+C=0$.
7. Write a program to convert the given temperature in Fahrenheit to Celsius using the following conversion formula, C=(F-32)/1.8.
8. Write a program to find out the average of any ten numbers. (Use (a) while loop, and (b) forloop).
9. Write a program to generate Fibonacci sequence. (1,1,2,3,5,8,13, …)
10. An employee is paid 1.5 times the normal rate for every hour beyond 40 hours worked in a week. Write a program to calculate the weekly wage of an employee.
11. Write a program to check whether the given string is palindrome or not.
12. Write a program to read the text and convert the case of the text.
13. Admission to a professional course is subject to the following conditions:
    (a) Marks in mathematics >=60
    (b) Marks in physics >=50
    (c) Marks in chemistry >=40
    (d) Total in all three subjects >=200

    Write a program to search of admission of students. The user has to enter the marks from the keyboard of the corresponding subjects.

14. Write a program to sum the following series:
    a) The first n natural numbers
    b) The first n odd natural numbers
    c) The first n even natural numbers
15. Write a program to sum the series : 2 * 3 – 3 * 5 + 4 * 7 + to n terms

Advance Practicals:

1. Write a program to read the following numbers, round them off to the nearest integers and print out the results in integer form:
   35.7 50.21 -23.73 -46.45
2. Given the string "WORDPROCESSING ", write a program to read the string from the terminal and display the same in the following formats:
   (a) WORD PROCESSING (b) WORD (c) W. P. PROCESSING

3. Write a program that will read the value of **x** and evaluate the following function

   1 for x>0
   Y= 0 for x=0
   -1 for x<0

   Using
   (a) nested **if** statements,

(b) **else if** statements, and
(c) Conditional operator

4. Write a program to calculate the monthly telephone bill according to the following rules:
   (a) Rural subscribers:

   Upto 250 calls Free
   251 calls to 450 calls 0.60
   451 calls to 500 calls 0.80
   501 calls to 1000 calls 1.00
   above 1000 calls 1.20

   (b) Urban subscribers:

   Upto 150 calls Free
   151 calls to 400 calls 0.80
   401 calls to 1000 calls 1.00
   Above 1000 calls 1.20

   (c) The rental for urban subscribers depends on the number of calls upto 400 calls the rental will be 200/- and above 400 calls the rental will be 240/-. For rural subscribers the rental is always 200/-.
5. Write a C program to input the Name, City Type (whether Metro or Non-Metro) and Basic Pay of an employee and calculate the salary according to the following rules:
   (a) Dearness allowance (DA)
      (i) Upto Rs. 3500 110% of basic pay
      (ii) Above Rs.3500 90% of the basic pay subject to a maximum of Rs. 3850
         (i.e. DA should be at least Rs. 3850.
   (b) House Rent Allowance (HRA) is 15% of the basic pay subject to a maximum of Rs. 800 (i.e. never more than Rs. 800)

   (c) If City is Metro, City Compensatory Allowance (CCA)=800 else if it is Non-Metro, CCA=600.

   (d) Provident Fund (PF) is 12% of the basic pay.
      (**Total Salary**=Basic Pay +DA+HRA+CCA-PF)
      The **output** should be in the following format (Example only)
      Example Name ABCDEF
      Basic Salary 5000
      Dearness Allowance 4500
      HRA 750
      CCA: Non-Metro 600
      PF 600
      Total Salary 10250
6. Write a program to display the multiplication table of a given number from 1 to 20.
7. Write a program to find the biggest and smallest number and its position in the given array.

8. Write a program to find addition, subtraction and multiplication of matrices using function.
9. The factorial of an integer m is the product of consecutive integers from 1 to m. That is,
   Factorial m = m! =m*(m-1)*(m-2)*…*1.

10. Write a program to find the sum of row, column, and diagonals of the given matrix.
11. Write a program to input a string and perform the following tasks without using library functions: (a) to find its length, (b) to change it to upper case / lower case (c) to extract the left most n characters, (d) to extract the right most n characters (e) to extract n characters from it starting from position p, (f) to insert another string in it at position p (g)to replace n characters in it starting at position p with a given string
12. Write a program to search a pattern in a given text.
13. Write a program to read and display the information of all the students in the class.
14. Write a program that passes a pointer to a structure to a function.
15. Write a program to illustrate the use of arrays within a structure.

Instructions to Paper Setter

- Questions should be set according to the following scheme.

UNIT	**Questions**	
	To be Set	**To be Answered**
I	2	1
II	2	1
III	2	1

For Practical a total of 10 questions, each carrying 19 marks, shall be set. For each question, there shall be two sub-questions, one carrying 9 marks and the other carrying 10 marks. A student shall be allotted any one of the questions on a LOTTERY basis.

Exam Duration:

Theory	**Practical**
2 Hours	2 Hours

Distributionofmarksforpractical

10% :Syntaxandinput/outputscreens
30% :Logicandefficiency(sourcecode,pseudocode,andalgorithm)
20% :Errortrapping(illegalorinvalidinput,stackoverflow,underflow,insufficientphysicalmemoryetc.)
20% :Completion
20% : Result

Suggested Readings:

Text Books:

1. TharejaReema, ProgramminginC,,OxfordUniversityPress,NewDelhi, 2nd Edition,2016.
2. Byron Gottfried,ProgrammingwithC,Schaum'sOutlineSeries,McGraw Hill Education,4thEdition,2018.
3. Brian W. Kernighan, Dennis Ritchie, ANSI C: The C Programming Language, Pearson Education India, 2nd Edition, 2015.
4. Jery R Hanly, Elliot BKoffman,ProblemSolvingandProgramDesignInC,Pearson, 2nd Edition, 2016.

ReferenceBooks:

1. YeshawanKanetkar, LetUs C: Authentic Guide To C Programming Language,BPBPublications,NewDelhi, 18th Edition, 2021.
2. E. Balagurusamy,ProgramminginANSIC,McGraw Hill Education,NewDelhi, 8th Edition,2019.

BCA-150: Internet Technology with PHP and MySQL

(Contact Hours: 75, Credits: 4)

Course Objectives (COs):

This course is designed to equip students with the basic skills and knowledge to start building dynamic and interactive websites using HTML, CSS, JavaScript, PHP and MySQL.

Learning Outcomes (LOs):

Students shall be able to list the various HTML tags and use them to develop user-friendly web pages. Define the Javascript functions, CSS with its types and use them to provide the styles to the web pages at various levels. The course also lays a good foundation for students to acquire full-stack development skills which are much in demand in today's marketplace.

Outline of the Paper

UNIT	Topic	Hours	External Marks	Internal Marks
I	HTML, JavaScript and CSS	15	18	15
II	Server Side Programming Using PHP	15	19	
III	MySql and PHP	15	19	
IV	Practical	30	19	6
Total		**75**	**75**	**25**

CONTENTS

UNIT-I : HTML, JavaScript and CSS (Theory) 15 Hours

HTTP and Web Servers: HTTP; System Architecture of a Web server; Client-side Scripting versus Server-side Scripting; Apache Web Server

HTML: Elements of HTML (Headers, Linking, Images, Special Characters, Lists, Tables, Forms, Frames, Dropdowns, Divs)

JavaScript: JavaScript syntax and basic data types, Variables, constants, and data manipulation. Working with operators and control structures. Arrays, String Manipulation

JavaScript Fundamentals: DOM (Document Object Model) manipulation, Handling events and event-driven programming, Working with arrays and objects, Conditional statements and loops, Error handling and debugging techniques.

JavaScript Functions and Scope: Creating and invoking functions, Function parameters and return values, Function scope and closures, Higher-order functions and callback functions.

Working with the DOM: Manipulating HTML elements with JavaScript, Accessing and modifying element attributes, Creating, appending, and removing elements dynamically, Traversing and manipulating the DOM tree, Handling form input and form validation.

Cascading Style Sheets: CSS syntax and structure, Inline, internal, and external CSS, CSS rule

precedence, CSS Class and Id selectors, Attribute selectors and pseudo classes. CSS Box Model (Introduction, Border properties, Padding-Properties, Margin properties). CSS Positioning, Changing font families, sizes and weights. Text color, background, shadows, text formatting-alignment, decoration, spacing. CSS Color- RGB, HEX, HSL. Applying colors to text, backgrounds, and borders, Working with gradients and background images, Creating transparent elements and overlays, CSS background properties: size, position, and repeat.Creating page Layout and Site Designs.

UNIT-II : Server Side Programming with PHP 15 Hours

Introduction to PHP: Introducing PHP, Conditions and Branches, Loops, Functions, Working with types,User-defined Functions Arrays, Strings and Advanced Data Manipulation in PHP: Arrays, Strings, Regular Expressions, Dates and Times, Integers and Floats.

Validation with PHP: Validation and Error Reporting Principles, Server-Side Validation with PHP
Sessions: Introducing Session Management, PHP Session Management, Using Sessions in Validation

UNIT-III: MySql and PHP 15 Hours

Introduction to MySQL with PHP: Database Basics, MySQL Command Interpreter, Managing Databases and Tables.Inserting, Updating and Deleting Data, Querying with SQL SELECT, Join QueriesQuerying Web Databases: Querying a MySQL Database using PHP, Processing User InputWriting to Web Databases: Database Inserts, Updates and Deletes, Issues in Writing Data to Database.

UNIT-IV: PRACTICAL 30 Hours

Practical involving HTML,CSS, JavaScript, PHP and MySQL

Suggested Practical Assignments (Questions need not be restricted to this list)

Basic Practicals

1. Create an HTML document that defines a table with columns for state, state bird/animal, state flower and state food. There must be at least five states as rows in the table.
2. Create a HTML document showing all the headings in a page.
3. Create a simple table with three rows and four columns.
4. Create a HTML document to display all the different form of lists.

5. Using HTML, CSS create a paragraph.
6. Using HTML, CSS create a list of fruits and vegetables.
7. Using HTML, CSS create a striped table.

8. Write Javascript code to display a table of the numbers from 1 to n through an HTML document. Use for loop or do loop.
9. Write Javascript code to display the first 50 Fibonacci Numbers through an HTML document. [Hint: Use document.write to display output in a tabular form, using the assistance of table HTML tags]. Use for loop or do loop.
10. Write Javascript code to check for Armstrong numbers
11. Write Javascript code to find the sum of n numbers.
12. Write a PHP function to add two numbers
13. Write a PHP program to swap 2 numbers using a third variable.
14. Write a PHP program to swap 2 numbers without using a third variable.
15. Write a PHP program to solve the following equation

    s= u*t+½ a*t^2 where s = distance, u= initial velocity, t = time, a= acceleration

    A=½*b*h where A = Area, b = base, h = height

Advanced Practicals

1. Create an HTML document for yourself, including your name, address, e-mail address, phone number, date of birth and age. If you are a student, you must include the course you have undertaken and give a little description about the course. If you are employed, you must include your employer, your employer's address and your job title. This document must use several headings and , ,<hr/>,<p> and <br/> tags.
2. Create an HTML document that defines a table with columns for state, state bird/animal, state flower and state food. There must be at least five states as rows in the table.
3. Create an HTML document that has a form with the following controls:

   A text box to collect users' names.

   Four checkboxes, one each for the following items:

   Four 100-watt light bulbs for Rs70.

   Eight 100-watt light bulbs for Rs140.

   Four 100-watt long-life light bulbs for Rs90.

   Eight 100-watt long-life light bulbs for rs210

4. A collection of three radio buttons that are labeled as follows:
   i. Visa
   ii. Mastercard
   iii. Maestro.

5. Using HTML, CSS create a styled checkbox with animation on state change.
6. Using HTML, CSS create a list with floating headings for each section
7. Create a Navigation bar (with dropdown) and grid with CSS

8. Write Javascript code to display a table of the numbers from 5 to 15 and their squares and cubes through an HTML document. [Hint: Use document.write to display output in a tabular form, using the assistance of table HTML tags]. Use for loop or do loop.
9. Write Javascript code to display the first 50 Fibonacci Numbers through an HTML document. [Hint: Use document.write to display output in a tabular form, using the assistance of table HTML tags]. Use for loop or do loop.
10. Write Javascript code to display a list of Armstrong numbers between 100 and 1000 through an HTML document. [Hint: Use document.write to display output in a tabular form, using the assistance of table HTML tags]. Use for loop or do loop.
11. Write Javascript code to display a table of Palindrome numbers between 100 and 500 through an HTML document. [Hint: Use document.write to display output in a tabular form, using the assistance of table HTML tags]. Use for loop or do loop.
12. Write Javascript code to generate a list of numbers between 100 and 1000 where the result of the current number is the sum of the previous four numbers in the series. Example initial four numbers are 0,1,1,2. The next number in the series should be 4.
18. Write a PHP script to display the contents of a database table containing information about books. The table has three fields specifying the book ID, book name and the number of pages in the book. Display the results in an HTML table.
19. Using the previous question's database table, create HTML forms for inserting, editing and deleting records. Use regular expressions to check the correct format for bookID which is given as, first three characters have to be digits followed by an underscore and then a five character string.
20. Create a PHP program that validates whether an inputted email address is in the correct format using regular expressions. The program should check for the presence of an "@" symbol, a domain name, and a valid top-level domain.

Instructions to Paper Setter

- Questions should be set according to the following scheme.

UNIT	**Questions**	
	To be set	**To be Answered**
I	2	1
II	2	1

III	2	1

For Practical a total of 10 questions, each carrying 19 marks, shall be set. There shall be two sub-questions in each question, one carrying 9 marks and the other carrying 10 marks. A student shall be allotted any one of the questions on a LOTTERY basis.

Exam Duration:

Theory	**Practical**
2 Hours	2 Hours

Evaluationofmarksforpractical Exam:

10% :Syntaxandinput/outputscreens
30% :Logicandefficiency(sourcecode,pseudocode,andalgorithm)
20% :Errortrapping(illegalorinvalidinput,stackoverflow,underflow,insufficientphysicalmemoryetc.)
20% :Completion
20% : Result

Suggested Readings:

Text Books:

1. Hugh E Williams and David Lane, *Web Database Applications with PHP and MySQL*, O'Rielly, 2nd Edition, 2004.
2. Luke Welling and Laura Thomson, *PHP and MySQL Web development*, SAMS Publishing, 2ndEdition.
3. Marijn Haverbeke, *Eloquent JavaScript: A Modern Introduction to Programming.* Available online: https://eloquentjavascript.net
4. James H. (Jim) Pence, Thomas A. Powell, HTML &CSS:The Complete Reference, McGraw-Hill Education, 5th Edition, 2010.
5. Eric Meyer, Estelle Weyl, CSS: The Definitive Guide, Shroff/O'Reilly, 4th Edition, 2017.

Reference Books:

1. Rasmus Lerdorf, Peter MacIntyre, Kevin Tatroe, *Programming PHP*, 2nd Edition, O'Reilly Publishing.
2. W. Jason Gilmore, *Beginning PHP 5 and MySQL 5: From Novice to Professional*, 2nd Edition, APress.

ECONOMICS

Preface

Economics has emerged as one of the most 'sought-after' subjects of study in Social Sciences as it immediately communicates with the changing societal priorities and needs. The curriculum under the NEP, 2020 has been structured so as to make it practically more useful and job- oriented in the multifaceted environment ranging from trade, industry, infrastructure, etc. to information technology. At the same time, the syllabus gives sufficient impetus for academic inputs to prepare students for a research/teaching career in Economics. The programme emphasises both on theory and applied nature of the subject that has registered rapid changes during the recent times.

There are a total of fifteen compulsory core courses that students are required to take across six semesters in the first three years of the programme. The question paper shall be prepared as per University guidelines. Out of 100 marks in each course, 75 marks will be assessed in the end semester examination and 25 marks will be carried from the sessional assessments. In the end semester examination, there will be two questions from each unit and the students have to answer at least one question from each unit.

Programme Outcomes

The Undergraduate programme in Economics aims to develop a comprehensive understanding and critical thinking among students. It seeks to impart knowledge of key economic theories and policies and to develop an ability to utilise this knowledge to examine and analyse past and present economic situations and issues. The syllabus facilitates development of a deeper insight in each individual so as to enable him/her to opt for challenges of selfemployment in the face of broadening gap between the demographic needs and the number of jobs becoming available. Overall, the programme provides necessary training to the students of economics and equips them to deal with contemporary public policy issues.

ECO-100: MICROECONOMICS I

(Contact Hours: 60, Credits:4)

Course Objectives:
This course is designed to expose the students to the basic principles of microeconomic theory. The emphasis will be on thinking like an economist and the course will illustrate how microeconomic concepts can be applied to analyze real life situations.

Learning Outcomes:
As a foundation course, in this Paper, the student will understand the behaviour of aneconomic agent, namely, a consumer, a producer, a factor owner and the price fluctuations in a market. In addition, the student will learn principles of factor pricing and welfare economics.

Unit – I

Consumer Behaviour: nature and scope of Economics. Concepts of demand and supply, price mechanism and market equilibrium. Individual and market demand curve; shifts in demand curve; elasticity of demand: types, determinants and methods of measurement (point, arc and total outlay methods); relationship between the price elasticity of demand and the slope of the demand curve. Indifference curve analysis of demand: basic assumptions, properties, consumer'sequilibrium.

Unit – II

Production, Cost and Supply: Concepts of production function, isoquants and their properties; returns to a factor, returns to scale, law of variable proportions; cost curves – short run and long run; total, average and marginal revenue curves, relationship between AR, MR and price elasticity. Concept of supply, derivation and shifts of supply curve, elasticity of supply.

Unit – III

Market Structure: perfect and imperfect competition; equilibrium of the firm and industry under perfect competition in the short run and long run; equilibrium of the firm under monopoly and monopolistic competition in the short run and long run; Chamberlin's group equilibrium; meaning and features of oligopoly.

Unit - IV

Factor Pricing and Welfare Economics: marginal productivity theory of distribution; Ricardian and modern theories of rent; Subsistence and wage fund theories of wages; liquidity preference theory of interest; Knight's theory of profit. Concepts of welfare; value judgements; problems in measuring welfare; Classical welfare economics; Pareto optimality; social welfare function.

Suggested Readings:

Koutsoyiannis, A. *Modern Microeconomics*. Macmillan, London (latest edition). Mankiw, N. G., *Principles of Economics*, Cengage Learning, New Delhi (latest edition). Samuelson, P.A. and W.D. Nordhaus (1998), *Economics*, Tata McGraw Hill, New Delhi.

Stonier, A.W. and D.C. Hague (1999), *A Textbook of Economic Theory*, Pearson Education, New Delhi.

Ahuja, H. L. *Advanced Economic Theory,* S. Chand Publishing, New Delhi, (latest edition).

ECO-150: MACROECONOMICS I

(Contact Hours: 60, Credits:4)

Course Objectives:
Macroeconomics deals with the functioning of the economy as a whole, including how the economy's total output of goods and services and employment of resources is determined and what causes these totals to fluctuate. This paper has an extensive, substantive as well as methodological content.

Learning Outcomes:
This course discusses the preliminary concepts associated with the determination and measurement of aggregate macroeconomic variables like saving, investment, GDP, money, inflation and the balance of payments. The student will learn about the basic theoretical framework underlying the field of macroeconomics. He/ she will be able to undertake economic analyses in terms of theoretical, empirical as well as policy issues.

Unit – I
National Income: meaning, concepts and their inter-relationship; methods of measuring national income and their limitations; national income identity in a closed economy; circular flow of income – two, three and four sector models; green accounting.

Unit – II
Output and Employment: Classical theory of employment; Keynesian theory of income and employment; the principle of effective demand; consumption and saving function; investment multiplier; marginal efficiency of capital; saving and investment: ex post and ex ante (concepts only); concept of accelerator.

Unit – III
Money, Banking, Inflation and Unemployment: Functions of money; Fisher's quantity theory of money; determination of money supply and demand; credit creation and credit control.Inflation: meaning, types, causes, effects and control. Unemployment: meaning and types; Phillip's curve.

Unit – IV
Trade Cycles and Balance of Payments: Concept, nature and characteristics of trade cycles; Hawtrey's monetary theory, Hayek's over-investment theory, Schumpeter's innovation theory; control of trade cycles. Balance of Trade and Balance of Payments: concepts and components; equilibrium and disequilibrium in the BoP; consequences of disequilibrium and measures to correct the deficit in the BoP.

Suggested Readings:
Ackley, G. (1976), *Macroeconomics: Theory and Policy*, Macmillan Publishing Co., New York.

Mankiw, N.G. (2007), *Principles of Macroeconomics*, Thomson Learning Inc., New Delhi.

Shapiro, E. (1996), *Macroeconomic Analysis*, Galgoti Publications, New Delhi.

Branson, W.H. (2005), *Macroeconomic Theory and Policy*, East West Press.

Ahuja, H. L. *Advanced Economic Theory,* S. Chand Publishing, New Delhi, (latest edition).

EDUCATION

Preface

The Under graduate Course in Education as per the NEP-2020 guidelines is meant for the 3- year UG Major, Multidisciplinary and Skill Enhancement course program, 4-year UG Honours, and Honours with the Research program of the University at the beginning of their careers .

The course in Education consists of:-

Three papers in the 1st semester

EDN-100: Introduction to Education (Major)
MDC- 116: Introduction to Psychology
SEC- 131: Motivation

Three papers in 2nd semester

EDN-150: Foundation of Education (Major)
MDC- 166: Introduction to Educational Psychology
SEC-182: Confidence Building

These papers will enable the learners to demonstrate their understanding of the subject and deliver meaningful learning experiences by integrating their knowledge of content, pedagogy, the learner and the learning environment; engaging in the reflective instructional cycle of planning, instructing, assessing, and adjusting based on data; and applying a variety of communication, instructional, and assessment strategies.

It will facilitate learning through joint productive activity among teachers and students, developing students' competence in communication throughout all instructional activities, connecting curriculum to experience and skills of students' home and community, challenging students toward cognitive complexity, and engaging students through dialogue, especially instructional conversation.

Programme Outcomes

At the end of the programme, the students are expected to have sound knowledge of fundamental concepts of Education. The acquired knowledge will enrich the skills for professional collaboration, and interactions with peer mates, teachers, parents, and the community.

EDN-100: INTRODUCTION TO EDUCATION

(Contact Hours: 60, Credits: 4)

Objectives: This course will help the learners to develop a positive attitude towards Education. It will sensitize the students on the importance of Education as a discipline. It will also help learners to identify future job opportunities relating to Education as a discipline.

Learning Outcomes

At the end of the course students are able to:

1. demonstrate comprehensive knowledge and understanding in the academic field of study
2. assess learning experiences that will help instil deep interest in learning about the effects of mass media in Education
3. discover and contextualise knowledge and can engage themselves in developing a curriculum
4. adapt skills that are necessary for planning, organising and present a report on an activity

UNIT I Concept of Education

- Meaning; Aims; Functions; Importance
- Principles of Education
- Types of Education
- Scope of Education

UNIT II Mass Media in Education

- Meaning; Functions of Mass Media
- Structure of Mass Media
- Multi Media in Education
- Effects of Mass Media in Education

UNIT III Concept of Curriculum

- Meaning; Characteristics; Need and Importance
- Principles of Curriculum Construction
- Types of Curriculum
- Factors Influencing Curriculum

UNIT IV Co-curricular Activities

- Meaning and Importance of Co-Curricular
- Scope of Co-curricular Activities
- Types of Co-curricular Activities
- Benefits of Co-curricular Activities

Assignments (Choose any one)

1. Prepare a plan for any one non-academic activity: Examples: Science quizzes; poetry competition; story writing competition; mathematics Olympiads; extempore; project exhibition, Essay competitions or Debate competition; poster drawing; folk art work; etc.
2. Prepare any one plan from the following, for organising: a Cultural event; scouting and guiding; celebrating cleanliness day; taking part in college councils; volunteering for social work; etc
3. Prepare, organise and report on any one recreational activity that you have performed: Example: Picnic; Mountain Hike; workshops; group games; industrial or factory visits; field visits; etc

.

References

Aggarwal, J.C.(2018). *Curriculum Development Planning & Instruction*. Doaba House: India

Aggarwal, J.C.(2020). *Philosophical Foundations of Education.* Shri Vinod Pustak Mandir: India

Chawla,A.(2021). *Introduction to Mass Communication* | First Edition | By Pearson Education: India

Dutta, K. B. *Mass Media in India*. (2005). Akansha Publishing: India.

Ferguson. (2001). *Co-curricular Activities: A Pathway to Careers.* Facts On File Inc.

Egyankosh. (n.d.). *Co-Curricular Activities.* https://egyankosh.ac.in/bitstream/123456789/47006/1/Unit-13.pdf

KKHSOU. (n.d.). *Co-Curricular Activities*. https://kkhsou.ac.in/eslm/E-SLM_Main/5th%20Sem/Bachelor%20Degree/Education/Education%20Major/English%20medium/Educational%20Management%20English%20Medium/Block%202/Unit%20-12.pdf

Pandey, Jyoti. (2015). *Principles Of Education and Curriculum Development*. KSK: India.

Ravi, V. (2015). *Curriculum Development*. Lulu.com: India.

Sudhakara Reddy, T. J. & Bhaskara, Digumarti Rao. (2016). *Co-Curricular Activities*. APH Publishing Corporation: India.

Talla, Mrunalini. (2012).*Curriculum Development: Perspectives, Principles and Issues*. Pearson Education India.

Venkateshwara Rao, N. (2020).*Introduction to Media and Mass Communication*. Kanishka Publishers: India.

EDN-150: FOUNDATION OF EDUCATION

(Contact Hours: 60, Credits: 4)

Objectives: This course will enable the students to deep knowledge and understanding of the philosophical, sociological, political and economic foundations of education. It will also develop in them the ability and commitment to engage in a critical analysis of educational issues and to apply the results of that analysis to educational reconstruction.

Learning Outcomes

At the end of the course, students are able to:

1. explain the concept and the need of Education
2. summarize the types of democracy related to education
3. examine the aims of education.

Unit I Concept of Education

- Meaning, Nature and Scope of Education
- Forms of Education:-Formal, Informal and Non-formal
- Distinction between Education and Literacy
- Role of Education in National Development

Unit II Aims of Education

- Need and Significance of Aims of Education
- Determinants of Educational Aims
- Type of Aims of Education
  i) Ultimate Proximate Aims of Education

  ii) Liberal and Vocational Aims of Education

- Democratic Citizenship as an Aims of Education

Unit III Freedom and Discipline in Education

- Meaning, Need and Importance of Freedom
- Meaning, Need and Importance of Discipline
- Relationship between Freedom and Discipline
- Role of Teachers in maintaining Discipline

Unit IV Democracy and Education

- Meaning, Types and Characteristics of Democracy
- Principles of Democracy

- Democracy in Education
- Role of Teachers in a Ddemocracy

Assignments (Choose any one)

1. Challenges of the NEP-2020 in Higher Education
2. Rights and duties of a democratic citizen(Give a detailed report by consulting primary or secondary sources)
3. Multi Cultural Education: Issues and Challenges(Give a detailed report by consulting primary or secondary sources)

References

Dewey, J. (2009). *Democracy and Education.* Merchant Books Publication.

Gingell, J. & Winch, C. . (1999). *Key Concepts in the Philosophy of Education.* Taylor & Francis Ltd.

Latchanna, G. et al. (2016). *Foundations of Education.* Hyderabad: Neelkamal Publication.Mishra, S. (2022). *Philosophy of Education.* Notion Press.

Mrunalini, T. et al. (2016). *Philosophical Perspectives of Education.* Hyderabad: Neelkamal Publication.

Pathak, R.P. (2019). *Philosophical and Sociological Foundations of Education.* Kanishka Publishers.

Ravi, S.S. (2015). *Philosophical and Sociological Bases of Education.* PHI Learning.

Saikia, P. (2019). *Sociological Foundations of Education.* DVS Publishers.

Singh, M. & Singh, U. (2011). *Sociological Foundations of Education.* Laxmi Publications.

Whitehead, A.N. (2022). *The Aims of Education.* Nation Press.

ENGLISH

Preface

The FYUG programme in English, up to the second semester, comprises two Major/ Minor Courses, two Ability Enhancement Courses (AEC) and one Multi-Disciplinary Course (MDC). There are five papers and 17 credits with a total of 425 grade points over two semesters. The Major/ Minor Courses, being subjects in a core discipline and comprising Introduction to English Literature and British Poetry: Milton to the Present, are taught in both semesters. So are the Ability Enhancement Courses, comprising Alternative English in the first semester and Communicative English in the second. The Multi-Disciplinary Course, comprising Introduction to Theatre and Performance, is taken up in the second semester.

The two Major/ Minor Courses are designed to introduce students to the origin and development of English literature and provide a comprehensive guide to English poetry, its development, forms and movements over the ages. So is the Alternative English paper under AEC. Communicative English is designed to train students to develop their communication skills in dealing with modern-day situations. The Introduction to Theatre and Performance will introduce students to the basic concepts of Theatre and Performance.

Programme Outcome

Through Major/ Minor Courses and the Alternative English paper, the students will gain the aptitude to read and understand various literary texts and genres, thus enabling them to think critically and demonstrate a coherent and systematic knowledge of the different aspects of the English language and literature. In addition, Communicative English will help them develop effective communication skills, while Introduction to Theatre and Performance will help them gain the ability to translate dramatic theory into practice.

ENG-100: INTRODUCTION TO ENGLISH LITERATURE

(Contact Hours: 60, Credits: 4)

The course is designed to introduce students to the origin and development of English literature. It will offer a broad overview of the major literary movements from the old English period to postmodernism and the present era with brief descriptions of key works. By introducing students to the broad categories of poetry, drama and fiction, the course will help them develop an understanding of major genres, literary tendencies and important socio-political movements of the various ages.

Course Objectives:

1. To equip students with the ability to understand and engage with various literary and critical concepts and categories.
2. To enable students to read texts with close attention to themes, conventions, contexts and value systems.
3. To train students to situate their reading and their positions in terms of community, class, caste, religion, gender and politics and to develop their understanding of the global and local.
4. To inculcate in students the ability to communicate ideas, opinions and values and to expand their knowledge of the subject as it moves from the classroom to life and life-worlds.
5. To develop critical thinking and ethical awareness in students.

Learning Outcomes

The students will gain the aptitude to read and understand various literary texts and genres, thus enabling them to think critically and demonstrate a coherent and systematic knowledge of the different aspects of English language and literature. They will also develop a keener literary judgement and a clearer understanding of literary and ethical values.

UNIT I: Introduction to the Literary Periods

(This unit will focus only on the major movements, providing a brief outline—about 400words—of each.) *

Literary Periods:

1. Old English (450-1066)
2. Middle English (1066-1500)
3. The Renaissance (1500-1660)
4. The Elizabethan Age (1558-1603)
5. The Jacobean Age (1603-1625)
6. The Restoration Period (1660-1700
7. The Romantic Period (1785-1832)

8. The Victorian Period (1832-1901)
9. Modernism (1914-1945)
10. Postmodernism (1945 to the Present)

***** Sample outlines are available. See "Christian, et al." in Suggested Reading.

UNIT II: Introduction to English Poetry

(This unit will focus on prominent genres—providing a brief outline of each—relevant literary terms and select texts.)

Brief Outlines of Poetry Genres:

1. Lyric (Elegy, Dirge, Sonnet, Ode)
2. Narrative Poetry (Ballad, Epic, Mock Epic, Allegory)
3. Didactic Poetry (Satire)
4. Epistolary Poetry
5. Pastoral Poetry
6. Dramatic Poetry (Dramatic Monologue)

Representative Poets and Texts (14th to 17th Century)

a. Geoffrey Chaucer: "The Tale of the Wyf of Bathe"
b. William Shakespeare: "Sonnet 18"
c. John Donne: "The Sunne Rising"
d. Abraham Cowley: "Platonic Love"

UNIT III: Introduction to English Drama

(This unit will focus on prominent genres—providing a brief outline of each—relevant literary terms and a select text.)

Brief Outlines of Drama Genres:

1. Mime Theatre
2. Morality Play
3. Tragedy
4. Comedy
5. Tragi-comedy
6. Historical Play
7. Melodrama
8. Mystery Play
9. Theatre of the Absurd
10. Street Theatre

Representative Playwright and Text (16th Century)

William Shakespeare – *The Merchant of Venice*

UNIT IV: Introduction to English Fiction

(This unit will focus on prominent genres—providing a brief outline of each—relevant literary terms and a select text.)

Brief Outlines of Fiction Genres:

1. Realistic Fiction
2. Romance
3. Picaresque Novel
4. Epistolary Novel
5. Historical Fiction
6. Science Fiction
7. Speculative Fiction
8. Crime/ Mystery
9. Magic Realism
10. Young Adult Fiction

Representative Author and Text (18th Century)

Daniel Defoe: *Robinson Crusoe*

Suggested Reading

Alexander, Michael. *History of English Literature*. Macmillan Press Ltd., 2000.

Allison, Alexander, et al., ed. *The Norton Anthology of Poetry*. W. W. Norton and Company, 1983.

Christian, et al., ed. "Literary Movements". 13 May 2023, StudySmarter, www.studysmarter.co.uk/explanations/english-literature/literary-movements/

Defoe, Daniel. *Robinson Crusoe*. Fingerprint Publications. 2017.

Mangan, Michael. *A Preface to Shakespeare's Comedies.* Routledge, 1996. Prasad,

B. *A Background to the Study of English Literature*. Macmillan Ltd., 2010.Robert

Scholes, et al., ed. *Elements of Literature*. Oxford University Press, 2004.

Sampson, George. *The Concise Cambridge History of English Literature*. Cambridge University Press, 1946.

Sanders, Andrew. *Oxford History of English Literature*. Oxford University Press, 2005.

Shakespeare, William. *The Merchant of Venice*. Dover Publications Inc., 1995.

Stephen Greenblatt, et al., ed. *The Norton Anthology of English Literature. Vol. A, The Middle Ages.* W.W. Norton & Co. Ltd., 2006.

ENG-150: BRITISH POETRY: MILTON TO THE PRESENT

(Contact Hours: 60, Credits: 4)

This course is a continuation of *Introduction to Poetry* dealt with in the first Semester. It is intended to provide a comprehensive guide to English poetry, its development, forms and movements over the ages. Beginning with Milton, it moves on to the Metaphysical Poets, represented by John Donne, and the Augustan period, represented by Alexander Pope. The Romantics are represented by Gray, Blake and Keats, the Victorians by Browning and Hardy, offering students the scope to view their poetry against the background of a clash between faith and scepticism, hope and despair.

The course is also designed to familiarise students with the "new" poetry which came into being at the beginning of the twentieth century in the UK, which embodies the crisis, disillusionment, and radical scepticism of the times. Beginning with Yeats and Eliot, the course includes English, Welsh and Irish poets, who add a "regional" flavour to the complexity and exciting diversity of Modern English Poetry.

Course Objectives

1. To provide a comprehensive guide to English poetry, its development, forms and movements over the ages.
2. To familiarise students with the "new" poetry, which came into being at the beginning of the 20th Century in the UK.
3. To equip them with the ability to understand and appreciate the various elements and aspects of poetry.
4. To encourage reading and discussion of poetry as a means to explore issues of identity, culture, human relationships, nature and topics relating to life and customs.

Learning Outcomes

This course will help students gain expertise in the study of poetry, its various elements, genres, techniques and devices. By engaging in close reading and analysis of literary texts, students will develop their critical thinking skills, thus inculcating the spirit of enquiry and questioning in them. Further, students will be provided with the relevant materials in their endeavour to explore culture, history, and human values.

UNIT I

1. John Milton: "Paradise Lost" (Book I, lines 1-125)
2. Alexander Pope: "Ode on Solitude"
3. Thomas Gray: "Elegy Written in a Country Churchyard"

UNIT II

1. William Blake: "The Lamb" and "The Tyger"

2. John Keats: “Ode to Autumn”
3. Robert Browning: “My Last Duchess”

UNIT III

1. Thomas Hardy: “Let Me Enjoy”
2. William Butler Yeats: “The Second Coming”
3. T. S. Eliot: “Whisper of Immortality”

UNIT IV

1. Ted Hughes: “A Woman Unconscious”
2. Seamus Heaney: “Digging”
3. Lynne Rees: “Never”

Suggested Reading

Bloom, H. *The Best Poems of the English Language*. Harper Collins, 2004.

Bowra, C. M. *The Romantic Imagination*. OUP, 1999.

Bromwich, David. *Skeptical Music: Essays on Modern Poetry*. University of Chicago Press, 2001.

Corcoran, Neil. *English Poetry since 1940*. Longmans, 1993

Corns, T. N., ed. *The Cambridge Companion to English Poetry*. Cambridge University Press, 1973.

Draper, R. P. *An Introduction to Twentieth-Century Poetry in English.* St Martin’s Press, 1999.

Duran, Angelica: *Concise Companion of Milton*, Blackwell, 2006.

Frye, N. *Fearful Symmetry: A Study of William Blake*. University of Toronto Press, 2004. Neill, E. *Trial by Ordeal: Thomas Hardy and the Critics.* Columbia Camden House, 1999.

Keats, John. *Complete Poems and Selected Letters of John Keats* (with an Introduction by Edward Hirsch). Modern Library, 2001.

Howarth, Peter. *British Poetry in the Age of Modernism*. Cambridge University Press, 2005.

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Manning, Peter. *Reading Romantics: Texts and Contexts*, Viking, 1990.

Perkins, David. *A History of Modern Poetry (2 Volumes).* Harvard University Press, 1987.

GEOGRAPHY

Preface

The syllabus for Geography at undergraduate level using the Choice Based Credit system has been framed in compliance with model syllabus given by UGC. The broad objective of this syllabus is to enable the students acquire a holistic understanding of the subject matter with emphasis on diverse approaches adopted by geographical sciences in dealing with spatial phenomena concerning both physical and human dimension in their interactive interface. Care has been taken to provide the students with a judicious mix of courses dealing with theories, techniques, and modern technologies in dealing with spatial interaction and researchpreparedness with an overall aim of inculcating spirit of critical thinking and improving employability through skill development in emerging areas of digital cartography, GIS and quantitative techniques in tune with the changing nature of the subject. Attempts have been madeto equip the students with the ability to comprehend both analytical (spatial) as well as synthetic (regional) dimension of geographical knowledge through courses designed to focus on practical applicability of the acquired knowledge in diverse fields of the subject.

Programme outcome (PO)

As an outcome of the syllabus it is expected that the students will be able to advance their level of understanding of geography as a holistic subject with acquired competence and expertise dealing with space and spatial issues and find solutions to the problems that concern global inequality, climate change, environmental degradation, pollution, hazards and disasters, bio-diversity loss, urbanisation, crowding, social and ethnic conflicts etc. at different levels of spatial hierarchy- from global to local.

GEO-100: INTRODUCTION TO HUMAN GEOGRAPHY

(Contact Hours: 60, Credits: 4)

Objective: To enable the students to understand the major themes in human geography

Learning Outcome: Students will acquire an understanding and appreciation on the relationship between geography and society

Unit I - Introduction

Geography and its branches; geography as a study of relationship between human and physical environment (determinism and possibilism); relationship of geography with other disciplines; nature and scope of human geography

Unit II - Economic Geography

Approaches to the study of economic geography; classification of economic activities; types of agricultural practices

Unit III - Population Geography

Growth, distribution, density of human population in the world; concepts of optimum, over and under population; migration - definition, types

Unit IV – Political Geography and Social Geography

History and development of political geography; attributes of states - frontiers and boundaries; concept of geopolitics

Human races and its distribution; languages - classification and distribution; religion - origin and distribution

Suggested Readings

Bergman. E.F.(1995): **Human Geography-Culture, Connections and Landscape,** Prentice Hall, New Jersey.

Dikshit R.D. (1994): **The Art and Science of Geography**, Prentice Hall of India, New Delhi. Dikshit

R.D. (2000): **Geographical Thought-A Contextual History of Ideas,** Prentice Hall of India, New Delhi.

Dikshit, R.D. (2000): **Political Geography: The Spatiality of Politics**, Tata McGraw Hill, New Delhi.

Hartshorne, R. (1959): **Perspective on the Nature of Geography**, McNally and Co., Chicago.Harvey,

D. (1972): **Explanations in Geography,** Edward-Arnold, London.

Holt, J.A. (2001): **Geography; Its History and Concept**, Longman, London.

Husain, M. (1984): **Evolution of Geographical Thoughts**, Rawat Publications, Jaipur.

James, R. (2010**): The Cultural Landscape-An Introduction to Human Geography,** Prentice Hall of India, New Delhi.

Knox, P.L. and Marston Sallie (2001): **Places and Regions in Global Context: Human Geography (2nd Edn.),** Prentice Hall, New Jersey.

Singh, L.R. (2002): **Fundamentals of Human Geography**, Sharda Pustak Bhawan, Allahabad.

GEO-150: INTRODUCTION TO PHYSICAL GEOGRAPHY

(Contact Hours: 60, Credits: 4)

Objective: To enable students in understanding the linkages between landscape form and processes, the factors that influence the earth's climate and the relationship between biotic and abiotic components.

Learning Outcome: Students will be able to explain the basic principles of the development of landforms through time. It also explains how the physical system plays a role in supporting lifeforms on the earth.

Unit I - Geo-tectonics

Interior of the earth; geological timescale; continental drift, sea floor spreading and platetectonics; folds and faults

Unit II - Geomorphology

Development of geomorphology; basic geomorphological concept; geomorphic processes - weathering, erosion and mass wasting; geomorphic forms - fluvial and glacial

Unit III - Climatology

Heat budget; classification of air masses, fronts, cyclones and anti-cyclones; Koppen's scheme of classification of world climates.

Unit IV – Oceanography and Biogeography

Ocean floor configuration (Pacific, Atlantic & Indian); Ocean currents (Pacific, Atlantic & Indian); Coral reefs: classification and distribution

Phyto-geographical and zoo-geographical regions; concept of biome - tropical forest and grassland biomes; ecosystem - food chain, food web and ecological pyramids

Suggested Readings

Ahmad, E.(2001):**Physical Geography,** Kalyani Publishers, New Delhi.

Barry, R.G. and R.J. Chorley (2010): **Atmosphere, Weather and Climate**, Routledge, London and New York.

Critchfield, H. (1975**): General Climatology,** Prentice Hall, New York. Dayal,

P. (1996): **A Textbook of Geomorphology**, Shukla Book Depot, Patna.Hagget,

R. J. (2003): **Fundamentals of Geomorphology**, Routledge, London.

Kale, V.S. and Gupta Abhijit (2001): **Introduction to Geomorphology**, Orient Longman, Calcutta.

Lal, D.S. (2005): **Climatology,** Sharda Pustak Bhawan, Allahabad.

Negi, B.S. (2002): **Climatology and Oceanography**, Kedar Nath Ram Nath, Meerut.

Sarkar, Ashis (2015): **Systematic Geography: A Systematic Approach**, Orient Blackswan Private Limited, New Delhi

Sharma, Y.K. (2007): **Physical Geography**, Lakshmi Narain Agarwal, Agra.

Sharma, R.C. and M. Vatal (2018): **Oceanography for Geographers**, Surjeet Publications, New Delhi.

Thornbury, W.D. (1960): **Principles of Geomorphology**, John Willey & Sons, New York.

HISTORY

The FYUG programme in History has been framed in line with the NEP framework, focusing on discipline specific courses intended to inform students about socio-economic, political and cultural developments in the Indian subcontinent from the prehistoric to post-colonial times. Also offered, are courses with a global perspective with special reference to Europe, The USA, China and Japan, to familiarize students with the major political, economic and social forces that have shaped the world in general and the history of India in particular. Further, the courses emphasise the foundational character of the discipline, highlighting the continuous dialogue that exists between the past and the present that can inform the future.

Programme Outcomes (POs):

I. Students will be familiar with the diverse sources, landscapes and approaches to the study of the history of ancient, medieval and modern India.
II. Will understand the major political, economic and social forces that have shaped the world in general and the history of India in particular.
III. Students will be acquainted with the historical trajectory of India's composite cultural heritage.
IV. Will be familiar with regional history with special reference to Northeast India.
V. Will be equipped to undertake research on the subject and to pursue a career in academics.
VI. Will help students sitting for competitive examinations, a career in tourism and other allied fields.
VII. Will create informed and responsible citizens.

HIS-100: HISTORY OF INDIA: EARLIEST TIMES TO THE POST VEDIC PERIOD

(Contact Hours: 60, Credits: 4)

Objective

To introduce stages of development in the Indian Sub Continent from the Prehistoric period to the rise of Iron Age urbanization during the 5th century BCE. The focus will be on key developments in Prehistory, Proto-history and early historical India, highlighting the elements of change and continuity in socio-economic, political and religious developments**.**

Learning Outcome

Students will be familiar with the diverse sources, landscapes and approaches to the study of the history of ancient India as well as the major developments spanning the period under study.

Unit I Reconstructing Ancient Indian History

Geographical Background of the Indian Subcontinent: landscapes and environment; sources for the historical reconstruction of the period under study; approaches to the understanding of ancient Indian History

Unit II Pre and Proto Historic India

Palaeolithic cultures: Sequence and distribution; tool typology and technology; subsistence patterns; Mesolithic cultures: Regional and chronological distribution; new developments in technology and economy; Neolithic and the advent of food production; regional and chronological distribution; patterns of exchange; Chalcolithic cultures in India with special reference to Ahar, Kayatha, Malwa and Jorwe cultures; distribution pattern and subsistence economy.

Unit III Harappan Civilization

Origin; settlement pattern and town planning; agrarian base; art and craft, trade; socio-political organization and religious beliefs; the problem of urban decline.

Unit IV Vedic to Post-Vedic Period

Vedic culture: Early to Later-Vedic period (society, economy, polity and religion); post-Vedic period (Iron technology, trade, money economy and urbanization); the rise of heterodox sects; Buddhism and Jainism (origin and teachings); the rise of *Mahajanapadas*; emergence of Magadha as a paramount power.

Suggested Readings

Agarwal D.P.,	*The Copper Bronze Age*, MunshiramManoharlal, New Delhi, 1969.
----------	*The Archaeology of India*, Select book Service Syndicate, New Delhi, 1985

Allchin , F.R. & Bridget,	*The Rise of Civilization in India and Pakistan*, Cambridge University Press, London, 1988.
Allchin , F.R.,	*The Archaeology of Early Historic South Asia: The Emergence of Cities and States*, Cambridge University Press, London, 1995
Chakravarty, Ranabir,	*Exploring Early India: Upto c.AD.1300*, Ratnasagar, Delhi, 2016.
----------	*Trade in Early India*, Oxford University Press, New Delhi, 2004
	Trade and Traders in Early Indian Society, Manohar, New Delhi, 2002.
Dhavilkar, M.K., (ed.)	*A Comprehensive History of India Prehistory of India*, Vol.1, Part-1, Manohar, New Delhi, 2013.
Ghosh, A.,	*The City in Early Historical India*, IIAS, Simla, 1973.
Jayaswal, Vidula,	*Palaeohistory of India*, Agam Kala Prakashan, Delhi, 1978.
Jha, D. N.,	*Ancient India in Historical Outline*, Manohar, New Delhi, 2002 reprint.
Kosambi, D. D.,	*An Introduction to the Study of Indian History*, Popular Prakashan, Bombay, 2016 (reprint).
----------	*The Culture and Civilization of Ancient India in Historical Outline*, PPH, Delhi, 2001 (reprint).
Malik, S. C,	*Indian Civilization: The Formative Period*, Indian Institute of Advanced Studies, Shimla, 1999.
Sankalia, H.D.,	*Prehistory of India*, MunshiramManoharlal, New Delhi, 1977.
Ratnagar, Shereen,	*Understanding Harappa: Civilization in the Greater Indus Valley*, Tulika Books, New Delhi, 2017 (4th edition).
Sahu, Bhairabi Prasad (ed.),	*Iron and Social Change in Early India*, OUP, New Delhi, 2006.
Sharma. R.S.,	*India's Ancient Past*, Oxford University Press, New Delhi, 2009.
----------	*Material Culture & Social Formations in Ancient India*, Macmillan India Ltd., New Delhi, 2007 (2nd edition).
----------	*Sudras in Ancient India, MunshiramManoharlal, Delhi, 2016 (3rdedn.).*
Singh, Upinder,	*A History of Ancient and Early Medieval India*, Pearson, Delhi, 2008.
Thapar, B.K.,	*Recent Archaeological Discoveries in India*, The Centre for East Asian Cultural Studies, Tokyo, 1985.
Thapar, Romila,	*A History of India*, Vol.1, Penguin Books, Delhi, 1996 reprint.
----------	*The Penguin History of Early India*, Penguin books, New Delhi, 2002.
Basham, A.L.,	*The Wonder that was India*, Rupa &Co., New Delhi, 2002 reprint.
Chakrabarti, Dilip, K.	*The Oxford Companion to Indian Archaeology: The Archaeological Foundations of Ancient India, Stone Age to AD 13th Century*, Oxford University Press, New Delhi, 2006
Habib Irfan, (ed.)	*The People's History of India*, Vol.-1-4, Tulika Books, New Delhi, 2015.
Majumdar, R.C.et.al. (ed),	*The History and Culture of the Indian People*, Vol.1-II, (BharatiyaVidyaBhavan Series, Delhi, 1945-1960, latest editions)

HIS-150: HISTORY OF INDIA: MAURYA TO POST GUPTA PERIOD

(Contact Hours: 60, Credits:4)

Objective

To introduce the broad socio-economic, political and cultural developments in the Indian subcontinent from 320 BCE - 650 CE.

Learning Outcome

Students will be informed about the historical developments in the period under study.

Unit I Mauryan Empire

Sources of historical reconstruction; Background of the rise of the Mauryan Empire: the Nanda Dynasty; Invasion of Alexander and its impact; Political history of the Mauryas, society, economy, administration and art; Ashoka's *Dhamma***;** the decline of the Mauryas.

Unit II Post- Mauryan Period

Sources; political history of the Indo –Greeks, Sakas, Kushanas and Satvahanas; art and architecture (Gandhara, Mathura and Amaravati School; *Stupa*, *Chaitya* and *Vihara*); religious developments (Hinyana and Mahayana); society and economy (trade and commerce, guilds); the Sangam Age.

Unit III Gupta-Vakataka Age

Sources**;** political history of the period with reference to Samudragupta and Chandragupta II; society and economy; rise of feudalism**;** cultural developments (architecture, sculpture, paintings with reference to Ajanta; literature and science).

Unit IV Post-Gupta Developments

Political History (Harshavardhana of Kannauj, Pulkesin II Chalukya of Vatapi and Kumara Bhaskaravarman of Kamarupa); political organization and growing importance of *Samanta* system; religious developments (Vaisnavism, Shaivism and Shaktism); Pallava art and architecture.

Suggested Readings

Barua, K.L.,	*Early History of Kamarupa*: *From Earliest Times to the End of the Sixteenth Century*, LBS Publications, Guwahati, 2020.

Bhandarkar, R. G.,	*Vaisnavism, Shaktism and other Minor Religions,* Indology Book House, Varanasi, 1963 (reprint).
Chakravarty, Ranabir,	*Exploring Early India: Upto c.AD.1300,* Ratnasagar, Delhi, 2016.
----------	*Trade in Early India,* Oxford University Press, New Delhi, 2004
----------	*Trade and Traders in Early Indian Society,* Manohar, New Delhi, 2002.
Champaklakshmi, R.,	*Trade Urbanization and Ideology in South India*, Oxford University Press, New Delhi, 1996.
Chattopadhyaya, S.,	*Evolution of Hindu Sects: Up to the Time of Samkaracarya*, MunshiramManoharlal, Delhi, 1970.
Coburn, T.,	*Devi-Mahatmya: The Crystallisation of the Goddess Tradition, MotilalBanarasidass, Delhi, 1984.*
Goswami, Ranjit Kumar Dev,	*Essays on Sankardeva*, LBS Publication, Guwahati,1996.
Jaiswal, Suvira,	*The Origin and Development of Vaisnavism: Vaisnavism from 200 BC to AD 500,* MunshiramManoharlal, Delhi, 1980 (reprint).
----------	*Caste: Origin, Function and Dynamics of Change,* Manohar, New Delhi, 1998.
Jha, D. N.,	*Ancient India in Historical Outline*, Manohar, New Delhi, 2002 reprint.
Kosambi, D. D.,	*An Introduction to the Study of Indian History,* Popular Prakashan, Bombay, 2016 (reprint).
----------	*The Culture and Civilization of Ancient India in Historical Outline,* PPH,Delhi, 2001 (reprint).
Mukhia, Harbans,	*The Feudalism Debate,* Manohar, New Delhi, 1990 (reprint).
Sharma. R.S.,	*India's Ancient Past,* Oxford University Press, New Delhi, 2009.
----------	*Indian Feudalism*, Macmillan, New Delhi, 2006.
----------	*Sudras in Ancient India, MunshiramManoharlal, Delhi, 2016 (3rd edn.).*
Shastri, Nilakanta K.A.,	*History of South India*, OUP, Delhi,1996.
Singh, Upinder,	*A History of Ancient and Early Medieval India,* Pearson, Delhi, 2008.
Thapar, Romila,	*A History of India,* Vol.1, Penguin Books, Delhi, 1996 reprint.
----------	*The Penguin History of Early India*, Penguin books, New Delhi, 2002.
---------	*Asoka and the Decline of the Mauryas,* K.P. Bagchi& Co. Calcutta, 2000
----------	The Mauryas Revisited, K.P. Bagchi& Co. Calcutta, 1993 (Reprint).

Basham, A.L.,	*The Wonder that was India*, Rupa &Co., New Delhi, 2002 reprint.
----------	*A Cultural History of India*, OUP, New Delhi, 1984 (reprint)
Barpujari, H.k., (ed.)	*The Comprehensive History of Assam*, Vol. I, Gauhati, 2004, (2nd edn.)
Choudhury, P.C.,	*The History of Civilization of the People of Assam to the Twelfth Century A.D.*, DAHS, Gauhati, 1966.
Habib Irfan, (ed.)	*The People's History of India*, Vol.-1-4, Tulika Books, New Delhi, 2015.
Majumdar, R.C.et.al. (eds),	*The History and Culture of the Indian People*, Vol. II-V, (Bharatiya Vidya Bhavan Series, Delhi, 1945-1960, latest editions)

HOME SCIENCE

FYUG programme in Home Science: A student will learn in-depth in Home Science undergraduate programme about food and nutrition, communication and extension education, resource management, human development, textile, and clothing. This will develop their professional skills in food & nutrition, textiles, housing, product-making, communication technologies, and human development that will favour in research, innovation, and product designing.

Programme Outcomes (POs): A comprehensive knowledge in Home science will open up ample job opportunities in both public as well as private sectors. Some of the most popular job roles for home science graduates are food analyst, health care professional, food scientist, research assistant, nutritionist, professor/lecturer, chef, textile supervisor, fashion designer, child care, housekeeper, demonstrator, and pantry in-charge.

HSC-100: INTRODUCTORY HOME SCIENCE 1

(Contact Hours: 60, Credits: 4)

Course Objectives (COs):

- To impart the knowledge on the basic concept of nutrition and health.
- To explain the need and the importance of studying human growth and development across life span.
- To get a brief insight on the scope of clothing and textiles.
- To understand different resources and its management.
- To provide knowledge on the different extension teaching methods

Learning Outcomes (LOs):

At the end of the course the student should be able to:

- Understand the various method of cooking and preservation of nutrients during food preparation

- Gain a scientific understanding of growth and development of a child.
- Develop understanding of technical terms involved in textiles
- Appreciation of the significance of management process in efficient use of resources

Unit I- Introduction to Home Science and its relevance in the current era. aim, scope and Content of public health nutrition, child growth and development and Extension Development.

Food- meaning, classification and function and food groups. Nutrition-Concept of Nutrition. Malnutrition and Health, Functions of food, Food groups -Types of food pyramids.

Methods of cooking, preservation of Nutrients while Cooking. Traditional methods

of enhancing the nutritional value of foods-germination, fermentation, etc. Nutraceuticals- the future of Nutrition care for health management, treatment and prevention of diseases.

Unit II- Introduction to Human Development. Concept, Definition and Need to study human

Development. Domains, Stages of development. Principles of Growth and development

Determinants of Development-heredity and Environment. Early Childhood Care and Education – Emerging trends.

Extension Education- objectives and methods used, integration of nutrition education with extension work, when to teach, whom to teach and who is to teach. Principles of planning, executing and evaluating extension education programmers. Designing nutrition and health messages, selecting communication channels, and developing and field-testing communication materials.

Unit III -Origin, Importance and functions of clothing- Social, emotional, psychological. Scope of clothing and textiles. Traditional textiles and costumes of difficent states India – The Northeastern States, Punjab, Himachal, Rajasthan, Hynderabad, Karnataka, Tamil Nadu, Introduction to textile terms- fibre, yarn, fabric, spinning, weaving, knitting. Classification of textile fibres based on source.

General properties of textile fibres- Cellulosic, Protein, Mineral, Man-made

Synthetic.

Unit IV- Concept of Management; Motivating factors in management- Values, Standards and Goals: meaning, types, and influences.

Decision-making-the crux of management, Importance, types of decision; Steps involved in decision-making. Management Process: Planning; Organising; Controlling; Evaluating.

Resources: meaning, classification and characteristics of resources; Factors affecting utilization of Resources. Family life cycle-demands upon resources like time, energy and money.

Suggested Readings

1. Bamji M.S, Prahalad Rao N, Reddy V (2004). Textbook of Human Nutrition Edition, Oxford and PBH Publishing Co. Pvt. Ltd, New Delhi Banarasidas, Bharat Publishers, 1167, Prem Nagar, Jabalpur, 428 001(India)
2. Bhatt D.P (2008), Health Education, Khel Sahitya Kendra, New Delhi
3. Feldman, R., & Babu, N. (2009). Discovering the life span. New Delhi: Pearson
4. Kapadia, S. (2011). Psychology and human development in India. Country paper.
5. Keenan, T., Evans, S., & Crowley, K. (2016). An introduction to child development.
6. Koontz.H. and O'Donnel C Management – A systems and contingency analysis
7. Kreitner. 2009, Management Theory and Applications, Cengage Learning: India
8. Lightfoot, C., Cole, M., & Cole, S. (2012). The development of children (7th ed.). New York: Worth Publishers.
9. Narayanaswamy, N. (2009). Participatory Rural Appraisal: Principles, Methods and
10. Park A. (2007), Park's Textbook of Preventive and Social Medicine XIX Edition M/S
11. Rao V.S. and Narayana P.S., Principles and Practices of Management, 2007, Konark
12. Sandhu, A.S. (2015). Extension Programme Planning. New Delhi: Oxford & IBH Publishing Co.Pvt.Ltd
13. Srilakshmi, B., Dietetics, New Age International (P) Ltd., New Delhi, 2013.
14. Swaminathan M (2007), Essentials of Food and Nutrition. An Advanced Textbook Vol.I, The Bangalore Printing and Publishing Co. Ltd, Bangalore
15. Vatsala R Textbook of Textiles and Clothing, Riddhi International, 2003, Jodhpur
16. Yadav, K and Singh, O.S "Home Science", Atlantic Publishers and distributor and Private Ltd. (2014).

HSC-150: INTRODUCTORY HOME SCIENCE 2

(Contact Hours: 60, Credits: 4)

Course Objectives (COs):

- To study the functions of specific nutrients in maintaining health and understanding the importance of planning a balanced meal
- To describe the characteristics, needs and developmental tasks of different stages in the human life cycle
- To understand the different types of communication patterns
- To evaluate outcomes of effective time management and increase work efficiency.
- To get acquainted with the properties and uses of various textile fibers and different types of yarn.

Learning Outcomes (LOs):

At the end of the course the student should be able to:

- Learn the functions of various nutrients in maintaining good health
- Understand the various developmental stages and requirements of children with special needs.
- Develop effective communication patterns in community development
- Efficiently use energy and time as a resource
- Analyze the types of fibers and yarns and their manufacturing processes.

Unit I: Introduction to nutrition. Balanced diet - Meal planning – steps in meal planning Nutrients: Nutrients Macro and Micronutrients- Sources, functions and deficiency. Carbohydrates, Proteins, Fats. Minerals – Calcium, Iron, Iodine. Vitamins – Fat-soluble vitamins – A, D, E & K. Water soluble vitamins – vitamin C Thiamine, Riboflavin, Niacin. Energy – factors affecting BMR. Fiber – Functions and sources. Nutrient antioxidants with potential health effects.

Unit II: Developmental Tasks during Infancy and Preschool Stage: Physical and Motor Development Social and emotional development, Cognitive and language development Children with special needs and special education: Definition of special needs children and special education, terminologies for children with special needs.

Gender and Development- Concept of gender, gender roles, changing trends.Concept, meaning, scope and significance of ECCE, Developmental

perspective, Neuroscience perspective, Human rights perspective Expansion from ECE to ECCE to ECD

Unit III: Meaning, definition, nature, scope and importance of communication. Functions of communication – information function, command or instructive function, influence or persuasive function and integrative function. Elements of Communication – three elements – source, message, receiver, Types of Communication – Formal and Informal Communication Pattern - one way, two ways, circular

Concept and significance of communication model. Principle of Programme planning, Elements, functions and criteria for developing a plan

Participatory Planning Importance of peoples' participation in Programme planning. Formation of Self-Help Groups.

Unit IV: Management Process applicable to specific resources: Time, Energy & Money Management; Time as a Resource; Tools in making time plan; Steps in making Time Plan.

Energy as a Resource – Energy cost in home making activity, fatigue – types their effect & avoidance of fatigue.

Family Income as a resource – Sources, types & methods of handling family income.

Manufacture and processing of fibres. Properties of (a) Cellulosic fibre- cotton, linen; (b) Protein fibres- Silk, wool; (c) Synthetic/Manmade fibres- nylon, polyester, acrylic, Rayon

Manufacture of yarn and yarn classification. Different fabric construction techniques- weaving, knitting, felting, braiding, Non-woven. Weaving of cloth- terminologies and steps in weaving.

Suggested Readings:

1. Agarwal, J. C. (2007). Early childhood care and education: principles and
2. Berk, L.E. (2005). Child development (5th ed.). New Delhi: Prentice Hall. Cambridge: Cambridge University Press.
3. Canning, N. (2010) Play and practice in the early years: Foundation stage. New Co.New Delhi
4. Dhawan, M. (2011). Education of children with special needs. New Delhi: Isha Books.
5. Fleer, M. (2010). Early learning and development: Cultural–historical concepts in play.

6. Gupta, D. (2007). Development Communication in Rural Sector. New Delhi: Mukhopadhyay
7. Kaul, V. (2009). Early childhood education Programme. National Council of Educational
8. Kreitner. 2009, Management Theory and Applications, Cengage Learning: India
9. Meenakshi Raman and Sangeetha Sharma. (2013). Technical Communication-Principles and Practice. New Delhi: Oxford University Press
10. Nisha, M. (2006). Understanding Extension Education. New Delhi: Kalpay Publications
11. Nutrition and Human Performance. William & Wilkin Publishing USA.Nutrition, Third Edition, Oxford and IBH Publishing Co. P. Ltd., New Delhi, 2012. NY.: Mcgraw-Hill Higher Education.
12. Santrock, J. (2017). A topical approach to life span development (9th ed.). New segregation to inclusion. New Delhi: Sage.
13. Singh, A. (2015). Foundations of Human Development: A life span approach. ND:
14. Singh, U.K and Nayak, A.K. (2007). Extension Education. New Delhi: Common Wealth Publishers
15. Swaminathan M. (2008) Essentials of Food and Nutrition Bangalore Printing Publishing

KHASI

A. Preface

Ka Programme kan ai jingtip ïa ki nongpule shaphang ki tnat bapher ka litereshor kum ka poitri, ka sawangka, ka parom mutdur bad ka thohtah. Ka thmu ruh ban hikai bad pynsngewthuh ïa ki khynnah ha kaba ïadei bad ka sengnia bad ka bishar bniah. Yn hikai ruh ïa ki nongpule ban sngewthuh ïa ki litereshor jong kiwei pat ki jaitbynriew lyngba ka kylla-ktien na ka Sanskrit, ka Greek, ka English bad na kiwei pat ki ktien; bad kham bunsien lyngba ka English kum ka ktien jiar. Ka Programme ka kynthup ruh ïa ki phang pule, kum halor ka ktien Khasi, ka lolshor bad ka kylla-ktien. Shuh shuh, ka kynthup ruh ïa ki phang pule kiba ai jingtbit bad jinglah ba khambha ïa ki nongpule.

[The programme will familiarise students with various genres of Khasi literature including poetry, drama, fiction and prose. It also aims to introduce and expose students with an understanding of literary theory and criticism. It will expose students to the literature of other people through translation from Sanskrit, Greek, English and other languages into Khasi; and mostly through English as a filter language. The programme also includes courses on Khasi language study, Khasi culture and translation. Besides, it also contains courses which willprovide skill enhancement and ability enhancement to students.]

Ki jingmyntoi:

1. Kan pynlah ïa ki nongpule ban san ha ka jingsngewthuh bajylliew ïa ki jait litereshor bapher bapher.
2. Kan pynïoh ïa ki nongpule ïa ka jinglah ban pule bishar ïa ki kot pule bad ban sngewthuh ïa ki phangkren bapher kiba don ha ki kot pule.
3. Kan pynsan ha ka jingsngewthuh ïa ka jinglong babha bad ka jinglah ban bishar bniah ïa ki phang kiba don ha ki jingpule.
4. Ki nongpule kin don ka jingsngewthuh ïa ka kramar bad ka jingtbit ban thoh bad ban kren.
5. Kan pynïoh ïa ki nongpule ïa ka jingtip ïa ki nongrim, ki rukom bad ki jait bapher ka kylla-ktien.
6. Kan pynsan ïa ki jinglong babha ka longbriew manbriew bad ïa ka mynsiem ban ieit bad ban tei ïa ka ri bad ka jaitbynriew.

[Programme Outcomes:

1. Enabling students to develop an in-depth understanding on the various genres of literature.
2. Equipping students with the ability of critical reading of literary texts and of identifying various themes contained in the texts.
3. Development of moral and critical understanding on various issues found in literary text.
4. Students will be equipped with the knowledge of grammar as well as the communicative competence.
5. Equipping students with the knowledge of the principles, strategies and types of translation.
6. Development of human values and the spirit of patriotism and nation building.

KHA-100: KA MAITPHANG ÏA KA LITERESHOR KHASI

(Contact Hours: 60, Credits: 4)

Ki Jingthmu jong ka phang pule:

Ïa kane ka phang pule la saiñdur ba ki nongpule kin tip ïa ki dur bad ki jait bapher jong ka Poitri, ka Sawangka, ka Parom Mutdur bad ka Thohtah. La saiñdur ruh ba ki nongpule kin sngewthuh ïa ki phangkren kiba ïadei bad ka imlang sahlang kumjuh ruh ïa kiwei pat ki phang ba ki kot pule ki pynphalang.

Ki jingmyntoi na kane ka phang pule:

- Ki nongpule kin lah ban sngewthuh ïa ki dur bad ki jait bapher jong ka litereshor khamtam ka phawar.
- Ki nongpule kin lah ban sngewthuh ruh ïa ki mat bapher bapher kiba ïadei bad ka imlang shalang.
- Kin ïoh ruh ïa ka jinghikai bahok bad bakordor kiba ka jaitbynriew ka ju bud.
- Kin don ruh ïa ka mynsiem ban tei ïa ka Ri.

Unit – I Poitri

1) Rabon Singh : "Ka Jingphawar Iasiat thong" na *Ka Kitab Jingphawar*
2) Soso Tham : "U Sim bala lait" na *Ka Duitara Ksiar*
3) Enami : "I Thakemon" na *Na Ka Thiar ki Longshuwa*
4) Oscar .M.Wahlang : "Ka Sohlyngngem" na *Ka Jutang jong ka Sur Pangnud u Khun Khasi*

Unit – II Sawangka

1) Remy Fancon : "Ka Sngi Khatduh u Tirot Sing" na *Mynhynnin , Mynta bad Lashai*

Unit – III Parom Mutdur

1) K.K. Kharlukhi : *Ka Melody*

Unit – IV Thohtah

1) R.Tokin Roy Rymbai : "Ki Samla bad la ka Ri" na *Ban Pynieng la*

ka Rasong bad Kiwei de ki Ese

2) L. Gilbert Shullai : "Ki Kur ki Bun Jaitbynriew tang Kawei" na *Talwiar u Sohpetbneng*

Ki kot pule baroh ki long na ka bynta ban pule bniah.

Ki jingthoh kiba ïadei bad ka phang pule:

Chyne, Trocylin. "Ka Mariang kumba ka paw ha ka poim "U Sim Ba La Lait" ba la thoh da u Soso Tham." *Ka Thwet Jingstad(Quest for knowledge)* Vol. IV No.1 December, 2018. pp. 63-66

Fancon, Remy. *Mynhynnin , Mynta bad Lashai,* Don Bosco Press. 2008.

Jyrwa, M.B. "The Issue of Visual Disability in *Ka Melody*." *Tribal Literature of North-East India,* edited by Badaplin War, Department of Khasi, NEHU, Shillong. 2008, pp.103-108.

Kharlukhi, K.K. *Ka Melody*, Hima Book Stall , 2000.

Lyngdoh, R.S. et al. *Na Ka Thiar ki Longshuwa*, Khasi Authors' Society, 1980.

Majaw,S.S. *Ka Sohlyngngem u Oscar M. Wahlang*, Khasi Book Stall, 1992.

Nongbri, Banniewkor.L. "Ka Phawar Ïasiatkhnam." *Ka Thwet Jingstad(Quest for knowledge)* Vol. IV No.1 December, 2018. Pp.67-73

… "Ka Thaw Phawar bad ka Rukom Phawar ïa ka." *Ka Thwet Jingstad(Quest for knowledge)* Vol. V No.1 December, 2021. pp.32-35

Rymbai, R.Tokin Roy. *Ban Pynieng la ka Rasong bad Kiwei de ki Ese*,Mrs. Witbon Hynniewta Rymbai, 1979.

Shullai, L. Gilbert. *Talwiar u Sohpetbneng*, Scorpio Printing Press,1993.

Singh, Rabon. *Ka Kitab Jingphawar,* Mrs Fair Beaulah Lyngdoh, 2002.

Sten, H.W. *Khasi Poetry: Its Origin and Development*, Mittal Publication, 1990.

Tham, Soso. *Ka Duitara Ksiar*, Mrs. A.D. Dkhar, 1972.

Wahlang, Oscar. M. *Ka Jutang jong ka Sur Pangnud u Khun Khasi*, Ri Khasi Book Agency, 4th ed., 2022.

KHA-150: POITRI, SAWANGKA BAD PAROM MUTDUR

(Contact Hours: 60, Credits:4)

Ki Jingthmu jong ka phang pule:

Ïa kane ka phang pule la saiñdur ba ki nongpule kin sngewthuh ïa ki tnat bapher jong ka Litereshor kum ka Poitri, ka Sawangka, ka Parom Mutdur. La saiñdur ruh ba ki nongpule kin sngewthuh ïa ki dur ki dar bad ki phangkren ha ka Poitri, ka Sawangka bad ka Parom Mutdur.

Ki jingmyntoi na kane ka phang pule:

- Ki nongpule kin lah ban sngewthuh khambha ïa ki tnat jong ka litereshor.
- Kin don ka jingtbit ban pule bad bishar bniah ïa ki dur kyntien, ki buit-thaw, ki phangkren bad ki snap bapher bapher jong ka Poitri, Sawangka bad Parom Mutdur.

Unit – I Poitri

1. Soso Tham : "Ka Duitara" na *Ka Duitara Ksiar*
2. S.S. Majaw : "Kylla Pongpet" na *Ka Phawar Ksan Rngiew*
3. Kynpham Sing Nongkynrih : "U Slap u Ap bad la ki Um Bakyntang" na *Ki Mawsiang ka Sohra*
4. Streamlet Dkhar :"Ka Pharshi Ki 'Tiew" na *Ki Kyrpien Jong Ka Por:Ki Tanka Ha Ka Khasi bad kiwei de ki poim*
5. Banlam Kupar Lyngdoh : "Saiñ-ruma" na *Khmih Pynor: Ka Thup Poitri Khasi*

Unit – II Sawangka

1. Dewi Singh Khongdup : *U Baieit Donshkor*
2. Wan Kharkrang : "Jubab Aiu sha phin ai?" na *U Syiem ka Mariang bad kiwei ki Playlet*

Unit – III Parom Mutdur (Khana lyngkot)

1. S.J. Duncan : "Ki Mad ïa ka Shillong" na *Phuit ka Sabuit bad kiwei kiwei de ki Khana*
2. I.M. Simon : "U Nonghikai Nongkyndong" na *Shikti na*

ThweiMutdur

3. Hughlet Warjri :"Ki Dienjat Khla" na *Ka Nongkylliang (Ki Jingïathuh khana lyngkot)*

Unit – IV Parom Mutdur (Nobel)

1. L.H Pde : *Tang Maphi Khun Baieid*

Ki kot baroh ki long na ka bynta ban pule bniah.

Ki jingthoh kiba ïadei bad ka phang pule:

Dkhar, S. *Ka Bishar bniah ïa ka Sawangka U Baieit Donshkor*: ESES PLUSPublications,Reprint 2021.

Dkhar, Streamlet. *Ki Kyrpien Jong Ka Por: Ki Tanka Ha Ka Khasi bad kiwei de ki poim,* ESES PLUS Publications, 2018.

Duncan, S.J. *Phuit ka Sabuit bad kiwei kiwei de ki Khana.* NEHU Publications. 1987. Kharkrang, Wan. *U Syiem ka Mariang bad kiwei ki Playlet*, Rilum offset Printing House, 2011.Khongdup, Dewi Singh.*U Baieit Donshkor*, Ka Matti Ladehi Syiem, 2009.

Lyngdoh, Banlam Kupar. *Khmih Pynor: Ka Thup Poitri Khasi*, Ri Khasi Book Agency, 2022

Majaw, Icylda. *Ka Khana Lyngkot Kum Ka Buit Thaw Litereshor*, Sunny Hill, 2015.

Majaw, S.S. *Ka Phawar Ksan Rngiew*, Don Bosco Press, 2014.

Nongkynrih, Kynpham Singh. *Ki Mawsiang ka Sohra*, Pine Cone, 2001.

Pde, L.H.*Tang Maphi Khun Baieid*, Author, 1984.

Sawkmie, Joyfully. *Ki Phangkren Halor ka Imlang Sahlang ha ki Nobel Khasi: Ka Bishar Bniah.,* Don Bosco Press, Shillong, 2017.

Simon, I.M. *Shikti na Thwei Mutdur* , G.M.S. Pariat, 2001.

Tham, Soso. *Ka Duitara*,Mrs. A.D. Dkhar, 1972.

Warjri, Hughlet. *Ka Nongkylliang (Ki Jingïathuh khana lyngkot)*, Scorpio Printers, 1985.

MATHEMATICS

Preface

The programme aims to lay a strong basic foundation for higher mathematics both in pure and applied branches of Mathematics. It is meant for students who wish to pursue their careers involving mathematical research and skills. The programme is intended to teach the students the art of problem solving activities in both branches of Mathematics.

Programme Outcomes:

At the end of the course, students:

1. Willhave a strong foundation in both the pure and applied Mathematics.
2. Will be able to ask logical questions and also be able to solve them.
3. Will be able to interact with people from outside the state and communicate their ideas effectively.
4. Will have a sound knowledge in programming and computation.

MTH-100: FUNDAMENTAL MATHEMATICS-I

(Contact Hours: 60, Credits: 4)

Objectives: The primary objective of this course is to introduce the foundational concepts of calculus and techniques of problem. The students will also learn the methods of classical algebra and the art of solving a cubic equation.

Course Outcomes : After this course students will be able to learn the rigorous idea of limit of a function which is foundational to grasp the concepts of continuity, differentiation. In addition to this the students will be able to calculate the volume and surface area of solids of revolution and learn the applications of continuity and derivative in Higher Algebra.

Unit I : Limit and Continuity (15 hours)

ε-δ definition of limit of a real valued function; standard theorems; limit at infinity and infinite limits; ε-δ definition of continuity of a real valued function; standard theorems; geometrical interpretation of continuity; discontinuity - types of discontinuity; properties of continuous functions; Intermediate Value Theorem and its applications; fixed point theorem; location of roots - theorem and its application.

Unit II : Differentiability (15 hours)

Differentiability of a real-valued function of a real variable; geometrical significance; standard theorems; stationary point; local extrema; Rolle's Theorem, Lagrange's Mean Value Theorem, Cauchy's Mean Value Theorem and their applications; differentiability and monotonicity; concavity; inflection point; differential; successive differentiation; Leibnitz's Theorem.

Unit III : Integral Calculus (15 hours)

Definite Integral as a limit of a sum; fundamental theorem of integral calculus; properties of definite integral; applications of definite integral - area under a curve, length of simple plane curves, volume and surface areas of solids of revolution in standard cases; reduction formulas for $\int sin^n x\, dx,\ \int cos^n x\, dx,\ \int tan^n x\, dx,\ \int e^{ax}x^n\, dx,\ \int x^n \log x^n\, dx,\ \int sin^n x\, cos^m x\, dx$.

Unit IV : Complex Numbers & Theory of Equations (15 hours)

Complex Numbers - properties; polar representation; Polynomials over $\mathbb{Z}$, $\mathbb{Q}$, $\mathbb{R}$, $\mathbb{C}$ - definition and standard properties; Division Algorithm; gcd, Euclidean Algorithm, Unique Factorisation Theorem over $\mathbb{Q}$, $\mathbb{R}$, $\mathbb{C}$ (statement and application); root of a polynomial; detailed study of the roots of a polynomial; Fundamental Theorem of Algebra (statement and corollary) and its failureover $\mathbb{Z}$, $\mathbb{Q}$, $\mathbb{R}$; Remainder Theorem and Factor Theorem; Synthetic division; multiple roots; complex roots and surd roots; Descartes' rule of signs; Relation between roots and coefficients of a polynomial; symmetric functions of roots with special reference to cubic equations; n^{th}roots of unity; De Moivre's Theorem and its applications; Euler's Theorem (statement only); solution of a cubic equation by Cardan's Method.

Notes: A candidate must obtain the minimum pass marks (as per NEHU Rule) to clear the course.

Suggested Readings:

1. Calculus, H. Anton, I. Bivens, S. Davis, Wiley India Pvt. Ltd. (2015).
2. Differential Calculus, R.K. Ghosh, K.C. Maity, New Central Book Agency Ltd. (2011).
3. Integral Calculus, R.K. Ghosh, K.C. Maity, New Central Book Agency Ltd. (2013).
4. Higher Algebra Classical, S.K. Mapa, Levant Books India (2021).
5. Mathematical Analysis, S.C.Malik , S.C.Arora, New Age International Publication (2021).
6. Thomas Calculus, G.B.Thomas, J. Hass, C. Heil, Pearson Education (2018).
7. Calculus: Early Transcendentals, J. Stewart, Cengage India Pvt Ltd. (2017).
8. Introduction to Real Analysis, R.G. Bartle, D. R. Sherbert, Wiley India Edition (2021).
9. Higher Algebra, B.Das, S.R.Maity, AsokePrakasan (2010).

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MTH-150: FUNDAMENTAL MATHEMATICS-II

(Contact Hours: 60, Credits: 4)

Learning Objectives: The primary objective of this course is to study the properties of standard geometrical objects in two and three dimensional spaces. The course will also introduce the basic concepts of multivariable calculus and vector calculus with applications in Physics.

Unit I : Two Dimensional Geometry (15 hours)

Transformation of coordinates - Change of axes, invariants, removal of xy term.

Pair of straight lines - General and homogeneous equations of second degree, angles between pair of straight lines represented by a second degree equation, bisectors of the angles between a pair of straight lines through the origin.

Conics - General equation of second degree, reduction to standard form, equation of tangents, conditions of tangency, equation of normal, parametric form of conics, conjugate diameters of ellipse and hyperbola.

Unit II : Three Dimensional Geometry (15 hours)

Planes - General equation of a plane, normal form of a plane, angle between two planes, perpendicular distance of a point from a plane, planes through intersection of two planes.

Spheres - General equation of a sphere, plane section of a sphere, sphere through a given circle, tangent plane, intersection of two spheres.

Cones - Equation of a cone with a conic as a guiding curve, enveloping cone, mutually perpendicular generators, tangent planes, reciprocal cone, right circular cone.

Unit III : Multivariable Differential Calculus (15 hours)

Real-valued functions of two and three real variables (f: $\mathbb{R}^2 \to \mathbb{R}$, f: $\mathbb{R}^3 \to \mathbb{R}$) ; Limits and continuity of real-valued functions of two and three real variables (basic concepts and simple problems); Partial Derivatives of first order and its geometrical significance.

Second order partial derivatives - basic concepts and examples; Schwarz's theorem (statement and examples only); Laplacian; Chain rule; Euler's theorem on homogeneous functions upto three variables.

Unit IV : Vector Calculus (15 hours)

Scalar and vector products of three and four vectors - properties, geometrical significance, and applications.

Vector-valued functions of real variables ($f: \mathbb{R} \to \mathbb{R}^2$, $f: \mathbb{R} \to \mathbb{R}^3$) ; Derivative of a vector- valued function of a real variable; Properties and geometrical applications - arc length, unit tangent vector, normal vector, curvature.

Gradients of real-valued functions of two or three variables - physical and geometrical significance, and elementary properties; Directional derivatives of real-valued functions of two or three variables and its geometrical significance, maximum directional derivative; Tangent planes and normal lines.

Divergence \& Curl - physical and geometrical significance, and elementary properties; Solenoidal and irrotational vector fields.

Course Outcomes :After this course students will be able to understand the properties of geometrical objects in two and three dimensions. They will learn conceptual variations while advancing from one variable to several variable in calculus. In addition to this they will intuitively understand how the language of vectors is used in other fields of science like Physics.

Notes: A candidate must obtain the minimum pass marks (as per NEHU Rule) to clear the course.

Suggested Readings:

1. Calculus, H. Anton, I. Bivens, S. Davis, Wiley India Pvt. Ltd. (2015).
2. Analytical Geometry and Vector Analysis, B. Das, Orient Book Company (2008).
3. Analytical Solid Geometry, S. Narayan, P.K. Mittal, S. Chand & Company (2007).
4. Differential Calculus, R.K. Ghosh, K.C. Maity, New Central Book Agency Ltd. (2011).
5. Vector Analysis, R.K. Ghosh, K.C. Maity, New Central Book Agency Ltd. (2011).
6. Analytical Geometry and Vector Analysis, J.G. Chakravorty, P.R. Ghosh, U.N. Dhur& Sons Pvt Ltd. (2012).
7. Calculus: Early Transcendentals, J. Stewart, Cengage India Private Limited. (2017).
8. Calculus and Analytic Geometry, G.B. Thomas Jr., R.L. Finney, Pearson Education India (2010).
9. Vector Calculus, S. J. Colley, Pearson (2012).

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PHILOSOPHY

About FYUP Programme of Philosophy:

The Programme will have a trust in developing what philosopher Hannah Arendt had once termed as 'life of the mind'. Similar expression is found in noted Indian Philosopher Krishna Chandra Bhattacharya, who called the growth of intellect as 'swaraj in ideas'. The Programme inPhilosophy aims at developing critical thinking and an ability to raise significant questions on any knowledge related issue from multiple points of view such as metaphysical, spiritual, logical, scientific, ontological, ethical and a host of such categories of reasoning and ideas.

On the practical side, learning philosophy would enable students to distinguish between what is rational and what is irrational, what is logical and what it illogical. Going deeper, philosophical aptitude would help in developing deeper understanding of a text or a formula or even a software program. As philosophers tend to find out the basic structure of understanding in any given frame of knowledge, philosophical abilitiy to reason, argue and contradict the given shall yield a substantive amount of high level and mature analytical ability and practical approaches inapplying those analytical finds.

Programme Outcomes:

1) Enhancement of ability for Critical analysis of a situation, problem or text of knowledge to a level that would mark originality and maturity.
2) Development of refined and sophisticated capability to self-assess and to respond to genuine needs of humanity in terms of universal values like goodness, truth and beauty.
3) Practical skills of analytical, logical and linguistic analysis to solving problems that arise at every walk of life.
4) A virtuous, moral and aesthetic selfhood that recognizes difference and looks for underlying unity between school of thoughts and their applied dimensions
5) Better managerial skills to manage human relations and ability to deliberate and resolve conflicts by way of providing good reasons wherever called for.
6) A versatile, multidisciplinary capacity to see connections between various branches of science, metaphysics, religion and any collectively arrived at decision-making process.
7) Development of healthy, accommodative, inclusive approaches to issue of life creating good citizenship values inculcated through philosophical knowledge.
8) Scientific bent of mind, democratic temperament and ability to draw distinctions that clarifies any confusion centering an issue or in case of difference of opinions.
9) Induction into a synthesizing role of culture and education by philosophical combining of disciplines and traditions of thought that are very important from historical and civilizational points of view.

10) An artistic, creative, rigorous and a sharp capacity to grasp and understand things at a deeper level than what goes by commonly held beliefs.
11) Achievement of a potential to be different in a purposive and productive manner that bridges between theory and practice.

PHI-100: UNDERSTANDING PHILOSOPHY

(Contact Hours: 60, Credits: 4)

Course Objectives (CO): To impart basics of knowledge through sophisticated philosophical approaches that makes a first-hand knowledge of reality possible.

Learning Outcomes (LO): Analytical and logical ability, capacity to apply philosophical knowledge in practical contexts of life, Science, human values and Technology.

Unit-I: Meaning and Method of Philosophy

(a) Meaning of Philosophy
(b) Relation of Philosophy to Science
(c) Relation of Philosophy to Religion

Unit-II: Sources of Knowledge

(a) Western: Empiricism, Rationalism and Critical Philosophy
(b) Indian: Perception, Inference and Verbal Testimony
(c) Phenomenological: Experience and Transcendence

Unit-III: Theories of Truth

(a) Coherence
(b) Correspondence
(c) Pragmatism

Unit-IV: Theories of Reality

(a) Monism, Dualism and Pluralism
(b) Realism and Idealism
(c) Internal Realism

Suggested Readings:

1. Hospers, John, *An Introduction to Philosophical Analysis*, Allied Publishers, New Delhi,1980.

2. Russell, Bertrand ,*Problems of Philosophy*, Oxford University Press, Oxford, 1912.
3. Hiriyanna, M, *The Essentials of Indian Philosophy*, George Allen & Unwin,London, 1985.
4. Smith, N. K. (trans.),*Immanuel Kant's Critique of Pure Reason*, Palgrave Macmillan, London, 2007.
5. Sharma, C. D., *Critical Survey of Indian Philosophy*, Motilal Banarasidass, New Delhi, 1975.
6. Datta,D. M., Chatterjee, S., *Introduction to Indian Philosophy*, University of Calcutta, Kolkata,1984.
7. Lehrer, Keith, *Knowledge*, Clarendon Press, Oxford, 1974.
8. Niiniluoto, Ilkka, *Critical Scientific Realism*, Chapter 7, Oxford University Press, London, 2002.
9. Goldberg, S.C., *Relying on others: An essay in Epistemology*, Oxfored University Press, London, 2012.

PHI-150: ETHICS

(Contact Hours: 60, Credits: 4)

Course Objectives (CO): Teaching students basic theories of Ethics, how to argue in Ethics.

Learning Outcomes (LO): Making students aware of primacy of Ethics in everyday affair, Making students capable of establishing ethical view and practice in every aspect of personal and social .

Unit-I: Nature and Scope of Ethics

(a) Nature and Scope of Moral Philosophy
(b) Nature of Moral Judgments
(c) Ethics and Meta-ethics

Unit-II: Moral Concepts and Issues in Applied Ethics

(a) Good, Right, Duty and Virtue
(b) Purusartha, Niskama Karma and Ahimsa
(c) Public and Private Good

Unit-III:Ethical Theories

(a) Teleological: Hedonism, Utilitarianism

(b) Deontological (Kant's Categorical Imperative)
(c) Moral Education

Unit-IV:Theories of Punishment

(a) Preventive
(b) Reformative
(c) Retributive

Suggested Readings:

1. MacIntyre, Alasdair., *A Short History of Ethics*, Rutledge and Kegan Paul, London, 1967.
2. Frankena, William K.,*Ethics*, Prentice Hall of India, New Delhi, 1982.
3. Walzer, Michael, *Spheres of Justice: A Defense of Pluralism and Equality*, Basic Books,New York, 1983
4. Taylor, Michael, *Anarchy and Cooperation*,Wiley Blackwell, New York,1976.
5. Jain,Amit, *Karma, Dharma and Moksha: The Art and Science of Living Dying and Enlightenment*, D.K. Printworld, New Delhi,2012.
6. Sharma, C. D., *Critical Survey of Indian Philosophy*, Motilal Banarasidass, New Delhi, 1975.
7. Datta,D. M., Chatterjee, S, *Introduction to Indian Philosophy*, University of Calcutta, Kolkata, 1984.
8. Hand, M., *A Theory of Moral Education*, Routledge, London, 2018.
9. Hiriyanna, M., *The Essentials of Indian Philosophy*, London George Allen & Unwin 1985.
10. Shaida, S. A., *Problems of Ethics*, Spectrum Publications, New Delhi, 2003.
11. Prasad, R., *Karma, Causation and Retributive Morality: Conceptual essays in Ethics and Metaethics*, ICPR and South Asia Books, New Delhi, 1990.
12. Kovesi, Julius, *Moral Notion*, Routledge & Kegan Paul, London, 1969.
13. Prasad, R.**, "**The theory of Purusārthas: Revaluation and reconstruction", *Journal of Indian Philosophy*, vol.9, pp.49–76, 1981.

PHYSICS

Preface

The Four Years UG Physics syllabus under NEP-2020 has been framed to enhance the knowledge acquired at the +2 level and to motivate and inspire the students to create deep interest in Physics.

Programme Outcomes

Upon successful completion of these courses, the students will be able to understand basic laws of Physics and their applications in solving most of the microscopic and macroscopic dimensional problems in nature.

PHY-100: MATHEMATICAL PHYSICS, PROPERTIES OF MATTER AND WAVES

(Contact Hours: 75, Credits: 4)

Course Objectives:Mathematical physics serves as a tool to understand physics. Mechanics helps the students to understand the basic laws of physics in day-to-day life and Waves and Vibrations help to understand different types of wave motion in physical systems. Practical will help students to determine and verify physical quantities related to mechanics and waves.

Learning Outcomes:Upon successful completion of this course, the students will be able to understand how to solve various problems of physics using mathematical tools; various laws of motion and properties of matter using mechanics; waves and oscillation in different physical media. These principles are basic requirements for higher studies of physics. The practical performed by the students will help them to measure some of the important physical quantities related to mechanics and waves for better understanding of the topics.

Unit I: Mathematical Physics-I (15 hours)

Vector Calculus: Scalar and vector field, Definitions and significance of Gradient, Divergence and Curl, Gauss's divergence theorem, Stoke's Theorem, Green's Theorem (without proofs) in Cartesian coordinates.

Coordinate systems: Polar, Spherical and Cylindrical co-ordinates.

Differential Equations: Ordinary differential equation, 1st order homogeneous linear differential equations and 2nd order homogeneous linear differential equations with constant coefficients.

Unit II: Mechanics and Properties of Matter (15 hours)

Newton's Laws of Motion, Free body diagram and applications.

System of particles and rigid body motion: Center of Mass (CM) and Laboratory frames, motion of the center of mass. Linear and angular momentum of a system of particles. Moment ofinertia of sphere, disc and cylinder.

Frames of reference: Inertial and non-inertial frames, uniformly rotating frame of references, Centrifugal and Coriolis force and their applications.

Elasticity: Hooke's Law, Elastic constants and their relations, Poisson ratio, torsional cylinder, bending of beam, cantilever (weightless) loaded at the free end.

Fluid Dynamics: Equation of continuity, Bernoulli's theorem and its applications, Surfacetension and surface energy, Capillarity and formation of droplets, Streamline and turbulent flow, Viscosity, Terminal velocity, Stoke's Law, Poiseulle's equation.

Unit III: **Waves and Oscillations (15 hours)**

Simple harmonic motion (SHM): Differential equation of simple harmonic motion and its solution. Superposition of two simple harmonic oscillations. Lissajous figures and their uses.

Damped and forced oscillations: Damped SHM, energy of damped SHM, Q-value of damped oscillations. Forced vibrations, Transients and steady state oscillations of forced vibrations, and condition of resonance.

Wave motion: Representation of plane progressive wave, Classical wave equation of a plane progressive wave and its general solution. Energy and energy density of a plane progressive wave. Qualitative idea of spherical waves. Phase velocity and group velocity.

Unit IV: **Experimental Physics-I (30 hours)**

1. Determination of the value of acceleration due to gravity (g) using Bar Pendulum.
2. Determination of the acceleration of gravity (g) using Kater's Pendulum.
3. Determination of the moment of inertia of a regular solid about an axis passing through its centre of gravity using torsional pendulum.
4. Determination of the rigidity modulus of a cylindrical body by static torsion apparatus.
5. Determination of co-efficient of viscosity of liquid by capillary tube method.
6. Determination of the surface tension of a liquid by Jaeger's method

7. Determination of the frequency of a tuning fork by Melde's method.
8. Determination of Young Modulus of a wire by Searle's Method.

Suggested readings: (All latest edition)

1.Essential of Mathematical methods K. F. Riley and M. P. Hobson, Cambridge University (2011).
2.An Introduction to Mechanics: Daniel Kleppner and Robert Kolenkow, Cambridge University Press (2011).
3. A Treatise on General Properties of Matter: Chatterjee and Sengupta, New Central book Agency, Kolkata (2011).
4. Mechanics: J. C. Upadyaya, Himalaya Publishing House, Agra (1999).
5. The Physics of Waves and Oscillations, N. Bajaj, McGraw Hill Education, Europe (2017).
6. Schaum's Outline of Mathematics for Physics Students (Schaum's Outline Series) (2011).
7. Mechanics: D. S. Mathur, S. Chand & Co., New Delhi (2000).
6. Acoustics, Waves and Oscillations: S. N. Sen, New Age International (1990).
7. Waves and Oscillation: R. N. Choudhuri, New Age International (2010).
8. B. Sc. Practical Physics, C. L. Arora, S. Chand & Co. (2005).
9. A Text Book of Practical Physics, S. K. Ghosh, New Central Book Agency, Kolkata (2004).
10. A Text Book on Practical Physics, K. G. Majumdar& B. Ghosh, Sreedhar Publishers,Calcutta

PHY-150: ELECTRICITY AND MAGNETISM, OPTICS AND ELECTRONICS

(Contact Hours: 75, Credits: 4)

Course Objectives:The course on Electromagnetism will help the students to understand the effect of charge at rest and in motion and dielectric properties of the matter. Study of geometricaloptics will help the students to picturize image formation. The basics of electronics are required to understand the different functions of electronic devices. The practical will help the students to determine physical properties of electrical and electronic components and also help them to understand the optics related topics.

Learning Outcomes:Upon successful completion of this course, the students will be able to understand the basic laws of electricity and magnetism, the formation of optical images, concepts of both analog and digital electronics. The practical will help the students in handling the multimeter, potentiometer and function generators, whereas the experiments performed on optics will help to measure different parameters of lenses.

Unit I: Electricity and Magnetism (15 hours)

Coulomb's law and Electric field, Electrostatic potential, Gauss' law in electrostatics (both differential and integral forms) and its application due to a linearly charged rod and a solid sphere, Polarization and displacement vector, Gauss' law in dielectric media.

Biot and Savart's Law and its application due to a straight conductor and solenoid, Ampere's law and its applications, Law of magnetostatics in differential forms.

Integral and Differential form of Faraday's laws, Modification of Ampere's law, Maxwell's equation in free space and in dielectric medium.

Circuits, Kirchhoff's Laws, Series and Parallel resistances, Capacitances, Parallel plate capacitor. Use of complex numbers to find impedance and voltage in series and parallel LCR circuits, Power dissipation, Quality factor and Resonance.

Unit II: Theory of image formation and matrix optics (15 hours)

Fermat's Principle and its applications to reflection and refraction at plane and curved boundaries.

General theory of image formation: Cardinal points of an optical system, Refraction through a thick lens, Relation between the distances of cardinal points, Combination of thin lenses separated by a distance.

Matrix optics: Reflection, refraction and translation matrices, Lens maker formula by matrix method, System matrix of thin and thick lens, Equation of image plane.

Unit III: Electronics-I (15 hours)

Binary system, Binary to decimal and decimal to binary conversion, Binary arithmetic-addition and subtraction, Signed binary numbers, two's complement scheme.

Logic gates: OR, AND, NOT gates and their realization with diodes and transistors, NOR and NAND as universal gates.

Boolean algebra: De' Morgan's theorems, Boolean expression, Simplification of Boolean expression and their representation with basic logic gates.

Diodes and their applications, Bipolar junction transistor (BJT): Different current components and characteristics of a BJT, CB and CE configurations and related characteristics, active, cut-offand saturation regions, current amplification factors in CB and CE configuration.

Unit IV: Experimental Physics-II (30 hours)

1. Determination of the value of an unknown low resistance using potentiometer.

2. Determination of the value of EMF of a Cell using potentiometer.
3. Determination of the resistance per unit length of the meter bridge wire by Carey-Foster method.
4. Determination of the value of unknown capacitance using De-Sauty's method.
5. Determination of the focal length of two thin lenses in contact using displacement method and verification of the result by measuring the focal length of individual lenses.
6. Determination of refractive index of the materials of a prism by measuring angle of prism and minimum deviation using spectrometer.
7. To find the frequency response of series LCR circuit.
8. To find the frequency response of parallel LCR circuit.
9. Construction and verification of AND and OR gates using diodes and resistors.
10. Study the characteristics of a transistor (CE/CB mode).

Suggested readings: (All latest edition)

1. Foundations of Electromagnetic Theory, John R. Reitz, Frederick J. Milford, and Robert W. Christy, Pearson (2008).
2. Electricity and Magnetism: D. C. Tayal, Himalayan Publisher (2019).
3. Electricity and Magnetism: K. K. Tewari, S. Chand & Co., New Delhi (2012).
4. Electricity and Magnetism: Edward M. Purcell, Mc-Graw Hill Education (2013).
5. A textbook of Optics: D. N. Subrahmanyam, BrijLal and M. N. Avadhanulu, S. Chand & Co., New Delhi (2012).
6. Physical Optics: A. K. Ghatak, Tata Mc-Graw Hill India (1997).
7. Modern Optics: A. B. Gupta, Books and Allied (P) Ltd. (2006).
8. Basic Electronics: D. C. Tayal, Himalayan Publisher (2010).
9. Basic Electronics: Devices, Circuits and its Fundamentals: S. Kal, Prentice Hall India, New Delhi (2002).
10. Principles of Electronics: V. K. Mehta and R. Mehta, S. Chand & Co., New Delhi (2005).
11. B. Sc. Practical Physics, C. L. Arora, S. Chand & Co. (2005).
12. A textbook of Practical Physics, S. Ghosh, New Central Book Agency, Kolkata (2004).
13. A textbook of Practical Physics, K. G. Mazumdar, Syndicate Press (2006).
14. B. Sc. Practical Physics, Harnam Singh, P. S. Hemne, S. Chand & Co., New Delhi (2011).

POLITICAL SCIENCE

Preface

About the Programme: The four-year undergraduate programme (FYUG),revised as per the New Education Policy 2020 framework is designed to enhance the basic theoretical, concetual and analytical skills of the students. The undergraduate Programme in PoliticalScience continuesto be among the most sought-after and prestigious programmesoffered at the University. The course covers the entire spectrum of the major sub-discipline of Political Science, Multidisciplinary Courses (MDCs), SkillEnhancement Courses (SECs), Ability Enhancement Courses (AECs) and Value AddedCourses (VACs).

Programme Outcomes: The studentswill be able to understand the basic concepts,foundational, theoretical and advancedknowledge in Political Science. Courses on Multidisciplinary, SkillEnhancement, Ability Enhancement and Value Added Courses will broaden theirunderstanding of the issues and problems in addition to their core discipline.

POL-100: POLITICAL THEORY

(Contact Hours: 60, Credits: 4)

Course Objectives:

This course aims to introduce basic concepts, ideas and theories in Political Science. It will also examine the various perspectives, dimensions and relevance of political theory.

Learning Outcomes:

This course will enable students to understand the basic political theory concepts and engage them in critically analyzing the subject. It will also provide an opportunity for the students to familiarize themselves with contemporary interpretations of the theories and views of scholars for a deeper understanding of the subject.

Unit 1: Nature, Scope and Significance of Political Theory.
Theories of the Origin of State: Social Contract,Evolutionary and Marxist.
Sovereignty: Nature, Characteristics, Monistic and Pluralistic theories.

Unit II: Rights: Natural, Legal and Marxist Theory of Rights.
Liberty: Negative and Positive.
Equality:Kinds of Equality, Relationship between Liberty and Equality.

Unit III: Law: Natural, Sociological and Marxist Theories of Law.
Justice: Natural, Distributive and Social Justice.
Political Obligation: Grounds of Political Obligation and Resistance.

Unit IV: Dimensions of Democracy: Social, Economic and Political;
Liberal and Marxist Perspectives.

Suggested Readings:

Barker, E., *Principles of Social and Political Theory*, Calcutta, Oxford University Press, 1976.
Barry, N.P., *Introduction to Modern Political Theory*, London, Macmillan, 1995.
Bercht, A., *Political Theory: The Foundations of Twentieth Century Political Thought*, Bombay, The Times of India Press, 1965.
Bhargava, Rajib and A. Acharya, *Political Theory: An Introduction*, Pearson, 2008
Cunningham, F., *Theories of Democracy – A Critical Introduction*, London and New York, Routledge, 2002.
Dahl, R., *A Preface to Democratic Theory*, Chicago, University of Chicago Press, 1965.
Engels F., *Origin of Family, Private Property and the State*, 1902 (English Edition)
Dunn, J., *Modern Revolutions*, London, The Clarendon Press, 1989.
Held, D., *Models of Democracy*, Cambridge, Polity Press, 1987.
----------, *PoliticalTheory Today*, Cambridge, Polity Press, 1991.
Heywood, Andrew, *Political Theory: An Introduction*, New York, Palgrave Macmillan, 2002.
Johari, J. C., *Contemporary Political Theory*, New Delhi, Sterling, 2004.
----------, *Principles of Modern Political Science*, New Delhi, Sterling, 2004.
Kukathas, C and P. Pettit, *Rawls' A Theory of Justice and its Critics*, Cambridge, Polity Press, 1998.
Macpherson, C.B., *Democratic Theory: Essays in Retrieval*, Oxford, The Clarendon Press, 1977.
Macpherson, C.B., *The Real World of Democracy*, Oxford University Press, 1970.
Milliband, R., *Marxism and Politics*, Oxford, Oxford University Press, 1977
Poggi, G., *The Sate: Its Nature, Development and Prospects*, Cambridge, Polity Press, 1990.
Ramaswamy, S., *Political Theory: Ideas and Concepts*, Delhi, Macmillan, 2002.
Sartori, G., *Democratic Theory*, Oxford University Press, 1974.
Singh, R., *Reason, Revolution and Political Theory*, New Delhi, People's Publishing House, 1997.Thakurdas, F., *Essays in Political Theory*, New Delhi, Gitanjali, 1992.
Varma, S.P., *Modern Political Theory*, New Delhi, Vikas, 1993.
Vincent Andrew, *The Nature of Political Theory*, OUP, 2007.
Wasby, S., *Political Science: The Discipline and its Dimensions*, Calcutta, Scientific Book Agency, 1970.

POL-150: INDIAN POLITICAL SYSTEM

(Contact Hours: 60, Credits: 4)

Course Objectives:

The paper focuses on the political processes and the actual functioning of the Indian political system with an emphasis on the role of social and economic processes.

Learning Outcomes:

The paper will familiarise students with the dynamics of Indian Politics and enable them to understand both constitutional and the socio-economic dimensions of the Indian political system.

Unit I: Nature of Indian State: Historical and Ideological basis.
Fundamental Rights, Duties and Directive Principles of State Policy.

Unit II: Federalism and Parliamentary Democracy: Union-State Relations,

Working of Parliament, Judicial Review and Judicial Activism.

Unit III: Changing Nature of Party System, Role of Political Parties and Pressure groups in Indian politics.

Unit IV: Globalization, Economic Liberalization and Indian Politics.

Suggested Readings:

Abbas, H. et.al (eds*), Indian Government and Politics*, Pearson, New Delhi, 2011.

Austin, G., *Working a Democratic Constitution: The Indian Experience*, Delhi, Oxford University Press, 2000.

Basu, D.D., *An Introduction to the Constitution of India*, New Delhi, Prentice Hall, 1994.

Baxi, U., *The Indian Supreme Court and Politics*, Delhi, Eastern Book Company, 1980.

Baxi and B. Parekh (ed.), *Crises and Change in ContemporaryIndia*, New Delhi, Sage, 1994.

Bhambri, C.P., *The Indian State: Fifty Years*, New Delhi, Shipra, 1999.

Brass, P., *Politics of India since Independence, 2nd edn.*, Cambridge, Cambridge University Press, 1994.

----------, Caste, *Faction and Party in Indian Politics, 2 Vols.*, Delhi, Chanakya Publications, 1984-1985.

----------, *Ethnic Groups and the State,* London, Croom Heim, 1985.

----------, *Language, Religion and Politics in North Indi*a, London, Cambridge University Press, 1974.

Frankel, F. R. et.al., (eds.) *Transforming India: Social and Political Dynamics of Democracy*, New Delhi, OUP, 2000.

R.L. Hardgrave, *India: Government and Politics in a Developing Nation*, New York, Harcourt, Brace and World, 1965.

Hassan, Zoya, (ed.), *Party and Party Politics in India*, New Delhi, OUP, 2003.

Jayal, N. G., (ed.) *Democracy in India*, Delhi, Oxford University Press, 2001.

Kashyap, S., *Our Parliament*, New Delhi, National Book Trust, 1992.

Kohli, A., *Democracy and Discontent: India's Growing Crisis of Governability*, Cambridge, Cambridge University Press, 1991.

M.P. Singh and S. R. Raj (eds), *Indian Political System,* Pearson, New Delhi, 2012

Mukherjee, Rahul, *India's Economic Transition*, New Delhi, OPU, 2007

Narang, A.S., *Indian Government and Politics*, Gitanjali Publishing House, New Delhi, 2012.

Shakir, M., *State & Politics in Contemporary India*, Delhi, Ajanta, 1986.

Omvedt, Gail., (ed.) *Land, Caste and Politics in Indian States*, Delhi, 1981.

Oommen, T.K., *Protest and Change, Study in Social Movements*, New Delhi, Sage, 1990.

Pylee, M.V., *An Introduction to the Constitution of India*, New Delhi, Vikas, 1998.

Saez, L., *Federation Without a Centre: The Impact of Political and Economic Reform on India's Federal System*, New Delhi, Sage, 2002.

Sathe, S.P., *Judicial Activism in India*, New Delhi, OUP, 2002.

Thakur, R., *The Government & Politics of India*, London, Macmillan, 1998.

Vanaik, A., *The Pointful Transition: Bourgeois Democracy in India*, London, Verso, 1990.

Warjri, Antarwell., *The Role of Political Parties in the Success and Failures of Coalition Governments in Meghalaya,* RI Khasi Book Agency, Shillong, Meghalaya, 2022

SOCIOLOGY

Preface

About the FYUG programme of Sociology: The four year undergraduate programme (FYUG) has been devised as per New Education Policy 2020 framework. Under this programme, various courses such as major courses, multi disciplinary courses (MDCs), skill enhancement courses (SECs), ability enhancement courses (AECs) value added courses (VACs) will be offered to the students.

Programme Outcomes (POs): The students will be able to understand, examine and analyse the conceptual and theoretical issues in sociology which will enable them to draw insights and articulate the empirical events. Multi-disciplinary courses will help them to widen their understanding on the issues and problems outside their core discipline. Furthermore, the students will get an opportunity to enhance their skills on the theme of their choice.

SOC-100: INTRODUCTION TO SOCIOLOGY

(Contact Hours: 60, Credits: 4)

Course Objectives (COs): The course intends to familiarize the students with the origin of sociology as a discipline.

Learning Outcomes (LOs): The students will be able to develop insights to understand the sociological concepts which will help them to examine the sociological issues and problems. The students will learn nature, scope and methods of sociology. They will also learn various concepts of sociology.

Unit I- Sociology and its Trajectory

Definition, Origin and Development of Sociology

Nature, Scope and Method of Sociology

Relationship with other Social Sciences/Humanities: Political Science, History, Philosophy and Anthropology

Unit II - Sociological Concepts

Society and Community, Associations and Institutions

Status and Role; Structure and Function

Folkways and Mores; Norms and Values

Unit III - Socialization and Culture

Socialization: Meaning, Stages and Agencies

Culture: Meaning, Elements and Cultural Lag

Civilization: Meaning and Distinction with Culture

Unit IV – Social Change

Evolution, Progress and Development

Factors of Social Change: Culture, Demography and Technology

Agencies of Social Change: Education, Law and Planning

Suggested readings:

Abraham, M. Francis. 2006. *Contemporary Sociology*. New Delhi: OUP.

Albrow, Martin. 1999. *Sociology*: The Basics. London: Routledge.

Alex, Inkeles. 1979. *Sociology*. London: Prentice Hall.

Bottomore, T. B. 2014. *Sociology*. London: George Allen and Unwin.

Davis, K. 1949. *Human Society*. New Delhi. The Macmillan Co.

Giddens , A. 2021. *Sociology*. Cambridge: Polity Press.

Ginsberg, Morris. 2016. *Sociology*. California: OUP.

Gisbert, P. 2010. *Fundamentals of Sociology*. New Delhi: Orient Blackswan.

Haralambos, M. 1980. *Sociology: Themes and Perspectives*. New Delhi: OUP.

SOC-150: PRINCIPLES OF SOCIOLOGY

(Contact Hours: 60, Credits: 4)

Course Objectives (COs): The course intends to familiarise the students with various social institutions and sociological concepts.

Learning Outcomes (LOs): The students will be able to understand the aspects of diverse social institutions such as marriage, family, polity, economy and religion. The students will also learn sociological concepts such as social control, social groups and social process which will help them to analyse the sociological issues and problems.

Unit I - Social Institutions I:

Marriage: Meaning and Types, Functions

Family: Meaning, Types and Changes

Kinship: Meaning, Types and Usages

Unit II - Social Institutions II:

Polity: Stateless Societies, State and Nation

Economy: Production, Consumption, Distribution and Property

Religion: Beliefs and Rituals, Sacred and Profane

Unit III - Social Control:

Meaning and Definition

Types of Social Control- Formal and Informal: Law; Custom

Conformity, Deviance and Delinquency

Unit IV – Social Group and Social Processes:

Social Group: Meaning and Types (Primary and Secondary, Reference Groups, In-Group and Out-Group)

Interaction, Cooperation, Competition, Conflict

Assimilation, Acculturation and Accommodation

Suggested readings:

Abraham, M. Francis. 2006. *Contemporary Sociology*. New Delhi: OUP.

Albrow, Martin. 1999. *Sociology: The Basics*. London: Routledge.

Alex, Inkeles. 1979. *Sociology*. London: Prentice Hall.

Bottomore, T. B. 2014. *Sociology*. London: George Allen and Unwin.

Davis, K. 1949. *Human Society*. New Delhi. The Macmillan Co.

Giddens , A. 1989. *Sociology*. Cambridge: Polity Press.

Ginsberg, Morris. 1961. *Sociology*. California: OUP.

Gisbert, P. 2010. *Fundamentals of Sociology*. New Delhi: Orient Blackswan.

Haralambos, M. 1980. *Sociology: Themes and Perspectives*. New Delhi: OUP.

Fox, Robin. 1984. *Kinship and Marriage: An Anthropological Perspective* Harmondsworth: Penguin Books.

Goode, William J.1984. *Family*. New Delhi: Prentice Hall of India.

Majumdar, D.N.and Madan, T. N. 1956. *An Introduction to Social Anthropology*. Bombay: Asia Publishing House.

Uberoi, P. (ed.). 1994. *Family, Kinship and Marriage in India*. Delhi: OUP.

ZOOLOGY

The FYUG programme in Zoology:

The key learning objectives of the programme in Zoology include the following: -

Students will imbibe a comprehensive understanding of the principles and concepts of zoology, including the organization and diversity of the animal kingdom, genetics, cell biology, biochemistry, developmental biology, molecular biology, biotechnology physiology, endocrinology, ecology, evolution, behaviour, parasitology, and entomology.

Students will be able to design, conduct, and analyze experiments to investigate questions related to zoology. They will also be able to evaluate scientific evidence, critically analyze data, and interpret results.

Students will develop effective written and oral communication skills in order to convey scientific information, including the ability to write laboratory reports, scientific papers, and presentations.

Students will develop critical thinking skills necessary to analyze and evaluate scientific evidence, assess the validity of scientific claims, and identify and solve problems related to zoology.

Students will learn and adhere to ethical principles and professional standards in scientific research and in interactions with animals, colleagues, and the public.

Students will develop skills in the use of technology and information resources relevant to zoological research and communication, including the use of databases and software.

Students will be exposed to interdisciplinary perspectives, including the interface between zoology and other scientific disciplines, such as molecular biology, biotechnology, and conservation biology.

Students will be exposed to and appreciate the diversity of animal life and the role of zoology in understanding and promoting conservation and the well-being of animals and humans. They will also learn to work effectively with diverse groups of people.

Students will develop a curiosity for learning and a desire to continue their education throughout their lives, including staying current with developments in the field of zoology.

Programme Outcomes (POs)

Upon successful completion of the four-year undergraduate programme in Zoology, the students will be able to:

POs1

- Demonstrate a deep understanding of the fundamental principles of Zoology, including its historical context, its relevance to society, and its relationship with other scientific disciplines.
- Identify, describe, and classify organisms from different taxa, including their morphology, functional anatomy, physiology, behaviour, and ecology.
- Develop a strong foundation in genetics, evolution, cell and molecular biology and ecology, and apply this knowledge to understand the patterns and processes that shape the diversity of life on Earth.
- Develop practical skills in laboratory techniques, fieldwork, and data analysis, including the use of statistical software and the interpretation of datasets.

POs2

- Apply the scientific method to investigate and solve biological problems, including designing experiments, collecting data, analyzing results, and drawing conclusions.
- Apply critical thinking and analytical skills to evaluate scientific literature, assess competing hypotheses, and develop evidence-based arguments.
- Communicate scientific information effectively to different audiences, including writing scientific reports, giving oral presentations, and participating in scientific discussions.

POs3

- Demonstrate an understanding of the ethical and societal implications of biological research and the responsible conduct of science.
- Develop transferable skills, including teamwork, problem-solving, time management, and adaptability, that will be useful in a variety of professional settings.
- Develop a passion for lifelong learning and a commitment to stay current with the latest advances in Zoology, through participation in professional development opportunities and engagement with the scientific community.

ZOO-100: TAXONOMY AND ANIMAL DIVERSITY

(Contact Hours: 75, Credits: 4)

Course Objectives (Cos):

- To impart the fundamental concepts in Animal Taxonomy and Diversity
- To introduce the notion of biodiversity

Learning Outcomes (LOs)

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

- Understand the importance of systematics, taxonomy and structural organization of animals.
- Appreciate the diversity of non-chordates and chordates living in varied habit and habitats.
- Be in a position to critically analyze the organization, complexity and characteristic features of non-chordates and chordates familiarizing them with the morphology and anatomy of representatives of various animal phyla.
- Enhancement of collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.
- Learn the skills for dissection of anatomical systems in an invertebrate and a vertebrate.
- Identify the major structures of the nervous system and statocysts in prawn, the digestive and reproductive systems in fish.
- Learn the principles, procedure, and skill of permanent mounting of biological specimens.
- Identify some anatomical structures of invertebrates and vertebrates, and their roles in the organisms' biology.
- Identify animals and to describe the identifying characters. They will also be able to classify the animals following the taxonomic hierarchy.

Unit-I: Taxonomy: Definition of taxonomy, phylogeny, systematics, category, taxon, classification, nomenclature; Biological species concept; Taxonomic hierarchy; Binominal nomenclature.

Seven-kingdom classification of organisms according to Michael A. Ruggiero et.al., (2015) which include Archaea, Bacteria, Protozoa, Chromista, Fungi, Plantae, and Animalia.

Salient features and classification of kingdom Protozoa up to phylum with example of representatives from each phyla.

Protozoa: Paramaecium - Morphology and reproduction.

Salient features and classification of the following phyla up to class with example of representatives from each class: Porifera, Cnidaria, and Platyhelminthes.

Porifera: *Sycon* - Morphology and canal system.

Cnidaria: *Obelia* - Morphology and reproduction.

Platyhelminthes: *Taeniasolium* – Morphology and the life cycle.

Unit-II: Salient features and classification of the following phyla up to class with example of representatives from each class: Nematoda, Annelida, Onychophora, Arthropoda, and Mollusca.

Nematoda: *Ascarislumbricoides* –Morphology and the life cycle.

Annelida: Leech - Morphology and urogenital system.

Onychophora: *Peripatus*–Morphology.

Arthropoda: Prawn - Morphology and Reproductive systems.

Mollusca: *Pila* - Morphology and Nervous Systems.

Introduction to Minor Phyla.

Unit III: Salient features and classification of the following phyla up to class with example of representatives from each class: Echinodermata, Hemichordata, and Chordata.
Echinodermata: *Asterias* - Morphology and water vascular system.
Hemichordata: Morphology of *Balanoglossus.*
Cephalochordata: Morphology of *Amphioxus.*
Urochordata: Morphology of *Ascidia.*
Cyclostomata: *Petromyzon*– Morphology.
Pisces: *Labeo* - Morphology and respiratory systems.
Mammalia: Rabbit - Morphology, digestive, circulatory and nervous systems

Unit-IV: **Practical** **(Contact hours: 30)**

1. Dissection

a) Dissection of Prawn - nervous system; b) Dissection of Prawn - statocysts; c) Dissection of *Channa*/*Labeo*/common carp - digestive system; d) Dissection of *Channa*/*Labeo*/common carp - reproductive system.

2. Mounting

a) General protocol for preparation of permanent mount; b) Permanent mount of: *Obelia* colony, parapodium of *Nereis*, gemmules of sponge, and cycloid scale of fish.

3. Museum Specimens

(Preferably representatives from the different classes/orders of the phylum. The number within the brackets indicates the minimum number of specimens to be studied).

a) Protozoa whole mount (2); b) Porifera (2); c) Cnidaria (3); d) Platyhelminthes (2); e) Nematoda (1); f) Annelida (3); g) Onychophora (1); h) Arthropoda (5); i) Mollusca (5); j) Echinodermata (3); k) Hemichordata (1); l) Cephalochordata (1); m) Urochordata (1); n) Agnatha (1); o) Pisces (4); p) Amphibia (3); q) Reptilia (3); r) Aves (2); s) Mammalia (3).

***Note:**

- For the Seven Kingdom classification, follow the classification scheme from "Ruggiero, M. A., et.al., (2015). A higher level classification of all living organisms. *PloS one*, 10(4), e0119248.
- For Invertebrates classification, follow the classification schemes from "Barnes, R.D. (2006). Invertebrate Zoology, 7th Edition, Cengage Learning, India."
- For Chordate Classification, follow the scheme from "Kardong, Kenneth V. (2015). Vertebrates: Comparative Anatomy, Function, Evolution, 8th Edition, McGraw-Hill Education.

Suggested Readings:

1. Barnes, R.D. (2006). Invertebrate Zoology. (7th ed.). Cengage Learning, India.

2. Brusca, R.C., Moore, W., & Shuster, S.M. (2016). Invertebrates. (3rd ed.). Oxford university press. New York.
3. Chaki, K.K., Kundu, G., & Sarkar, S. (2021). Introduction to General Zoology Vol 1. (1st ed.). New Central Book Agency. Kolkota.
4. Chaki, K.K., Kundu, G., & Sarkar, S. (2021). Introduction to General Zoology Vol 2. (1st ed.). New Central Book Agency. Kolkota.
5. Ganguli, B.B., Adhikari, S., & Sinha, A.K. (2011). Biology of Animals: Volume I. (3rd ed.). New Central Book Agency. Kolkota.
6. Ghosh, K.C. and Manna, B. (2009). Practical Zoology. (3rd ed.). Central Book Agency, Kolkota.
7. Kardong, Kenneth V. (2015). Vertebrates: Comparative Anatomy, Function, Evolution, 8th Edition, McGraw-Hill Education. New York.
8. Kotpal, R.L. (2019). Modern Textbook of Zoology: Invertebrates. (12th ed.). Rastogi Publications. Meerut.
9. Kotpal, R.L. (2019). Modern Textbook of Zoology: Vertebrates. (4th ed.). Rastogi Publications. Meerut.
10. Lal, S.S. (2011). Practical Zoology: Invertebrate. (10th ed.). Rastogi Publications. Meerut.
11. Lal, S.S. (2015). Practical Zoology: Vertebrate. (10th ed.). Rastogi Publications. Meerut.
12. Mayr, E. &Ashlock, P.D. (1991). Principles of Systematic Zoology. (2nd ed.). McGraw-Hill (India). New Delhi.
13. Pechenik, J. A. (2015). Biology of the Invertebrates. (7th ed.). McGraw-Hill Education. New York.
14. Pough, F.H., & Janis, C.M. (2019). Vertebrate Life. (10th ed.). Oxford University Press. New York.
15. Ruggiero, M. A., Gordon, D. P., Orrell, T. M., Bailly, N., Bourgoin, T., Brusca, R. C., ...& Kirk, P. M. (2015). A higher level classification of all living organisms. PloS one, 10(4), e0119248.
16. Sinha, A.K., Adhikari, S., Ganguli, B.B., and Goswami, B.C.B. (2012). Biology of Animals: Volume I. (7th ed.). New Central Book Agency. Kolkota.
17. Verma, P.S. (2010). A Manual of Practical Zoology: Chordates. (11th ed.). S. Chand & Co. New Delhi.
18. Verma, P.S. (2010). A Manual of Practical Zoology: Invertebrates. (15th ed.). S. Chand & Co. New Delhi.
19. Verma, P.S., & Jordan, E.L. (2013). Chordate Zoology. (14th ed.). S.Chand& Co. New Delhi.
20. Verma, P.S., & Jordan, E.L. (2022). Invertebrate Zoology. (16th ed.). S.Chand& Co. New Delhi.
21. Young, J. Z. (2004). The Life of Vertebrates. (3rd ed.). Oxford university press. New York.

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ZOO-150: FUNCTIONAL AND COMPARATIVE ANATOMY

(Contact Hours: 75, Credits: 4)

Course Objectives (Cos):

- The course will provide in depth knowledge of the biology of form and functions.
- It will examine vertebrate anatomy to understand how the structures develop, how they evolve, interact with one another and allow animals to live in variety of environments.

Learning Outcomes

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

- Learn about the importance of structural organization of animals.
- Understand evolutionary history and relationships of different groups through functional and structural affinities.
- Critically analyze the organization, complexity and characteristic features of different groups making
- Understand the morphology and anatomy of representatives of various animal phyla.
- Compare and contrast each organ system across various vertebrate groups.
- Understand the evolutionary relatedness of various groups of invertebrates and vertebrates through affinities study.
- Learn the skills for dissection of anatomical systems in an invertebrate and a vertebrate and identify the major structures of the accessory respiratory organs and afferent branchial system of fish.
- Identify some anatomical structures, histological samples of tissues and organs, and whole mounts of specimens.
- Identify and learn the characteristic features of bones in a mammal.

Unit-I: Protozoa: Locomotion and nutrition.
Porifera: Canal system and skeletal systems.
Cnidaria: Polymorphism in Siphonophora; Corals and coral reefs.
Annelida: Excretory system.
Arthropoda: Comparative study of respiratory systems.
Mollusca: Torsion and detorsion in Gastropoda

Unit II: Echinodermata: Comparative study of water vascular system.
Hemichordata: Affinities of *Balanoglossus*.
Cephalochordata: Affinities of *Amphioxus*.
Urochordata: Retrogressive metamorphosis in *Ascidia*.
Agnatha: Comparative study of *Petromyzon* and *Myxine*.

Pisces: Scales and fins in fishes; Accessory respiratory organs.

Unit-III: Amphibia: Comparative study of the morphological features of the three orders.
Reptilia: Venomous and non-venomous snakes; Poison apparatus and mechanism of biting.
Aves: Comparative study of Flight and flightless birds.
Mammalia: Affinities of Monotremata, Affinities of Marsupialia, and dentition in mammals.
Comparative anatomy of kidney in vertebrates.
Comparative anatomy of heart in vertebrates.
Comparative anatomy of respiratory organs (skin, gills, lungs, and air sacs) invertebrates.

Practical **Credit 1 (Contact hours: 30)**

Unit-IV:

1. **Dissection**
   a) Accessory respiratory organs in teleost fish; b) Dissection of Channa/Labeo/common carp - Afferent branchial vessels

2. **Permanent mounting**
   a) Setae of earthworm; b) Scales (placoid and ctenoid) of fish; c) Feathers {down, filoplume, contour (showing barb and barbules)} of birds.

3. **Study of permanent sections**
   a) Histological study of tissues: epithelia, connective, muscle, and nervous; b) Histological study of stomach, intestine, kidney, liver, lungs, testis, and ovary of vertebrate; c) Transverse sections of: *Ascaris* male and female; Earthworm through typhlosolar region; *Amphioxus* through branchial region.

4. **Osteology**
   a) Study of skull of rabbit/guinea pig b) Study of pelvic and pectoral girdle of rabbit/guinea pig; c) Study of humerus, radius-ulna, femur, tibio-fibula of rabbit/guinea pig; d) Study of vertebrae: Atlas, axis, and typical vertebra of rabbit/guinea pig.

Suggested Readings:

1. Barnes, R.D. (2006). Invertebrate Zoology. (7th ed.). Cengage Learning, India.
2. Brusca, R.C., Moore, W., & Shuster, S.M. (2016). Invertebrates. (3rd ed.). Oxford university press. New York.
3. Ganguli, B.B., Adhikari, S., & Sinha, A.K. (2011). Biology of Animals: Volume I. (3rd ed.). New Central Book Agency. Kolkota.

4. Ghosh, K.C. and Manna, B. (2009). Practical Zoology. (3rd ed.). Central Book Agency, Kolkota.
5. Kardong, Kenneth V. (2015). Vertebrates: Comparative Anatomy, Function, Evolution, 8th Edition, McGraw-Hill Education. New York.
6. Kotpal, R.L. (2019). Modern Textbook of Zoology: Invertebrates. (12th ed.). Rastogi Publications. Meerut.
7. Kotpal, R.L. (2019). Modern Textbook of Zoology: Vertebrates. (4th ed.). Rastogi Publications. Meerut.
8. Lal, S.S. (2011). Practical Zoology: Invertebrate. (10th ed.). Rastogi Publications. Meerut.
9. Lal, S.S. (2015). Practical Zoology: Invertebrate. (10th ed.). Rastogi Publications. Meerut.
10. Parker, T.J., &Haswell, W.A. (1972). Textbook of Zoology Vol.I: Invertebrates (7th ed.). Macmillan Education Australia.
11. Parker, T.J., &Haswell, W.A. (1972). Textbook of Zoology Vol.II: Vertebrates. (7th ed.). Macmillan Education Australia.
12. Pechenik, J. A. (2015). Biology of the Invertebrates. (7th ed.). McGraw-Hill Education. New York.
13. Pough, F.H., & Janis, C.M. (2019). Vertebrate Life. (10th ed.). Oxford University Press. New York.
14. Sinha, A.K., Adhikari, S., Ganguli, B.B., and Goswami, B.C.B. (2012). Biology of Animals: Volume I. (7th ed.). New Central Book Agency. Kolkota.
15. Verma, P.S. (2010). A Manual of Practical Zoology: Chordates. (11th ed.). S. Chand & Co. New Delhi.
16. Verma, P.S. (2010). A Manual of Practical Zoology: Invertebrates. (15th ed.). S. Chand & Co. New Delhi.
17. Verma, P.S., & Jordan, E.L. (2013). Chordate Zoology. (14th ed.). S.Chand& Co. New Delhi.
18. Verma, P.S., & Jordan, E.L. (2022). Invertebrate Zoology. (16th ed.). S.Chand& Co. New Delhi.
19. Young, J. Z. (2004). The Life of Vertebrates. (3rd ed.). Oxford university press. New York.

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FOUR YEAR UNDER GRADUATE (FYUG)

PROGRAMME UNDER

NEW EDUCATION POLICY, 2020

(1st and 2nd Semester)

Date of approval in Academic Council - 02.06.2023

STRUCTURE OF THE SYLLABUS, FYUG PROGRAMME, NEP 2020

(Example- Subject: Economics Major and History Minor)

1ST SEMESTER

COURSE CATEGORY	**COURSE CODE**	**CREDIT**	**TOTAL CONTACT HOURS**	**REMARK**
MAJOR	ECO-100*	4	60/75	
MINOR	HIS-100	4	60/75	Student to choose one course from other department
MDC		3	45	Student to choose one course out ofthe offered courses by the college under each category
AEC		3	45	Student to choose either English or any MIL and continue the same in 2nd Semester.
SEC				Student to choose one course out of the offered courses by the college under each category
VAC	VAC-104	3	45	Compulsory
Total		**20**		

2ND SEMESTER

COURSE CATEGORY	COURSE CODE	CREDIT	TOTAL CONTACT HOURS	REMARK
MAJOR	ECO-150	4	60/75	
MINOR	HIS-150	4	60/75	Student to choose one course from other department
MDC		3	45	Student to choose one course out of the offered courses by the college under each category
AEC		3	45	Student to continue the same as chosen in the 1st Semester.
SEC				Student to choose one course out of the offered courses by the college under each category
VAC		3	45	Student to choose one course out of the offered courses by the college under each category
Total		**20**		

NOTE: ALL MAJOR AND MINOR COURSES ARE THE CORE COURSES FOR MULTIDISCIPLINARY PROGRAMME

SEMESTER I

SL NO	CODE	NAME OF THE COURSE (MDC) SEM I
1	MDC 110	COMMERCIAL ARITHMETIC & ELEMENTARY STATISTICS
2	MDC 111	CULTURE AND SOCIETY
3	MDC 112	FUNDAMENTALS OF COMPUTER SYSTEMS
4	MDC 113	FUNDAMENTALS OF EARTH SYSTEM SCIENCE
5	MDC 114	FUNDAMENTALS OF LIFELONG LEARNING
6	MDC 115	INTRODUCTORY LIFE SCIENCES
7	MDC 116	INTRODUCTION TO NATIONAL CADET CORPS
8	MDC 117	INTRODUCTION TO PSYCHOLOGY
9	MDC 118	MATHEMATICS IN DAILY LIFE
10	MDC 119	PHILOSOPHY OF CULTURE

SL NO	CODE	NAME OF THE COURSE (AEC) SEM I
1	AEC 120	ALTERNATIVE ENGLISH
2	AEC 124	MIL-I: KALITERESHOR KHASI BAD KAKYLLA-KTIEN
3	AEC 127	MIL-I:हिĿ भाषाका D विरकअनपुंयोग

SL NO	CODE	NAME OF THE COURSE (SEC) SEM I
5	SEC 130	CYBER SECURITY
2	SEC 131	MOTIVATION
1	SEC 132	PERSONALITY DEVELOPMENT
4	SEC 133	PUBLIC SPEAKING
3	SEC 134	TEAM BUILDING

SL NO	CODE	NAME OF THE COURSE (VAC) SEM I
1	VAC 140	ENVIRONMENT STUDIES

MULTI DISCIPLINARY COURSES

MDC-110: COMMERCIAL ARITHMETIC AND ELEMENTARY STATISTICS

(Contact Hours-45, Credits-3)

Course Objective: To familiarize the students with the knowledge of essential mathematics and statistics that is applicable in business.

Learning Outcomes: Students will be able to:

a. Acquire the knowledge of various arithmetical and statistical concepts
b. Learn techniques which help in dealing with real-life business situations

UNIT - I

Average- simple and weighted average, Ratio and Proportion.
Percentage, Problems on Time and Distance.
Simple interest- Bank interest – Average rate of interest: interest on installment payment
Compound Interest (With the help of logarithms)
Annuities- Annuity certain, Annuity due, Immediate Annuity and Deferred Annuity (With the help of logarithms)
Profit and loss, Market price Discount- trade and cash discount

UNIT - II

Bankers discount, true discount, Bill value, Present value, average due date and equation of payment
Stock Exchange investment, transfer of stock and shares, Ex dividend and cum dividend prices
Commission and Brokerage
Probability meaning and definition, Events, Trial, Random experiment, mutually likely events, mutually exclusive events, Favorable cases to an event

UNIT - III

Statistics: Meaning, Application and Limitations.
Measures of Central Tendency – Averages (Mean, Median, Mode) and Dispersion (Range,Quartile Deviation and Standard Deviation)
Diagrammatic Presentation of business data (Bar diagram, line diagram, pie and rectangular chart)

Suggested Readings (Latest Edition)

- S.C. Chanda & NK. Nag, Commercial Arithmetic, Kalyani Publication
- Dr. S. K. Singh & Samresh Chauhan, Commercial Arithmetic, SBPD Publication
- Dhayagude M. G., Commercial Arithmetic and Statistics, Everest Publishing House

MDC 111: CULTURE AND SOCIETY
(Contact Hours-45, Credits-3)

COURSE OBJECTIVES (COs)

The course intends to familiarize the students with the conceptual and theoretical aspects of society and culture. Learning Outcomes (LOs): The students will be able to develop insights and examine various concepts related to culture and society. The students are expected to learn components of culture and cultural diversity of India and North-East region of India.

Unit- I: Conceptual and Theoretical Aspects
Culture, Cultural Lag, Society Components of Culture (Edward B. Tylor)
Functionalist theory of culture (Broislaw Malinowski) Symbolic Interaction (George Herbert Mead)

Unit- II: Culture and its Attributes
Language Food Religion Technology

Unit- III: Socio-Cultural Diversity - India and North-East India Linguistic, Religious and Ethnic Diversity in India Unity in Diversity: Contemporary Understanding
Socio-cultural Diversity of North-East India
Indigenous Knowledge Systems of the Tribes of North-East India

Suggested readings:
Back, les and Andy Bennett et al.2012. Cultural Sociology- An Introduction. Wiley Publishers Oxford, UK.
Beattie, John. 1976. Other Cultures. London: OUP.
Majumdar,D.N. and T.N Madan.2022.An Introduction to Social Anthropology.NewDelhi: Mayur Books.
Marak, Queenbala. 2020. The cultural Heritage of Meghalaya... New Delhi: IGRMS and Manohar.
Marak, Queenbala. 2021. Food Politics: Studying Food, Identity and Difference among the Garos. New Castle. CSP.
Miller, B.2011.CulturalAnthropology. PHI Learning Pvt. Ltd.
Ogburn, William F.1922. Social Change with Respect to Nature and Original change. Chicago: Chicago Press.
Ranjan, Geetika. 2016. Approaches to the study of Indian Culture and Society. New Delhi: Pragun Publications.
Shangpliang,Rekha M.2010 .Forest in the Life of the Khasi .New Delhi: Concept Publications.
Singer,Milton.1955
The Cultural Pattern of Indian Civilization. The Far Eastern Quarterly.15(1).
Subba, T.B. 2016. North-East India: A Handbook of Anthropology. NewDelhi: OrientBlackswan.
Tylor, E. B. 2012. Primitive Culture. Cambridge University Press. London.
Vidyarthi, L. P and Rai B.K.1985.Tribal Culture in India. New Delhi: Concept Publishing Co. Williams, R .1990.Cultural Anthropology. New Jersey: Prentice Hall.

MDC- 112: FUNDAMENTALS OF COMPUTER SYSTEMS

(Contact Hours-45, Credits-3)

Course Objectives (COs):

To understand the fundamental organization of a digital computer. To understand data representation along with theoretical basic knowledge of operating systems.

Learning Outcomes (LOs):*Students will be able to u*nderstand the basic informationrelated tohardware and software.To gain basic knowledge of number system, Boolean logic along with types of operating system and network.

UNIT -I:Computer Fundamentals 15 Hours

Generations of Computer (I-V) , Block Diagram of a Computer Functions of the Different Units (Input unit, Output unit, CPU (ALU+CU)) , Input & Output Devices , Memories, Memory hierarchy, Registers and Types, Cache Memory , Primary Memory (Ram, How data is stored ina RAM) DRAM and SRAM, ROM ROM BIOS/ Firmware Types of ROM Secondary Memories , Solid State Drive , CD /DVD. Software, System Software and Application Software , Computer Languages: Machine language, Assembly language, High level language, Program Language Translators, Compiler, Assembler Interpreter.

UNIT -II: Number Systems and Boolean Algebra 15 Hours

Bit, Byte, Nibble, Word, Binary Number, Binary Arithmetic (Addition, Subtraction, Multiplication, Division), Hexadecimal number system, Octal number system, Conversion between number systems, Binary codes (BCD, ASCII, EBCDIC). Gates AND, OR, NOT, NAND, NOR, XOR and XNOR operations, Boolean variables, postulates and theorems of Boolean Algebra, Boolean functions, Simplification of Boolean expressions by algebraic method, Dual and Complement of a Boolean expression.

UNIT -III:Basics of Operating System & Network 15 Hours

Operating System: Overview, Evolution of Operating System, functions and importance of operating system, types of operating system (GUI and Non GUI), Open source and Non Open Operating System, their advantage and disadvantage , Batch Operating System , Real-Time , Operating System , Distributed Operating System ,Embedded Operating System , Network Operating System , Mobile Operating System. Basics of Networking , LAN ,MAN ,Wan , Arpanet.

Suggested Readings:
Text Books:

1. Rajaraman, Neeharika Adabala, Fundamentals of Computers 6th Edition , Prentice Hall India Learning Private Limited, 2014.
2. Morris. M. Mano, *Digital Logic and Computer design*, 3rd Edition, Prentice Hall India 2002.

Reference Books:

1. Malvino& Leach, Digital Computer and Applications, 4th Edition, Tata Mc-Graw Hill Company, 2015.
2. Reema Thareja, Fundamentals Of Computers 2nd Edition, Oxford University Press, 2026.

MDC-113: FUNDAMENTALS OF EARTH SYSTEM SCIENCE

(Contact Hours-45, Credits-3)

Course Objectives (COs): To provide comprehensive knowledge about the planet Earth, geomorphicprocesses and concepts of rocks and minerals.

Learning Outcomes (LOs): Students will gain knowledge about the geological processes, formation of minerals and rocks; and interactions between exogeneticprocesses along with the identification of geomorphic features.

UNIT I (15 hours) Earth System Sciences: concept and scope. Geological Time Scale. Origin and age of the Earth.

UNITII (15 hours) Geomorphology: concept and scope. Concept of uniformitarianism;Geomorphic agents & processes.Weathering& Erosion.
Landforms: Depositional and Erosional.

UNIT III (15 hours) Minerals: Definitions, physical properties, and classification.
Rocks: Igneous, Sedimentary and Metamorphic rocks and their classification. Rock Cycle.

Suggested Readings:

Allen, P.A., 1997. Earth Surface Processes, Blackwell publishing.

Bridge, J.S. and Demicco, R.V., 2008. Earth Surface Processes, Landforms and Sediment Deposits, Cambridge University Press.

Leeder, M. and Perez-Arlucea M., 2005. Physical processes in earth and environmental sciences, Blackwell' publishing.

Perkins, D., 2013. Mineralogy, Prentice Hall.

Raymond, L. A., 2002. Petrology: the study of igneous, sedimentary, and metamorphic rocks. McGraw-Hill Science Engineering.

Shrivastava J. P., 2009. Rocks and Ore Forming Minerals (National Science Digital Library, CSIR, New Delhi)http://hdl.handle.net/123456789/1086. CSIR, New Delhi.

Shrivastava J. P.,2009. Igneous Rocks (National Science Digital Library, CSIR, New Delhi) http://hdl.handle.net/123456789/1034CSIR, New Delhi.

Tarbuck, E. J. and Lutgens, F. K. 1998. Earth: An Introduction to Physical Geology, Pearson.

Verma, V. K. 2002. Lectures on Geomorphology, Pilgrims Book House.

MDC- 114: FUNDAMENTALS OF LIFELONG LEARNING

(Contact Hours-45, Credits-3)

Course Objectives (COs):

1. To enable the students to understand the concept of Lifelong Learning and its importance and relevance in the present day context.
2. To acquaint the students with various terms related to Lifelong Learning
3. To provide the students with knowledge of Government policies and programmes

Learning Outcomes (LOs):

Students are able to -

1. explain the concepts of Lifelong Learning
2. examine the relationship between 'lifelong learning' and related terms
3. identify the link between Lifelong Learning and adult education policies and practices in India.

Unit I: Introduction:

- Lifelong Learning –Concept, Basic elements, Characteristics, Nature and scope
- Sustainable Development Goals and Lifelong Learning
- Types of Lifelong Learners and Lifelong Learning needs
- Need and Importance of Lifelong Learning,

Unit II: Inter-related Concepts

- Adult Education and Lifelong Learning
- Continuing Education and Lifelong Learning
- Lifelong Learning and Lifelong Education
- Life-wide Learning – Individual learning, Community Learning, Workplace Learning.

Unit III: Programmes of Lifelong Learning

- Jan Shiksha Sansthan, Training for Rural Youth for Self-Employment (TRYSEM)
- Support to Training and Employment Programme (STEP) for Women, Condense Courses of Education and Vocational Training Programme for Women
- Farmers' Training Programmes through Krishi Vigyan Kendras
- Skill Training and Upgradation Programmes

Activity or Assignment: Choose any one

1. Prepare a write up on any incident/situation you experience and lesson learnt from that experience
2. Write an essay on 'Home as the first social Institution'
3. Prepare a report on your visit to any Vocational Training Centre or Farmers Training Centre

Suggested Readings:

1. Rajesh & Dixit, V.K. *Lifelong Learning: Issues and Challenges*, New Delhi: Global Book Organization, 2011.
2. Jarvis, P. *Adult Education and Lifelong Learning: Theory and Practice*. 4th Edition, New York: Rutledge, 2010.
3. Holford, John et.al. *International Perspective on Lifelong Learning*. New York: Routledge, 2020.
4. Mohanty S. *Lifelong and Adult Education.* APH Publishing corporation, 2007.
5. Shah, S.Y. *Lifelong learning in India: A policy perspective.* ASEM Education and Research Hub for Lifelong Learning. Online. https://tinyurl.com/y3u4dngw
6. UGC (University Grants Commission). *Guidelines on Lifelong Learning and Extension.* New Delhi: University Grants Commission, 2007.
7. Singh, Madhu. *Lifelong Learning*. Humberg: UNESCO Institute of Lifelong Learning, 2002
8. Planning Commission. *Eleventh Five Year Plan: Report of the Sub Group on Adult Education.* In www.planningcommission.nic.in, 2007.Chadha, N.K. (ed.). *Readings in Lifelong Learning*. New Delhi: University of Delhi, 2009.
9. National Literacy Mission. *Guidelines on Jan Shiksha Sansthans*. New Delhi: Ministry of Human Resource Development, 2003.
10. UGC (University Grants Commission). *Guidelines on Lifelong Learning and Extension.* New Delhi: University Grants Commission, 2007.

MDC-115: INTRODUCTORY LIFE SCIENCES
(Contact Hours-45, Credits-3)

Course Objectives (COs)

- The aim of Introductory Life Sciences course will be to impart knowledge to students related to topics of general aspects of Life Sciences

Learning Outcomes

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

- Know about the concept of general diversity and classification of life forms.
- Know about the concept of Origin of Life.
- Understand about the structural and functional features of prokaryotic and eukaryotic cells.
- Understand the basic concept of genes and their role in inheritance.
- Understand the process of evolution and importance of basic ecological principles.
- Understand the concept of Biodiversity, and appreciate the importance of Wildlife and their conservation.

Unit-I: General features of life form and their classification (up to kingdom); Origin of life.

Unit II: Structure and function of prokaryotic and eukaryotic cells. Introduction to biomolecules (nucleic acids, proteins, carbohydrates and lipids). Basic concept of genes and their role in inheritance.

Unit III: Bio-resources and their economic importance (microbes, plants, and animals). Concepts of evolution, ecology, biodiversity, and wildlife management.

Suggested Readings:

1. Bruce, A., Dennis, B., Karen, H., Alexander, J., Julian, L., Martin, R., Keith, R. and Peter W. (2009). Essential Cell Biology. (3rd ed.). Garland Publishing. London.
2. De Robertis, E. D. P. and De Robertis, L. M. F. (1987). Cell and Molecular Biology, (8th ed.). Lea and Febiger.
3. Gardener, E. J., Simmons, M. J., and Snustad, D. P. (2005). Principles of Genetics. (8th ed.). John Wiley and Sons.
4. Hall, B.K. and Hallgrimsson, B. (2008), Strickberger's Evolution, (4th ed.). Jones andBartlett Publishers.
5. Krishnamurthy, K.V. (2003). Textbook of Biodiversity. (1st ed.). Science Publisher, Chennai.
6. Mader, S.S. (2008). Concepts of Biology. (Indian ed.).CBS Publishers. New Delhi.
7. Sharma B.D. (1999). Indian Wildlife Resources, Ecology and Development. (1st ed.).Daya Publishing House, Delhi.
8. Sharma, P. D. (1990). Ecology and Environment, 7th Edition. Rastogi Publications. Meerut.
9. Singh S.K. (2005). Textbook of Wildlife Management (2nd ed.). International Book Distributing Company, Lucknow.

MDC -116: INTRODUCTION TO NATIONAL CADET CORPS
(Contact Hours-45, Credits-3)

Course Objectives (COs): The paper intends to impart basic knowledge about the evolution of National Cadet Corps; a brief overview of our defence system and services, to shape the young minds of our country with an aim of developing qualities like courage, Positive mindset, a secular outlook so that they may become responsible citizen and contribute towards the growth of India as a nation. Through Drill and Command, the young leaders will inculcate in them the quality of discipline.

Learning Outcomes (LOs): The students will develop a sense of responsibility and display patriotism, secular values, discipline, improve bearing and develop the quality of immediate and implicit obedience to orders.

UNIT I	NCC Motto, NCC Flag, Aims of NCC, Cardinal points of NCC, Types, organization, capability & role of NCC cadet. Organization of defence forces in general, Organizational structure of Indian Army, Organizational structure of NCC, NCC Song, Incentives of NCC, Ranks in Army, Navy and Air Force – Certificate Examination in NCC– Honors and Awards. Honour code. Modes of entry to Army CAPF Police
UNIT II	Foot Drill Basics, Aims of Drill, Word of Commands, Attention, Stand at Ease, Turning Left, Right and Inclining at the Halt. Sizing, Forming up in three Ranks and Numbering, Open and Close March Order, Dressing the Squad, Saluting at the Halt, Getting on Parade, Falling Out and Dismissing, Marching, Guard of Honour
UNIT III	Basics of Weapon Training, Introduction and organization of Infantry BN, Characteristic of Rifles, Stripping, Assembling, Care and Cleaning, and Sight Setting, Loading, Unloading of Rifle, Light Machine Gun and Stern Machine Carbine, Safety Procedures, Positions in Shooting and its Advantages, Trigger Control and Firing a Shot, Theory of Group and Snap Shooting.
Practical	a. Drill and physical training b. NCC Camps c. Types of Camps

Suggested Readings:

Cadet's Handbook- Common Subject, All Wings, by DG NCC, New Delhi
Cadet's Handbook -Specialized Subject, Army, by DG NCC, New Delhi
Challenging Destiny: A biography (2016). M. D. Bhaskaran, 314pp
Field Marshal Sam Manekshaw, (Soldiering with Dignity), 2021, Lt. Gen. Depinder Singh,PVSM, VSM. Published by Natraj publishers, 271pp
Youth in Step, V. Longer (1983), Published by Lancer International, 220pp

MDC- 117: INTRODUCTION TO PSYCHOLOGY

(Contact Hours-45, Credits-3)

Programme Objectives: This programme will develop interest among the learners towards Psychology. It aims to help learners to understand behaviours and mental processes of people. It will also develop awareness of the empirical knowledge to improve the lives of people.

Learning Outcomes

At the end of the Course students are able to:

1. identify basic concepts of psychology and apply psychological principles to everyday life
2. determine the relationship between the physical functioning of on organism and its behaviour
3. make use of a wide range of actions such as helping, sharing, comforting and cooperating with others

UNIT I Concept of Psychology

- Meaning, Nature and Scope of Psychology, Psychology as a Science
- Principles of Psychology
- Branches of Psychology
- Approaches in Psychology: Behaviourism, Cognitive, Psychodynamic and Biological

UNIT II Physiological Basis of Psychology

- Physiological Characteristics
- Nervous System and Endocrine System
- Hemispheric Division and its features
- Neurons: Definition, Structure and Types

UNIT III Pro- Social Behaviour

- Meaning and determinants of Pro-social Behaviour
- Types: Proactive, Reactive and Altruistic
- Influences on Pro-social Behaviour
- Benefits of Pro-social Behaviour

Assignments (Choose any one)

1. Prepare a sketch on how to promote pro-social behaviour
2. Use a pro-social behaviour scale to measure the Pro-Social Behaviour of a student.
3. Engage yourself in any one prosocial activities: like Clubs(e.g. art, biking, robotics, scouts, chess etc); or day camps; or creative arts/music/theatre or volunteer opportunities through community organizations

References -

Ashok Kumar. E and Laurence Kharluni (2021) *Social Behaviour Scale (SBS-EKAKL)*. National Psychological

Corporation (NPC), Agra

Bierhoff, H. (2005). Prosocial Behaviour. United Kingdom: Taylor & Francis.

Bron R.A. Allyn & Bacon (2002).Essentials of Psychology, Guwahati, Nivedita DK.Distributors.

Chand T. (2002). Educational Psychology,Agra, Bhargava Book House,

Crow, R.B. & Crow (1964).Educational Psychology**,** New Delhi, Eurasia Publishing House,

Development and Maintenance of Prosocial Behavior: International Perspectives on Positive Morality. (2013). Germany: Springer US.

Glassman, W. E., Hadad, M. (2004). Approaches to Psychology. United Kingdom: Open University Press.

Mangal. S.K. (2011) Essentials of Educational Psychology, PHI Pvt. Ltd, New Delhi.

Sahoo F.M.(2002) Psychology in Indian Context,Agra, Bhargava Book House.

Schroeder, D. A., Piliavin, J. A., Dovidio, J. F., Penner, L. A. (2017). The Social Psychology of Prosocial Behavior. United Kingdom: Taylor & Francis.

Sharmila P. (2004). Textbook of Educational Psychology, Kanishka Publication,New Delhi.

MDC-118: MATHEMATICS IN DAILY LIFE
(Contact Hours-45, Credits-3)

Learning Objectives: To introduce thebasic mathematical concepts that are used in different aspects of our daily life.

Unit I : Arithmetical Ability (15 hours)

Unit conversion (length, mass, time); Number System; Decimal Fractions; Square Roots and Cube Roots; Problems on Numbers; Problems on Ages; Use of concepts of HCF and LCM; Percentage; Ratio and Proportion; Time and Distance; Allegations or Mixture; Area, Volume, Surface Areas; Trigonometric ratios; Height and Distance in our everyday life.

Unit II : Banking Ability (15 hours)

Interest - Concept of Present value and Future value, Simple interest, Compound interest,Nominal and Effective rate of interest; Depreciation and discount; Annuity - Ordinary annuity, sinking fund, annuity due, present value and future value of annuity; Equated Monthly Installments (EMI) by Interest of Reducing Balance and Flat Interest methods - examples and problems.

Unit III : Data Interpretation (15 hours)

Probability; Classification of data - Frequency distribution, Tabulation; Graphical representation of data - Bar Graphs, Pie Charts, Line Graphs; Calendar and Clocks.

Course Outcomes : After this course students will be able to understand everyday banking transactions, identify patterns and relationships. Students will be able to perform basic calculations and measurement and also understand about ratios and proportions.

Notes: A candidate must obtain the minimum pass marks (as per NEHU Rule) to clear the course.

Suggested Readings:

1. Quantitative Aptitude, R.S. Aggarwal, S. Chand Publishing (2022).
2. Fundamentals of Business Mathematics, M.K. Bhowal, Asian Books (2009).
3. Fundamentals of Mathematical Statistics, S.C. Gupta, V.K. Kapoor, Sultan Chand and Sons (2020).
4. The Mathematics of Everyday Life, A.S. Posamentier, C. Spreitzer, Prometheus Books, Illustrated Edition (2018).

MDC-119: PHILOSOPHY OF CULTURE

(Contact Hours-45, Credits-3)

Course Objectives (COs): Imparting basics of Human Culture, developing core concepts ofcultural understanding of knowledge and society.

Learning Outcomes (LOs): To develop cultural sensibility and to make students responsive towards diversity and difference.

Unit-I: Concepts of Culture

(a) Meaning of Culture
(b) Kinds of Culture (Material, non-material,etc.)
(c) Understanding roots of Culture

Unit- II: World View

(a) Belief Systems, Practices and Performances
(b) Tribal Cultures: Case Studies from NE-India.
(c) Holistic understanding of Cultural Identity

Unit-III: Cultures of Nationalism

(a) Indian Culture, Vedic and Buddhist
(b) Decolonization of Knowledge and Culture
(c) Cultural Nationalism

Suggested Readings:

1. Aurobindo, Sri, *The Foundations of Indian Culture*, Vol 1., Sri Aurobindo Ashram Publications, Pondicherry, 1972.
2. Radhakrishnan, S. et.al., (Eds.),*The Cultural Heritage of India*, Vol 1 & 2, Ramakrishna Mission, Kolkata, 1970.
3. Panikkar,K.M.,*The Essential Features of Indian Culture*, Chapters 1 & 2, Bharatiya Vidya Bhavan, Mumbai, 1974.
4. Pande, G. C., *Foundations of Indian Culture*, vol 1 & 2
5. Radhakrishnan, S, *The Hindu View of Life*, Macmillan, London, 1962.
6. Mohammada, Malika,, *The Foundations of the Composite Culture in India*, AakarBooks, 2007.
7. Smith, Philip, *Cultural Theory*, Blackwell Publishers, Oxford, 2001.
8. Uberoi, Jeet, *Science and Culture*, Oxford University Press, New Delhi, 1978.
9. Biswas, Prasenjit, *Ethnic Life-World(s) in North-East India*, SAGE, New Delhi, 2008.
10. Ndlovu-Gatsheni, Sabelo J (2020). "The Dynamics of Epistemological Decolonisation in the 21st Century: Towards Epistemic Freedom", *Strategic Review for SouthernAfrica*. 40 (1): 16–45.

ABILITY ENHANCEMENT COURSE

AEC-120: ALTERNATIVE ENGLISH

(Contact Hours: 45, Credit-3)

Course Objectives

1. To provide opportunities to students to acquire deeper insights into the English language and literature and enhance and reinforce creativity, understanding, and criticalappreciation of the subject.
2. To introduce students to various artistic expressions in order to give them exposure to diverse literary and cultural experiences.
3. To inculcate in students the ability to communicate ideas, opinions and values and to expand their knowledge of the subject as it moves from the classroom to life and life-worlds.

Learning Outcomes

The students will gain awareness of the various artistic expressions emerging out of diverse literary and cultural experiences. This will give them deeper insights into the English language and literature, thus enhancing their creativity, understanding, and critical appreciation of the subject. The students will also gain the ability to communicate ideals opinions and values and apply the knowledge of the subject to real-life situations.

UNIT I : Poetry

1. Matthew Arnold: "To Marguerite: Continued"
2. Nicolas Guillen: "Fusil"
3. W. H. Auden: "Who's Who"
4. Nissim Ezekiel: "Goodbye Party for Miss Pushpa TS"
5. Maya Angelou: "Still I Rise"

UNIT II: Prose Pieces, Short Fiction, Grammar and Composition

1. Jawaharlal Nehru: "Animals in Prison"
2. Ruskin Bond: "Life at My Own Pace"
3. O. Henry: "The Last Leaf"
4. Grammar and Composition:
    a. Preposition
    b. Articles
    c. Idioms and Phrases
    d. Change of Voice
    e. Usage
    f. Correction of Errors

g. Reading and Comprehension
h. Narration

UNIT III: One-act Plays

1. A. A. Milne: *The Ugly Duckling*
2. J. M. Synge: *Riders to the Sea*

Suggested Reading

Corns, T. N., ed. *The Cambridge Companion to English Poetry.* Cambridge University Press, 1973.

Dolley, Colin and Rex Walford. *The One-Act Play Companion: A Guide to Plays, Playwrights and Performance.* Methuen Drama, 2011.

Eastwood, John. *Oxford Practice Grammar*, Oxford University Press, 2006.

Gates, Henry Louis, ed. *The Norton Anthology of African American Literature*. W. W. Norton &Company. Inc., 2014.

Gilbert, Sandra M. and Adrienne Rich. *Essential Essays Culture, Politics, and the Art of Poetry*. W. W. Norton &Company. Inc., 2018.

Hashemi, Louise & Raymond Murphy. *Essential Grammar in Use*. Cambridge University Press, 2007.

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

March-Russell, Paul. *The Short Story: An Introduction*. Edinburgh University Press, 2009.

McClatchy, J. D., ed. *The Vintage Book of Contemporary World Poetry*. Vintage, 1996.

Peck, John and Martin Coyle. *The Student's Guide to Writing: Grammar, Punctuation and Spelling*. Macmillan Education UK, 1999.

Sinha, M. P., et al., ed. *Ruskin Bond: A Critical Evaluation*. Atlantic Publishers and Distributors. 2012.

Scofield, Martin. *The Cambridge Introduction to the American Short Story*. Cambridge University Press, 2006.

Spiegelman, Willard. *How Poets See the World: The Art of Description in Contemporary Poetry*. Oxford University Press, 2005.

Swan, Michael. *Basic English Usage*, OUP, 2000.

Washbum, Katharine, Clifton Fadiman and John S Major. *World Poetry: An Anthology of Verse from Antiquity to Our Time*. Book-of-the-Month Club, W. W. Norton, 1998.

AEC- 124: MIL I- KA LITERESHOR KHASI BAD KA KYLLA-KTIEN

(Contact Hours: 45, Credtrs-3)

Ki jingthmu jong ka phang pule:

Ïa kane ka phang pule (course) la saiñdur ba ki nongpule kin sngewthuh halor ki jait ki sker jong ka litereshor, ki dur ki dar bad ki phangkren bapher ba la wanrah lyngba ka Poitri, ka Sawangka, ka Parom Mutdur bad ka Thohtah. La saiñ dur ruh ban hikai ïa ki nongpule halor ka Kylla-ktien, ki jingeh bad ki buit ban pynkylla ktien. Kane ka phang pule kan pynlah bad pyntbit ruh ïa ki nongpule ha ka liang ka Kylla-ktien ïa ki tnat jong ka Litereshor bad ban Kylla-ktien ïa ki khubor na ka thaiñ bad na ka Ri.

Ki jingmyntoi na kane ka phang pule:

- Kan pynlah ïa ki nongpule ban sngewthuh ïa ki tnat bapher jong ka Litereshor.
- Kan pynlah ïa ki nongpule ban ithuh bad sngewthuh ïa ki dur ki dar jong ki tnat bapher jong ka litereshor lem bad ki phangkren bapher ba la wanrah ha ki.
- Kan pynlah ïa ki nongpule ban sngewthuh shai halor ka Kylla-ktien.
- Ka jinglah ban kylla-ktien ïa ki tnat bapher jong ka litereshor.
- Ka jinglah ban kylla-ktien ïa ki khubor na ka thaiñ bad na ka Ri.

Unit – I Poitri bad Sawangka Lyngkot

1. Rabon Singh : "Ka Jingphawar Shadwait" na *Ka Kitab Jingphawar*

2. Victor G. Bareh : "Ka Lynti Umiam" na *Ki Poetry Khasi*

3. D.S. Khongdup : "U Syntiew ba nga jied" na *Na Lum Khasi*

4. L.H.Pde : "U Tiew Lili Basaw" na *Shi Hira ki Sawangka*

Unit – II Parom Mutdur bad Thohtah

1. W. Tiewsoh : *Ka Jingkwah U Kpa*

2. Donbok T. Laloo : *Pluh ka Jingieit*

3. L. Gilbert Shullai : "Hima ki Bun, Jaitbynriew Tang Kawei" na *Talwiar u Sohpetbneng*

Unit – III Ka Kylla-Ktien

1. Badaplin War: "Halor ka kylla-ktien" na *Ka Kylla-Ktien bad ka LitereshorKhasi.*

2. Ka kylla-ktien ïa ki poim bad ïa ki jingthoh balyngkot.

3. Ka kylla-ktien ïa ki khubor na ka thaiñ bad na ka Ri.

Ki kot pule baroh ki long na ka bynta ban pule bniah.

Ki jingthoh kiba ïadei bad ka phang pule:

Bareh, Victor G. *Ki Poetry Khasi*. North East Industrial Coop Society, Shillong, 1956.

Khongdup, D.S. *Na Lum Khasi*. Ri Khasi Press, Shillong, 1968.

Laloo, Donbok. T. *Pluh ka Jingieit.* Don Bosco Technical School, Shillong, 1999.

Lynshing, Thomlin. Ka Jingphawar Shadwait: Ki Snap Ka Lariti in *Ka ThwetJingstad* (Quest for knowledge) Vol. IV No.1 December, 2018.

Malone, Joseph L. *The Science of Linguistics in the Art of Translation: Some tools fromLinguistics for the analysis and practice of translation.* New York: State University of New York Press, 1998.

Mawphlang,Bulsilian Lyngdoh. "U Syntiew ba nga Jied kumka Sonnet" in *KaThwet Jingstad* (Quest for knowledge) Vol. IV No.3 December, 2020.

Nida, Eugene A. *The Theory and Practice of Translation*. Leiden, Netherlands: E.J. Brill, 1982.

Nonglait, D.R.L. *Literary Criticism and Fiction in Khasi*. SMS Hi-Tech Impression, Shillong, 2005

Pde, L. H. *Shi Hira ki Sawangka.* Shillong, 2008.

Shullai, L. Gilbert. *Talwiar u Sohpetbneng.* Scorpio Printing Press, Shillong, 1993.

Singh, Rabon. *Ka Kitab Jingphawar*. Shillong:6th Ed. Mrs. Fair Beaulah Lyngdoh, Ri Khasi Press, 1987.

Syiem, Esther. "U Manik Raitongu Nongmuna ka Jingieit bad ka Shna Sur: Ka Jingpynshongdor" in *Ka Dak Sahkynmaw (Unforgettable Impression).* Society for Khasi Studies, Shillong, 2016.

Tiewsoh, W. *Ka Jingkwah U Kpa.* Khasi Book Stall, Shillong, 1998.

War, Badaplin. *Ka Kylla Ktien bad ka Litereshor Khasi*. Shillong: Ri Lum Printing Press, 2016.

HIN-127: िहŁ ी भाष ा क ा D ाвह ािरक अन ु ंयोग

(Contact Hours: 45, Credits- 3)

उह े 4: ंत™पा Ọ़मक उह े 4 िव h िथय ांमŐ िहŁ भ ाष ा के ंय ोगक ा D वह ारक द ात ाक ेसव िधत करन े के साथ-स ाथ िहŁ भ ाष ा के श5 उDŽ ारणके िविवधप ाा क ाy न, िहŁ िवतन ाक ाy नएवस ŗ े षण कल ाक ाय ाzत ांद ानकरन ाह।

उपलि ı: इसप ाỌ़मके अ ȯयनस े िव h थ ाजह ाएकओर िहŁ भ ाष ाके श5 उDŽ ारणमŐ द ासक Őग े, वह ीद ूसर ीओर िहŁ ल ेखनमŐम ानकवतन ाके ंय ोगऔरसव ादकौशलमŐभ ीद ात ां™करसक Őग े।

इक ाई1 िहŁ ी उDŽ ारण y न: वणम ाल ा; अ ʙ ं ाण, मह ां ाण; अघ ोष, सघ ोष; कỌ, त ालD, मध Ɋ, ओ4Ọ, द ȶ, द ȶ 4Ọ, अ ŧ™, ऊ®।

इक ाई2 िहŁ िवतन ीy न: 54, द ीघ; 4र, Dजन, म ाT ांय ोग।

इक ाई3 स ŗ े षणकल ा: सव ाद/व ात ाल ाप– औपच ारिक, अन ौपच ारिक; िलिखतस ŗ े षण; औप च ा रकपT ल ेखन।

अिभ· ाििवत प ु ·क:

1. िहŁ भ ाष ाऔरस ŗ े षण– एम. एस. प ि ɲ क े शन, नईिद W ी. 2020 ई.
2. िहŁ भ ाष ाक ाD वह ारकD ाकरण- एम. एस. प ि ɲ क े शन, नईिद W ी,2018 **ई.**
3. स ŗ ण िहŁ ीD ाकरणऔररचन ा- ड ॉ. अरिवदक ुम ार, ӄ स Ő टंक ाशन, नईिद W ी, 2019 ई.
4. आध ुिनकिहŁ ीD ाकरणऔररचन ा- ड ॉ. व ासद ुे वनदनंस ाद, भ ारत ीक ाशन, नईिद W ी, 2020 ई.
5. िहŁ ीD ाकरणऔररचन ा- ड ॉ. िवजयप ालिसह, िव ʷ िव h ालयंक ाशन, व ार ाणस ी, 2010 ई.
6. सरलिहŁ ीD ाकरणऔररचन ा- ड ॉ. व ासद ुे वनदनंस ाद, भ ारत ीक ाशन, नईिद W ी, 2021 ई.
7. िहŁ भ ाष ाऔरस ŗ े षण- ड ॉ. व ी. ड ी. िवज, ल® िबकािडप ो, िद W ी, 2018 ई.

SKILL ENHANCE MENT COURSES (SEC)

SEC- 130: CYBER SECURITY

(Contact Hours: 60, Credits-3)

Course Objectives (COs):

The course objective is to cover the basics of cyber and information security & spread it awareness of this field to help the students to understand the importance of security in their dailylives.

Learning Outcomes (LOs):
Students shall be able to explain various security concepts and apply them in daily cyber use. Perform the malware and spam email identification, analysis, virus scanning and cleaning and other services using security tools and various existing cyber laws.

UNIT-I: Basic foundation of Cyber Security **15 Hours**

Information security: overview, information security importance, Attributes of Information Security, Authentication, Confidentiality, Integrity, Availability, Non Repudiation, Access Control, Threats and Vulnerabilities, Security Attacks, Unauthorized Access, Impersonation, Denial of Service, Malicious Software, Viruses, Worms, Trojan Horses. Definitions, Types of authentication, Password Authentication, Password Vulnerabilities &Attacks: Brute Force & Dictionary Attacks. Password Policy & Discipline, Single Signon- Kerberos, Biometrics: Types of Biometric Techniques: False Rejection, False Acceptance, Cross over Error Rates.

UNIT-II: Email risk, Different types of attacks, IT laws **15 Hours**

E-mail Risks, Spam, E-mail Protocols, Basics of Internet Protocol (IP), Email security: web authentication, SSL and SET, Network Attack: Buffer Overflow, TCP Session, Hijacking, Sequence Guessing, SQL injection attack, Cross-site scripting attack, Eavesdropping attack, Birthday attack, Malware attacks, Social Engineering attacks.Firewall, types of firewall.

IT Act: Salient Feature of IT Act 2000, Penalties & Offences, Legal Provisions under the Information Technology Act, Recent amendments by the IT (Amendment Act) 2008, section 66A.

UNIT-III: Practicals **30 Hours**

Suggested Hands on Practical Assignments (Experiments need not be restricted to this list)

Basic Practical:

1. Installation of antivirus software with different parameter settings.

2. Password management in Windows operating systems.
3. Setting up web browser security, Email Encryption.
4. Demonstration of SQL injection attack.
5. Demonstration of Cross-site scripting attack.

Advance Practical:

1. Demonstration of Eavesdropping attack.
2. Demonstrate the use of Network tools: ping, ipconfig, ifconfig, tracert, arp, netstat, whois
3. Use of Password cracking tools : John the Ripper, Ophcrack. Verify the strength of passwords using these tools.
4. Perform encryption and decryption of Caesar cipher.
5. Use nmap/zenmap to analyse a remote machine.
6. Use Burp proxy to capture and modify the message.
7. Demonstrate sending of a protected word document.
8. Demonstrate sending of a digitally signed document.
9. Demonstrate sending of a protected worksheet.
10. Demonstrate use of gpg utility for signing and encrypting purposes.

SEC- 131: MOTIVATION

(Contact Hours: 45, Credits-3)

Course Objectives: This course will develop awareness among learners of the importance of Motivation. The programme will create in learners conditions in which they are willing to learn and work with zeal, initiative, interest, and enthusiasm. It will empower the students with diverse knowledge, expertise, skills and helps to develop the essential skills in life.

Learning Outcomes

At the end of the course students are able to:

1. demonstrate different aspects on how people are motivated
2. value outcomes through improved performance, well-being, personal growth and a sense of purpose
3. propose a pathway to change the way of thinking, feeling and behaving and also willing to work with zeal, initiative, interest and enthusiasm

UNIT I Motivation

- Concept; Types: Extrinsic and Intrinsic Motivation
- Principles and Importance of Motivation;
- Approaches to Motivation- Physiological, Behavioural, Cognitive and Social;
- Components of Motivation: (i) Activation, (ii) Persistence and (iii) Intensity

UNIT II Skills for Promoting Motivation

- Fun classroom energizers for motivation
- Group work for team building
- Motivational Talks to Achieve Goals
- Celebrate personal achievements in the classroom

UNIT III Improving Motivation

- 3 Motivation Activity Ideas for Students
- Strategies for Improving Motivation (i) Set Goals (ii) Develop a Timeline (iii) Assess your progress regularly (iv) Develop a support system (v) Create rewards
- Preparation of a Motivational Worksheet
- Music and games for improving motivation

Assignments (Choose any one)

1. Create a 5 minutes Motivational video

2. Develop your own Motivation skills
3. Identify 2 games for Experiential learning: Write down the steps for playing these motivational games

References

Federmeier, K.D (2018)(Ed). Psychology of Learning and Motivation. United States: Elsevier Science.

Fuller, C., Taylor, P., Wilson, K. (2019). A Toolkit of Motivational Skills: How to Help Others Reach for Change. United Kingdom: Wiley.

Graham, S., & Weiner, B. (1996). Theories and principles of motivation: *Handbook of educational psychology*, *4*(1), 63-84.

Hoffman, B. (2015). Motivation for Learning and Performance. Netherlands: Elsevier Science.

Mackay, A. (2010). Motivation, Ability and Confidence Building in People. (n.p.): Taylor & Francis.

Mangal, S. K. (2004). Advanced Educational Psychology. India: PHI Learning. Mangal,

S. K. (2007). Essentials Of Educational Psychology. India: PHI Learning.

Miele & Wentzel.(2016) Handbook of Motivation at School. United Kingdom: Taylor & Francis.

Morreale, S. P., Spitzberg, B. H., & Barge, J. K. (2001). *Human communication: Motivation, knowledge, and skills*. Belmont, CA: Wadsworth/Thomson Learning.

Motivation: Theory and Research. (2012). United States: Taylor & Francis.

Peters, R. S.(2015). *The concept of motivation*. Routledge.

Shah & Gardner(Eds).(2008)Handbook of Motivation Science. United Kingdom: Guilford Publications.

SEC-132: PERSONALITY DEVELOPMENT

(Contact Hours: 45, Credits-3)

Learning Outcomes (LOs):

1. Comprehending the scope of personality and its development.
2. Enabling development of core skills for development of self.
3. Understanding positive personality traits
4. Cultivating skills for successful life

Unit-I Personality Development

- Personality-Concept, nature, traits of Personality, Social etiquettes and manners
- Determinants of personality- physical, intellectual, emotional, linguistic and cultural
- Importance of personality development, Factors influencing Personality Development
- Self-confidence – Meaning and building techniques, Willpower-Increasing the Willpower for self-improvement.

Unit-II Attitude and Motivation

- Attitude – Concept and types
- Developing a positive attitude in life and factors affecting attitudes
- Motivation– Concept, significance and types
- Importance of self-motivation and factors leading to de-motivation

Unit-III Career planning activities

- Time management skills
- Resume building, Art of Facing Interviews
- Significance of personality Test & Aptitude tests
- Mock Interview Sessions

Suggested readings:

1. Andrews, Sudhir (1988). How to Succeed at Interviews. 21st (rep.) New Delhi, Tata McGraw-Hill.
2. Barun K. Mitra, Personality Development and Group Discussions, Oxford University Press Career Digest
3. Chandra, M.S. Satish (1999). Conflict Management. Delhi. Rajat publication.
4. Hurlock Elizabeth B. Personality Development Tata Mcgraw Hill, New Delhi
5. Jaikishan Roy (2015). Improve your Personality, Mark Publishers, Jaipur.
6. Jegadeesan, M., S.R. Padma, M.R. Naveen kumar (2021). Communication Skills and Personality Development. New India Publishing Agency, New Delhi.
7. Mile, D.J (2004). Power of positive thinking. Delhi. Rohan Book Company.
8. Pravesh Kumar (2005). All about Self- Motivation. New Delhi. Goodwill Publishing House.

9. Sabharwal, D. P. (2021). Personality Development Handbook Paperback, Fingerprint Publishing, New Delhi.
10. Shankar, Uday (1981). Personality Development. Delhi Smith, B (2004). Body Language. Delhi: Rohan Book Company.
11. Swami Vivekananda (2011) Personality Development published by Ramakrishna Math and Ramakrishna Mission.
12. Yadav, R. N. Singh (2016). The Dynamics of Successful personality, Mount Hill Publishing Company, New Delhi.

SEC-133: PUBLIC SPEAKING

(Contact Hours: 45, Credits-3)

Course Objectives:

This paper aims to impart communication skills to students for public speaking and interaction with the general public.

Learning Outcomes:

The course will enable the students to overcome the fear of public speaking and enhance their confidence to gain practical experience in effective public speaking.

Unit I: Public Speaking: Meaning and Significance.
Types of Public Speaking: Media, Corporate and Political.

Unit II: Art of Public Speaking: Language, Etiquettes and Communication Skills.
Techniques of Public Speaking: Audience Applause Technique, Practice witha mini-audience, Practice in front of camera, Soft Sale Storytelling Strategy.

Unit III: Tools for Public Speaking: Vocal delivery, Body language, Audio Visual aids.
Effective Speaking: Presentation

Suggested Readings

Davidson, Jeff, *The Complete Guide to Public Speaking*, Breathing Space Institute, 2003

DiSanza, J. R., &Legge, N. J, *Business and professional communication: Plans, processes, and performance* (3rd ed.). Needham Heights, MA: Allyn & Bacon, 2005.

Goleman, Daniel, *Working with Emotional Intelligence*, London: Banton Books, 1998

Hall, Calvin S, et.al., *Theories of Personality*, New Delhi: Wiley, rpt.2011

Hamilton, C, *Essentials of public speaking* (5th ed.). Belmont, CA: Wadsworth Cengage Learning, 2012

Holtz, Shel, *Corporate Conversations*, New Delhi: PHI.2007

King, Dale, *Effective Communication Skills: The Nine-Keys Guidebook for Developing the Art of Persuasion through Public Speaking, Social Intelligence, Verbal Dexterity, Charisma and Eloquence*, Hamatea Publishing Studio, 2020

Kumar, Sanjay and Pushp Lata, *Communication Skills*, New Delhi: OUP, 2011

Koch, A. *Speaking with a purpose.* Needham Heights, MA: Allyn & Bacon, 2007.

Lucas, Stephen E, The *Art of Public Speaking*, McGraw-Hill Book Co. International Edition, 11th Ed., 2014

O'Hair, D., Rubenstein, H., & Stewart, R, *A pocket guide to public speaking* (2nd ed.). Boston, MA: Bedford/St. Martin's, 2007

Sharma, Sangeeta and Binod Mishra, *Communication Skills for Engineers and Scientists*, New Delhi: PHI Learning, 2009, 6th Reprint 2015

Thorpe, Edgar and Showick Thorpe, *Winning at Interviews*, Pearson Education 2004

Turk, Christopher, *Effective Speaking, South Asia Division*: Taylor & Francis, 1985.

Zarefsky, David, *Public Speaking: Strategies for Success*, Allyn & Bacon, Incorporated, 1999

SEC-134: TEAM BUILDING

(Contact Hours: 45, Credits-3)

Course Objectives (COs): The course will familiarize the students with the diverse aspects of team building.

Learning Outcomes (LOs): The students will be able to understand the importance of team building, its purpose, team spirit and team work. They will be able to effectively address diverse issues relating to team building process. The students will learn how team building helps in conflict resolution, management and use of individual talents.

Unit- I: Team Building: Conceptual Issues
Definition and characteristics of a team
Team spirit and collectivism
Motivation
Leadership

Unit- II: Structure and Process of Team Building
Characteristics of successful team building
Effective team performance: issues and challenges
Accountability
Obstacles/problems in team building

Unit- III: Importance of Team Building
Creative and learning competence
Improvement of work culture
Building up of trust
Collective ownership

Suggested readings:

Alley, H. R. 2011. *Becoming the supervisor: Achieving your company's mission and building your team*. UK: Routledge.

Coyle, D. 2019. *The culture code: The secrets of highly successful groups*. London: RH Business Books.

M., V. J. 2001. *Group model building: Facilitating team learning using system dynamics.* Chichester: J. Wiley.

McChrystal, S. 2015. *Team of teams: New rules of engagement for a complex world*. USA: Portfolio Penguin.

McDaniel, A. 2013.*The Young Professional's Guide to managing: Building, guiding, and motivating your team to achieve awesome results*. USA: The Career Press.

Roefaro, M. 2011. *Building the team from the inside out: A multi-dimensional view of leadership*. United States: Waterside Publications.

Tjosvold, D. & Tjosvold, M. M. 2015. *Building the team organization: How to open minds, resolve conflict, and ensure cooperation*. Basingstoke, Hampshire: Palgrave Macmillan.

VALUE ADDED COURSE

VAC-140: ENVIRONMENTAL SCIENCE

(Contact Hours: 45, Credits:3)

Course Objective: To introduce the basic concepts of environment, natural resources, biodiversity and its conservation and concepts and components of environmental pollution and social issues.

Learning Outcomes: Student should be able to gain the knowledge about the environment, its component, natural resources, biodiversity conservation, environmental pollution and social issues pertaining to environmental pollution.**(Contact hours: 15 hrs.)**

Unit I: Environment: Definition, Components of Environment; Natural resources (Renewable and Non-renewable) their conservation and management: Forest resources, Water resources, Mineral resources, Energy resources, Land resources. Soil erosion and desertification.**(Contact hours: 15 hrs.)**

Unit II: Ecosystems: Concept, Structure and Functions. Food Chain and Food web.Energy flow in an ecosystem and biogeochemical cycle.Biodiversity: definition and concepts, biodiversity hot-spots. Conservation of biodiversity: *In-situ* and *ex-situ* conservation.**(Contact hours: 15 hrs.)**

Unit III: Environmental Pollution and Social Issues: Definition, causes, effects and control measures for Air pollution, Water pollution, Soil pollution, Noise pollution; Important issues of environmental pollution: Climate change (Greenhouse effect & Global warming), acid rain, ozone layer depletion; Environmental Legislation: Salient features of Environmental Protection Act, Air (Prevention & Control of Pollution) Act, Water (Prevention & Control of Pollution)Act; Sustainable development; Role of Information Technology in Environment, Environmentalethics and movements.**(Contact hours: 15 hrs.)**

Suggested Readings: (All latest edition)

Botkin, D.B. and Keller, E.A. Environmental Science: Earth as a Living Planet. John Wiley and Sons, New Delhi.
Chapin III, F.S., Matson, P.A. and Vitousek, P.M. Principles of Terrestrial Ecosystem Ecology.Springer, New Delhi.
Purohit, S.S., Shammi, Q.J. and Agarwal, A.K.A Textbook of Environmental Science. Students Edition, Jodhpur.
Sharma, P.D. Ecology and Environment.Thirteenth Edition.Rastogi Publication, Meerut.
Odum, E.P. Fundamentals of Ecology.Nataraj Publisher, DehraDun.
Rana, S.V.S. Essentials of Ecology and Environmental Science.Prentice Hall of India, New Delhi.
De, A.K.Environmental Chemistry. New Age International Pvt. Ltd., New Delhi.
Viswanatha, C.R., Hegadal, R.V. and Hegadal, S.V. Disaster Management. Himalaya Publishing House

SEMESTER-II

SL NO	CODE	NAME OF THE COURSE (MDC) SEM II
1	MDC 160	DISASTER MANAGEMENT
2	MDC 161	ENTREPRENEURSHIP
3	MDC 162	ENVIRONMENTAL ETHICS
4	MDC 163	FUNDAMENTALS OF STATISTICS
5	MDC 164	HEALTH & HYGIENE, ENVIRONMENTAL EDUCATION AND DISASTER MANAGEMENT
6	MDC 165	INTRODUCTION TO EDUCATIONAL PSYCHOLOGY
7	MDC 166	INTRODUCTION TO THEATRE AND PERFORMANCE
8	MDC 167	PHYSICAL EDUCATION AND SPORTS SCIENCE
9	MDC 168	PHYSICAL GEOLOGY &GEODYNAMICS
10	MDC 169	UNDERSTANDING HUMAN RIGHTS

SL NO	CODE	NAME OF THE COURSE (AEC) SEM II
1	AEC 170	COMMUNICATIVE ENGLISH
2	AEC 171	MIL-II: ASOMIYA JOGAJOG
3	AEC 172	MIL-II: BANGLA BHASHARBYABOHARIKPRAYOG
4	AEC 173	MIL-II: COMMUNICATIVE GARO
5	AEC 174	MIL-II: COMMUNICATIVE LANGUAGE
6	AEC 175	MIL-II: KAKRENKATHOH KHASI
7	AEC 176	MIL-II: NEPALI
8	AEC 177	MIL-II: हिन्दी भाषा का तकनीकी अनुप्रयोग

SL NO	CODE	NAME OF THE COURSE (SEC) SEM II
1	SEC 180	COMMUNICATION SKILLS
2	SEC 181	CONFIDENCE BUILDING
3	SEC 182	E- COMMERCE
4	SEC 183	PYTHON PROGRAMMING

SL NO	CODE	NAME OF THE COURSE (VAC) SEM II
2	VAC 190	HEALTH AND WELLNESS
1	VAC 191	LIFE SKILLS EDUCATION
3	VAC 192	UNDERSTANDING INDIA

2ND SEM- MULTI DISCIPLINARY COURSE

MDC-160: DISASTER MANAGEMENT

(Contact Hour-45, Credit-3)

Course Objectives (COs):

1. To acquaint and familiarize students with the fundamentals of disaster and disaster management
2. To develop critical thinking in disaster response, preparedness and mitigation
3. To acquaint students on policy matters and role of different stakeholders

Learning Outcomes (LOs):

Students are able-

1. To explain the fundamentals of disaster and disaster management
2. To develop critical thinking in terms of response, preparedness and mitigation strategies in all phases of disaster
3. To examine policy related matters and the role of different agencies and stakeholders in disaster management

Unit I: Fundamentals of Disaster and Disaster Management

- Concept – disaster, hazard, vulnerability, capacity, risk, disaster management
- Characteristics of disaster
- Natural and man-made disasters
- India: Vulnerability profile

Unit II: Disaster Management Framework and Policies in India

- National disaster management act 2005
- National policy on disaster management 2009
- National disaster management plan 2016
- Disaster management cycle – mitigation, preparedness, response, recovery

Unit III: Stakeholders response to disasters

- UNDP
- Role of State government
- Community and NGOs
- Role of media

Assignment *(Choose any one)*

1. Prepare a Disaster Management Plan at the locality or village level
2. Prepare a Disaster Management Plan at the institutional level
3. Highlight the Do's and Don'ts – during and after an earthquake

Suggested Readings:

1. Government of India, Ministry of Home affairs, National Disaster Management Division, *Disaster Risk reduction: The Indian Model,* 2005, New Delhi.

2. Government of India, Ministry of Home affairs, NIDM, *Reading Material, Training Programme on Disaster management*, 2005 New Delhi,
3. Government of India, Ministry of Home Affairs, NDM Division, *Disaster Management in India: A Status Report*, August 2004, New Delhi.
4. Dhawan, Nidhi Gauba & Khan, Ambrina Sardar. *Disaster Management and Preparedness.* CBS Publication,2012.
5. Anon. *Dealing with disasters-Awareness, Preparedness.* Ahmedabad: Response (an educator's Manual) Centre for environmental Education, 2004.
6. Carter, Nick. *Disaster Management*: *A Disaster Manager's Handbook.* Asian Development Bank, 1992.
7. Kapur, A. *Disaster in India*: *Studies of Grim Reality*.Jaipur: Rawat Publication, 2005.
8. Narayan, B. *Disaster Management*.New Delhi: APH Publication, 2000.
9. Paul, Yashwant P.Raj. *Volunteer's Handbook for Disaster Preparedness*. UNDP, UN Volunteers, 2002.
10. Prakash, Indu.*Disaster Management: Societal Vulnerability to natural calamities and Man-made.*Ghaziabad: Rashtra PrahariPrakashan, 1994.

MDC-161: ENTREPRENEURSHIP

(Contact Hour-45, Credit-3)

Course Objective: To provide exposure to the students to the concept and process of entrepreneurship, and industrial growth so as to prepare them to set-up their own small enterprises.

Learning outcome: Students will

- **a.** Understand the concepts and process of Entrepreneurship
- **b.** Know the importance of entrepreneurship in different context
- **c.** Be able to develop and design entrepreneurship development programs

Unit-I: Introduction

Entrepreneurship- Concepts and Definitions
Theories of Entrepreneurship
Entrepreneurial Behavior
Entrepreneurial Culture vs. Administrative Culture
Entrepreneurship vs. Intrapreneurship
Entrepreneurship as an Alternative Career Option
Social Entrepreneurship
Corporate Entrepreneurship Women Entrepreneurship International Entrepreneurship

Unit-II: The Entrepreneur and Entrepreneurship

Types and Classification of entrepreneurs
Functions of Entrepreneurs
Entrepreneurial traits
Entrepreneur distinguished from manager and leader Entrepreneurial functional different stages of enterprise life cycle Cases of successful entrepreneurs
Steps involved in starting a business venture

Unit-III: Entrepreneurship Development

Needs for EDPs
Objectives of EDPs
Designing Comprehensive EDPs
Evaluating an EDP
Startups.

Institutional Supports – Financial (SFCs, NSIC, SIDBI, CBs) and Non-Financial (EDII, IIE, DIC, KVIC)

Suggested Readings (Latest Edition)

- Coulter: Entrepreneurship in Action, Prentice Hall of India, N. Delhi
- Roy, Rajeev: Entrepreneurship, Oxford University Press, New Delhi
- Kuratko, Donald F. & Richard M Hodgetts: Entrepreneurship in the New Millennium, South Western Cengage learning
- Desai, Vasant: Entrepreneurial Development, Vol. I, Himalaya Publications, N. Delhi.
- Drucker, Peter: Innovation and Entrepreneurship, Heineman.
- Hisrich, RD & Peter, MP: Entrepreneurship, Tata Mc Graw Hill.

MDC-162: ENVIRONMENTAL ETHICS

(Contact Hour-45, Credit-3)

Course Objectives (COs): Teaching ethical aspects of Human-Environment relations, Making students aware of ethical ways of dealing with environmental problems.

Learning Outcomes (LOs): Sensibility to larger issues of environment and climate crisis, how to think about restoration, replenishment and recycling and other such ethical means of preserving the environment.

Unit-I: Possibility of Environmental Ethics

(a) Concept of Environment.
(b) Moral standing of Non-human World
(c) Ecocentrism, Anthropocentrism, Zoocentrism

Unit-II:Deep Ecology

(a) Deep Ecology of Arne Naess.
(b) Ecofeminism
(c) Bioethics

Unit-Iii:Climate Change

(a) Global Warming and Disaster Resilience.
(b) Ethics of Sustainability
(c) Development Ethics

Suggested Readings

1. White, Lynn Jr., "The Historical Roots of Our Ecologic Crisis",*Science*, Vol. 155, 1967.
2. Carson, Rachel, *The Silent spring*, A Mariner Book Houghton Mifflin Company, Boston and New York, 1962.
3. Naess, Arne, *Selected works of Arne Naess* (SWAN), Series Editor, Harold Glasser. Alan Drengson, Associate Editor, 10 Volumes. Springer, Netherlands, 2005.
4. Naess, Arne, "The Shallow and the Deep, Long-Range Ecology Movement: A Summary'',*Inquiry: An Interdisciplinary Journal of Philosophy and the Social Sciences*,vol.16:1-4, pp.95-100, 1973.
5. Naess, Arne, "The Shallow and the Deep Ecology Movement",*The Trumpeter*, (tr.), ErlingSchøller, Vol 24, Number 1, 2008.
6. Naess, Arne, "A Defence of the deep ecology movement", *Environmental Ethics*, Vol. 6, 1984.

7. Norton, Bryan G., “Environmental Ethics and Weak Anthropocentrism” ,*Environmental Ethics*, Vol. 6, Issue 2, 1984.
8. Marangos, John, *Alternative Perspectives of a Good Society*, Palgrave Macmillan, New York,2012.
9. Sylvan, Richard, “A Critique of Deep Ecology”,*Radical Philosophy*, vol.40, 1985.
10. Watson, Richard A., “A critique of anti-anthropocentric biocentrism”,*Environmental Ethics*, 5 (3), 1983.
11. Henk ten Have, Maria doCéuPatrão Neves, *Dictionary of Global Bioethics*, Sprigner Cham, Switzerland AG, 2021.
12. Shiva, Vandana, *Who Really Feeds the World?*,Zed Books,London, 2016.
13. Shiva, Vandana, *Earth Democracy*, Bloomsbury Academic, London, 2016.

MDC-163: FUNDAMENTALS OF STATISTICS

(Contact Hour-45, Credit-3)

Course Objectives: To impart the students a knowledge on the development, meaning. Importance and scope of Statistics, summary measures of data setsand concepts of probability.

Learning Outcomes: Upon successful completion of this course, the students will be able to understand the types of data and its scales of measurements, various data representations, types of averages and variations, what probability is as well as associated concepts.

UNIT-I: Introduction to Statistics (15 hours)

Historical development of Statistics. Definition and meaning of Statistics. Collection of Data: meaning and need of data, primary and secondary data, scientific methods of collecting primary data,sources of secondary data. Types of data: Qualitative, Quantitative, Cross-Sectional, Time series, Discrete and Continuous,Univariate, bivariate and multivariate data. Scales of Measurement. Presentation of data (Univariate): Classification, tabulation and diagrammatic representation of data.

UNIT-II: Descriptive measures(15 hours)

Descriptive Measures of data- concepts and properties of different measures of central tendency and dispersion (univariate data) and their application in different scales of measurement. Moments; skewness and kurtosis.

UNIT-III: Elementary Probability(15 hours)

Concept of probability: Random experiment, outcome, trial, event, sample points, sample space (Discrete and Continuous), favourable events, equally likely events, mutually exclusive, independent and exhaustive events. Concept of Permutation and Combination. Definition of probability: Classical and statistical and their limitations. Additive and multiplicative theory of probability. Conditional probability. Bayes' theorem and its applications.

Suggested readings:

1. Goon, A.M., Gupta, M.K. and Dasgupta, B. (2002): Fundamentals of Statistics, Vol. I, 8th Edn. The World Press, Kolkata.
2. Gupta, S. C., & Kapoor, V. K. (2002). Fundamental of Mathematical Statistics. Sultan Chand & sons. New Delhi.
3. Mann, Prem S. (2007). Introductory Statistics, 7th Edition. John Wiley & Sons.
4. Medhi, J. (2006). Statistical Methods: An Introductory Text. New Age International (Pvt) Limited, New Delhi.
5. Agarwal, B.L. (2020). Basic Statistics, 6th Edition. New Age International (P) Limited. New Delhi
6. Bansal, Archana. (2017). Survey Sampling. Narosa Publishing House Pvt Ltd. New Delhi
7. Gupta, S.C.&Kapoor, V. K. (2007), 'Fundamentals of Applied Statistics', S. Chand and Sons. New Delhi.

MDC -164: HEALTH & HYGIENE, ENVIRONMENTAL EDUCATION AND DISASTER MANAGEMENT

(Contact Hour-45, Credit-3)

Course Objectives (COs): The objective of this course is to educate on the importance of maintaining good health and hygiene practices, understanding the principles of environmental education, and preparing for and responding to disasters.

Learning Outcomes (LOs): The students will develop an understanding of health and hygiene practices to maintain personal and community well-being. They will be able to apply principles of environmental education to promote sustainability and reduce environmental impact and develop skills in disaster management to prepare and respond effectively to emergencies and natural disasters.

UNIT I	Structure and Function of Human Body, Hygiene and Sanitation, Preventable Diseases, First Aid, Yoga: Introduction and Exercises, Physical and Mental Health, Fractures: Types and Treatment.
UNIT II	Civil Defense: Meaning, Organization and its Duties, Civil Defense Services, Fire Fighting: Meaning, Mode of Fire, Fire Fighting Parties, Fire Fighting Equipment. Introduction and Classification of Disaster: Natural Disaster & Man-Made Disaster, Disaster Management with special reference to Flood, Cyclone and Earthquake, Assistance in Removal of Debris, Collection and Distribution of Aid Material, Message Services.
UNIT III	Environment: Definition, Global Warming, Acid Rain, Depletion of Ozone Layer, Conservation of Environment. Ecology: Introduction, Component of Ecological System, Forest Ecology, Wildlife, Pollution Control.
Practical	a. First aid and CPR b. Yogic exercises c. Team composition & equip for specific disaster. d. Environmental awareness & conservation e. Practical on Environmental Education f. Fire Fighting Equipment

Suggested Readings:

Business Communication, VK Jain, Omprakash Biyani, S. Chand Publishing (2008), 283pp
Cadet's Handbook- Common Subject, All Wings, by DG NCC, New Delhi
Cadet's Handbook -Specialized Subject, Army, by DG NCC, New Delhi
NCC Common Subjects, SD/SW
The Cadet, Journal of the NCC.
The book of Leadership, Anthoni Gell (2014), Published by Piatkus, 368pp
The Written Word, Vandana R. Singh. (2012), Published by Oxford University Press.

MDC- 165: INTRODUCTION TO EDUCATIONAL PSYCHOLOGY

(Contact Hour-45, Credit-3)

Course Objectives:

This course will sensitize learners towards the applications of psychological concepts and principles in Education in order to improve educational practice. The learners will acquire detail knowledge of the relation between psychology and education. It will also help learners to understand human behaviour in educational situations during the learning process and the psychological requirements for completing the educational process.

Learning Outcomes

At the end of the course students are able to:

1. explain the fundamentals of Educational Psychology
2. assess individual differences in learning, intelligence, personality and creativity
3. make use of skills related to Educational Psychology

UNIT I Concept of Educational Psychology

- Meaning, Nature and Scope of Educational Psychology
- Aspects of Educational Psychology
- Problems of Educational Psychology
- Importance of Educational Psychology to the Teacher

UNIT II Basic Introduction to

- Learning : Concept, Nature, Factors
- Intelligence: Concept & Determinants
- Personality: Concept, Determinants, Types
- Creativity: Concept, Component ,Process

UNIT III The Teacher

- Psychological Characteristics of a Teacher
- Role of a Teacher in Teaching Process
- Teaching Competencies
- Psychological Wellbeing of a Teacher

Assignments (Choose any one)

1. Measure the IQ of an individual and write a report on it.
2. Develop strategies for improving Creativity
3. Assess the personality of a subject by using any personality test

References

Bhatia, H. R. (1973). Elements of Educational Psychology. Orient Blackswan, 1973.

C., A. J. (2014). Essential of Educational Psychology (Third Edition 2014 Ed.). New Delhi: Vilkas Publishing House.

Chauhan, S. S. (2007). Advanced Educational Psychology. New Delhi: Vikas Publishing House Pvt Ltd.

Jeanne Ellis Ormrod, E. M. (2017). Educational Psychology: Developing Learners (9 Ed.). Pearson.

Jones, J. E. (2018). Essentials of Educational Psychology: Big Ideas To Guide Effective Teaching. Pearson.

Lyn Corno, E. M. (Ed.). (2016). Handbook of Educational Psychology (3rd Edition Ed.).

Mangal, S. K. (2002). Advanced Educational Psychology. New Delhi: Phi Learning Pvt. Ltd.

Mangal, S. K. (2007). Essentials of Educational Psychology. New Delhi: Phi Learning Pvt.Ltd.

Pathak, R. (2011). Research In Education And Psychology: Always Learning. Pearson Education India.

Rao, S. (2002). Educational Psychology. New Delhi: New Age International.

MDC-166: INTRODUCTION TO THEATRE AND PERFORMANCE

(Contact Hour-45, Credit-3)

Objectives:

1. TofamiliarizestudentswiththebasicconceptsofTheatreandPerformance.
2. Toequipstudentswithpracticalknowledgeandunderstandingoftheatreandperformance.
3. Toencouragecreativeexpression,thinkingandcollaborativeexploration.

LearningOutcomes:

Students will gain the basics of theatre and performance, a theoretical introduction to theatreandperformanceandtheabilitytotranslatedramatictheoryintopractice.Thecoursewillalsofacilitateanunderstandingoftechnicalaspectssuchasstagecraftandtheatredesign,scriptwritingandactingetc.

UNIT I

Introductiontotheatreand performance

a. BriefIntroductiontoPerformanceTraditions
b. BriefIntroductiontoClassicalGreekPlaysandplaywrights:Sophocles,Aeschylus,Aristophanes.

UNIT II

Briefintroductiontosomeofthemajor contemporarytheatremovements:
Realism in Theatre, Theatre of the Absurd, Modern Indian Drama (Theatre of RootsTheatreoftheEarth)

Detailed Studyofanyone ofthefollowingplays:

a. *A Doll'sHouse*byHenrikIbsen
b. *TheZoo Story* byEdward Albee
c. *CharandasChor*byHabibTanvir
d. *Pebet*byHeisnamKanhailal

UNIT III

PracticalsofTheatreandPerformance:

BasicsofScriptwriting
BasicsofActing
FundamentalsofTheatreDesign

Aplay (any play) tobeadapted/ designed and performedbythestudents.

SuggestedReadings

Albee, Edward. *The Zoo Story* Ed. by Samuel French, Samuel French Ltd, 1998.

Arnott,P.*AnIntroduction totheGreek Theatre.*PalgraveMacMillan, 1991.

Bharucha, Rustom. *The Theatre of KanhailalPebet and Memoirs of Africa.* Kolkata:SeagullBooks,1992.

Bogart,AnneandTinaLandau.*TheViewpointsBookA PracticalGuidetoViewpointsandComposition*.New York:TheatreCommunicationsGroup2005.

Bogart, Anne. *And then you Act: Making Art in an Unpredictable World*. Routledge, 2007.

Carlson,Marwin.*Theatre:AVeryShort Introduction*.OxfordUniversityPress,2014.

Deshpande, G.S. *Modern Indian Drama by: An Anthology*, Sahitya Akademi, 2015.

Egan,Michael.*Henrik Ibsen:The Critical Heritage*.Routledge,2009.

Herpham, Geoffrey Galt and M. H. Abrams. *Glossary of Literary Terms* by, WordsworthPublishingCoInc,2014.

Ibsen,Henrik.*ADoll'sHouse*.SMSBooks,2008.

Kanhailal, Heisnam. *Theatre of the Earth: Essays and Interviews* Seagull Books, 2016.

Moore,FrankLadlie andMaryVarchaver.*Dictionary ofthe PerformingArts*.

ContemporaryBooksInc,2001.

Stanislavski, Constantine.*An Actor Prepares*, Bloomsbury Publishing India Pvt Ltd, 2001.Tanvir,Habib.*CharandasChorandOtherPlays*.SeagullBooks,2018.

Wiles, David. *Greek Theatre Performance: An Introduction*. Cambridge UniversityPress,2000.

MDC-167: PHYSICAL EDUCATION AND SPORTS SCIENCE

(Contact Hour-45, Credit-3)

Course objective:

The course will provide general concept of physical education and its significance for overall growth and development of body and mind. It will also provide valuable information on the impact of physical activities on our vital physiological systems and first-aid measures. It will also encompass the significance of recreational sports and provide information about Sports Bodies of India.

Learning outcome:

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

1. The significance of physical education in overall well-being and to maintain physical fitness.
2. Basic concept of muscle contraction and the need to have warm-up before the physical exercises.
3. The sources of energy in the body during physical activities.
4. Sport injuries and administration of first aids.
5. The effects of exercises on various physiological systems of our body.
6. The cardiac cycle and how it is regulated during exercises.
7. The significance of recreational sports in maintaining good health.
8. The role of various traditional and modern centers of physical trainings.
9. The role of different sports bodies and awards at various levels

Unit 1

Meaning, definition, scope and functions of physical education; Different interpretations of physical education; Concept of movement education; Physicaleducation as an integral part of education; Life time physical education for fitness; Physical fitness and its components; Training, conditioning, and warm-up; Types of muscle contraction; Lactic acid and its influence on sports performance; Fuels for exercise and energy production; Metabolic response to short term and prolonged exercise; Common sports injuries in different parts of body; First aids for sports injuries; Common causes of sports injuries and its prevention; Rest, ice, compression, and elevation (RICE) & bandage.

Unit 2

Definition and importance of physiology and exercise physiology; Effect of exercise on various system of the body-circulatory system, respiratory system & muscular system; Cardiac cycle and its function in human body; First aid and Management

of fracture, nose bleeding, electric shocks, other shocks, fever, fainting, drowning/near-drowning.

Unit 3

Recreational Sports**:** meaning, definition, scope & functions of recreations; Recreation in rural, urban &industrial area; Age-wise planning & leadership in recreation; Movement of Akhadas & Vyayam Shalas; Sports Bodies of India-Central Advisory Board of Physical Education, All India Council of Sports, Sports Authority of India (SAI) & Nehru Yuva Kendra; Sport Awards-State, National & International level.

Suggested readings:

1. Deshpande SH (1992). Physical Education in ancient India. Bharatiya Vidya Prakashan, India.
2. Fox EL (1994). Sports Physiology. W.B. Sounders Co. USA.
3. Guyton AC and Hall JE (1996). Textbook of Medical Physiology, 9th Edition. W.B. Saunders Co., USA.
4. Hunter M (1964). Dictionary for Physical Educators. In H. M. Borrow & R. McGee, (Eds.), A Practical approach to measurement in Physical Education (pp. 573-74). Lea &Febiger, USA.
5. Hyensmith CW (1966). History of Physical Education. Joanna Cotler Books, USA.
6. Marieb EN (1995). Human Anatomy and Physiology. Benjamin-Cummings Publishing Company, USA.
7. Pearce E (1993). Anatomy and Physiology for nurses. Jaypee Brothers, India.
8. Rice EA, Hutchinson JL and Lee M (1969). A Brief History of Physical Education. Ronald Press, USA.
9. Seeley RR, Stephens TD and Tate P (2005). Anatomy and Physiology, 7th Edition. McGraw-Hill Higher Education, Australia.
10. Tortora GJ and Derrickson BH (2017). Introduction to Human Body, 11th Edition. Wiley, USA.
11. Van Dalen DB and Bennett BL (1971). A World History of Physical Education: Cultural, Philosophical, Comparative, Volume 10, Prentice Hall, USA.
12. Wakharkar DG (1967). Manual of Physical Education of India. Pearl Publication,India.
13. Willam JE (2000). The Principles of Physical Education, 8th Revised Edition. W.B. Saunders Co. Ltd, USA.
14. Wuest DA and Walton-Fisette J (2020). Foundations of Physical Education, Exercise Science, and Sport, 20th Edition. McGraw-Hill, New York.

MDC-168: PHYSICAL GEOLOGY & GEODYNAMICS

(Contact Hour-45, Credit-3)

Course Objectives (COs): To familiarise students about the internal structure of the earth,endogenetic processes, deformation in the rocks.To understand the various principles of Stratigraphy and its correlation.

Learning Outcomes (LOs): The students will be able to understand the process of earthquakes, interpret the structural features of deformed rocks,and stratigraphic units.

UNIT I (15 hours)	Primary differentiation; Internal structure of the Earth. Earthquakes: Seismic waves and causes. Plate Tectonics: Types of Plate, Plate boundaries and Plate movement.
UNITII (15 hours)	Rock deformation. Stress: Concept and types. Strain: Concept and types. Preliminary concepts of Linear and Planar Structures: Bedding plane, Fold,Joints, & Faults.
UNIT III (15 hours)	Principles of Stratigraphy. Stratigraphic correlation. Tertiary rocks of Upper Assam and Lithostratigraphy of Meghalaya.

Suggested Readings:

Billings, M. P., 1987. Structural Geology, 4th edition, Prentice-Hall.
Datta A. K., An introduction to Physical Geology –Dastane Ram Chandra and Co. Pune.Holmes A., 1993. Principle of Physical Geology 4th Ed., Chapman and Hall, London.
Park, R. G., 2004. Foundations of Structural Geology. Chapman & Hall.
Verma, V. K. 2002. Lectures on Geomorphology, Pilgrims Book House.

MDC-169: UNDERSTANDING HUMAN RIGHTS

(Contact Hour-45, Credit-3)

Course Objectives:

The objective of the course is to understand the basic concepts of human rights, its contemporary significance and measures for protecting and promoting human rights. It also aimsto sensitize the students regarding principles and aspects of human rights.

Learning Outcomes:

This course will enable students to understand the historical growth of human rights anddemonstrate awareness in international and national contexts.

Unit I: Human Rights: Meaning and evolution; Universal Declaration of Human Rights1948.

Unit II: Group Rights: Indigenous People's Rights, Workers' Rights, Women's Rights.

Unit 11I: Human Rights and Environment, Globalization and Challenges to Human Rights**,** United Nations Human Rights Commission, National Human Rights Commission of India.

Suggested Readings:

Alston, P., *The United Nations and Human Rights: A Critical Appraisal*, Oxford, the Clarendon Press, 1995.

Alston, P. & Ryan Goodman (ed.), *International Human Rights*, OUP, India,2012. Brownlie, I. (ed.), *Basic Documents on Human Rights*, Oxford, The Clarendon Press, 1992.

Chandler, David, *From Kosovo to Kabul, Human Rights and International Intervention,* London Pluto, 2002.

Donnelley, J., *The Concept of Human Rights*, London, Croom Helm, 1985.

Donnelly, J. *Universal Human Rights in Theory and Practice* (3rd Edn.), Rawat Publications, Jaipur, 2014.

Eide, A. and Bernt, H., *Human Rights in Perspective: A Global Assessment*, London, Blackwell, 1992.

Evans, T., *The Politics of Human Rights: A Global Perspective*, London, Pluto, 2004.

Freeman, Michael, *Human Rights: An Interdisciplinary Approach*, Blackwell Publishing Company, UK, 2002.

Goodhart, Michael (ed.), *Human Rights: Politics and Practice*, OUP, Oxford, 2013

Gupta, U.N., *The Human Rights*, Atlantic, 2007.

Nirmal Chiranjivi J. (ed.), *Human Rights in India: Historical, Social and Political Perspectives*, OUP, New Delhi, 2002.

Mishra, Pramod, *Human Rights: Global Issues*, Delhi, Kalauz Publications, 2002. Saksena, I.P. (ed.), *Human Rights, Fifty Years of India's Independence*, Delhi, Gyan, 1999.

Rosad, A and J. Helgrsen (eds.), *Human Rights in a Changing Easet-West Perspective*, London, Pinter Publishers, 1990.

Subramaniam, S., *Human Rights: International Challenges*, Delhi, Manas, 1997.

2ND SEM- ABILITY ENHANCEMENT COURSE (AEC)

AEC-170: COMMUNICATIVE ENGLISH

(Contact Hours-45, Credits-3)

Course Objectives:

*To know about the fundamentals of Communicative English and communication skills in general.

*The use of body language as non-verbal cues in communication (gestures)

*Developing active listening and speaking skills

*To teach students to identify the nuances of phonetics and intonation

*To enhance pronunciation skills for better communication

*To build English vocabulary and language proficiency

*To encourage teamwork in making basic presentations

*To orient students in e-learning in Communicative English

Course Outcomes:

*Learn the basics of good language and speaking proficiency.

*Write accurately on what is expected.

*Personality development**.**

Marks have been distributed as per the skill components in the respective units:
***Unit-I 10 marks**, **Unit II 30 marks**: Listening Skill 10 marks (5X2); Spoken Skill 20 marks (4X5).*

***Unit III35marks**: Reading Skill 10 marks; Writing Skill 25 (Introduction to Writing 10; Written Composition 5X3=15; Business writing 5 marks, Formal letters 5 marks)*

UNIT I: COMMUNICATION

1.1 Introduction, Meaning, Definition, Objectives and its Importance: Print and Digital

1.2 Types of Communication: Verbal, Non-Verbal, Spoken and Written

1.3 Barriers to Communication: Physical, Physiological, Psychological, Languageand Cultural Barriers

UNIT II : LANGUAGE SKILLS: LISTENING AND SPEAKING

LISTENING SKILLS

2.1 Effective Listening: Introduction

2.1.1 Intensive & Extensive Types of Listening

2.1.2 Hearing vs Listening

2.1.3 Process of Listening: Receiving, Understanding, Evaluating, and Responding

2.1.4 Listening Strategies: eye-contact, paraphrasing, supportive body language, unspoken messages and attentive listening.

SPEAKING SKILLS

2.2 Speech sounds and Phonetic Symbols: Consonants and Vowels

2.3 Dialogues and Monologues

2.4 Conversation Skills

2.4.1 Types of Conversations: Formal & Informal

2.4.2 Factors Influencing Conversations: Setting, Topic, Attitude & Language

2.5 Basic Presentation Skills

2.5.1 Coordinating, Organising and Making a Presentation

2.6 Vocabulary Building and Situation-Specifics

UNIT III: LANGUAGE SKILLS: READING AND WRITING SKILLS

READING SKILLS:

3.1 Introduction

3.2 Types of Reading: Loud Reading and

Silent Reading

3.3 Types of Silent Reading: Intensive and Extensive

3.4 Reading Techniques: Skimming & Scanning

3.5 Reading Comprehension: Unseen Passages

WRITING SKILLS

3.6 Introduction to Writing: Print and Digital

3.6.1 Written Composition

3.6.2 Passage Writing**:** Expansion of a Sentence; Short Passage and a Story-line, Pictorial Analysis

3.6.3 Precis Writing

3.6.4 Content Writing for Social Media: Reviews, Emails, Infographics, Press Releases, Marketing and Creating Memes

3.7 Communication Practice:

3.7.1 Business Writing

Memoranda, Announcements, Circulars, Notices, Agenda, Minutes, Reports

3.7.2 Formal Letters

Writing Applications, Letters to the Editor, Letters lodging formal Complaint

3.7.3 Informal Ways of Communication: WhatsApp, SMS, Messenger

Suggested Reading

Aarts, Bas. *Oxford Modern English Grammar*. Oxford University Press. 2011.

Bamon,T.K.*Spoken English and the Non-Native Speaker.* Bookland. Guwahati.

Brown, Kristine and Susan Hood. *Writing Matters.* CUP, 1989.

Carnegie, Dale. *The Quick and Easy Way to Effective Speaking*. Rupa. 1st ed. 2016.

Collins, Sandra D. *Listening and Responding.* Ed. James S. O'Riurke, IV, South-Western,CENGAGE Learning. Dwivedi, R. K. and A. Kumar. *Macmillan Foundation English.*

Dwivedi, R. K. and A. Kumar. *Macmillan Foundation English*. Macmillan India Limited. 2011.

Ehrenborg. Jons & Jones Mattock. Powerful Presentation. Kogan Page. Delhi

Ghosh, R. P. *English: (Spoken and Written)*. Modern Book Agency Private Limited. 2008.

Hedge, Tricia. *Writing.* Orford University Press. 1991.

Kaul, Asha. Business Communication Prentice- Hall of India. New Delhi 1998.

Lewis, Norman. *How to Read Better and Faster*. Goyal Publishers and Distributors Private Limited. 4th Ed. 1980.

Murphy, Raymond. *English Grammar in Use.* Cambridge University Press. 2012.

Murphy, Raymond. *Intermediate English Grammar (Reference and Practice for South Asain Students)* Cambridge University Press. 2nd ed. 1999.

Narayanaswami, V.R. *Strengthen Your Writing.* Hyderabad: Orient Longman Pvt. Ltd 2002.

Nesfield, J.C. *English Grammar, Composition and Usage.* Chennai: Macmillan India Ltd 2002.

O'Brien, Terry. *Effective Speaking Skills.* Rupa. 2011.

O' Brien,Terry. *Modern Writing Skills.* Rupa. 2011.

Seeley, John. The Oxford Guide to Writing and Speaking. Oxford:OUP 2002.

Swan Michael and Catherine Walter. *Oxford English Grammar Course(Basic)*.

Oxford University Press. 2019.

Swan Michael and Catherine Walter. *Oxford English Grammar Course(Intermediate)*. Oxford University Press. 2019.

Swan, Michael. *Practical English Usage.* Oxford University Press. 4th ed. 2016.

Vanikar, Ranu. *Corridors to Communication.* Hyderabad: Orient Longman Pvt. Ltd. 2003.

Weiss, Donald H. *Improve Your Reading Power.*Goyalsaab. 2011

Wren and Martin. *High School English Grammar and Composition*. Revised edition by Dr. N D. V. Prasada Rao. S. Chand Publishing. 2017.

Woodhead, Chris, Ann Miller and Pat O' Shea. *Writing and Responding: A Course for English Language Examinations.* Oxford University Press. 1987.

Yates, Jean. *English Conversation* (*Practice Makes Perfect).* McGraw-Hill Education. 3rd Ed. 2020.

AEC-175: MIL II- KA KREN KA THOH KHASI

(Contact Hours: 45, Credits – 3)

Ki jingthmu jong ka phang pule:

Ïa kane ka phang pule (course) la saiñdur ban hikai bad pynlah ïa ki nongpule ba kin sngewthuh ïa ka ktien Khasi bad ïa ki buit ban nang bad ban pyndonkam ïa ka ktien. La saiñdur ruh ïa kane ka phang pule ba kin nang ïa ka kramar bad ban nang ban kren ïa ka ktien. Kane ka phang pule kan pynlah ruh ïakinongpuleba kin pyndonkamïakaktienlyngbaki jingleh jingkambapher bad ban kyntiewïaka sap thoh jong ki.

Ki jingmyntoi na kane ka phang pule:

- Kan pynlah ïa ki nongpule ha ka ki buit ban nang bad ban pyndonkam ïa ka ktien.
- Ki nongpule ki ïoh ïa ka jinglah ha ka liang ka tbit kren.
- Ka jinglah ban thoh ha ka rukom kaba shai bad kaba dei.

Unit I:

1. Ka jingdonkam ban pule ïa ka ktien Khasi
2. Ki buit ban nang bad ban pyndonkam ïa ka ktien
3. Ka jingnang ïa ka kramar bad ka jingnang ban kren
4. Ka jingsei ïa ki kyntien: *synonyms*, *antonyms*, *hyponymy*, *homonyms*, *homophone*, *polysemy*

Unit II:

Ka jingpyndonkam ïa ka ktien ha ki khen bapher:
Ka Jingpynbna, KaJingkrenpdiang, Ka jingkrenaikhublei, Ka jingpynithuh ïa u nongkren, Ka jingkren paidbah halor kano kano ka phang (kum ka jingpynneh mariang, ka jingktah jong ki jingdih bapynbuaid bad kiwei kiwei ki phang), ban thoh ïa ki khubor, ban pule ïa ki khubor.

Unit III:

1. Ban thoh shithi sha ki seng bad ki bor trei kam.
2. Ban thoh shithi thep kam.
3. Ban thoh jingtip shaphang ïa lade.
4. Ban thoh ïa ki jingïakut jong ki jingïalang.
5. Ban thoh kaiphot halor kano kano ka kam ba la pyndep.

Ki jingthoh kiba ïadei bad ka phang pule:

Jack. C. Richards. *Communicative Language today*, Cambridge: CUP, 2006.

Kharmalki, A.*Ki Nongrim ka Pule-Ktien bad KaHikai-Ktien*: Shillong, Lianmeroschse, 2006.

---. "KaTbitKren (Communicative Competence) bad kaTbitAiñKtien (Linguistic Competence) in *KaDakSahKynmaw.* Society for Khasi Studies, Shillong, 2016.

---. "KaKtienla jong: KaJingïadeijongka bad ka Pule puthi bad kanangkastad" in *KaThwetJingstad* (Quest for knowledge) Vol III No.2. August,2015.

---. "KaKtien bad kaJinglongKyrpang" in *KaThiarkiNongthoh*Thup – XIII KAS, 2018.

Malmkjaer, Kirsten and John Williams. *Context in Language Learning and Language Understanding*: Cambridge University Press, 1998.

Munvy, J. *Teaching Language as communication*: Oxford University Press, 1978.

Nonglait, D.R.L. *Ka Poetics u Aristotle bad kiwei pat kiJingthohBisharBniah*: Shillong, 2023.

War, B. "Semantics" in *KaThwetJingstad (*Quest for knowledge), Vol. IV No.3.December, 2020.

HIN-177: MIL II- िहŁी भाषा का तकनीकी अनुΰयोग

(Contact Hours: 45, Credits – 3)

उद्दे4: इसपाठ्यक्रमकाउद्दे4विhाथयोकोिहŁीभाषाके तकनीकीΰयोगमőदक्षबनानाहैइसके लिएकΠ्यूटरके विविधपाहोजसे एम. एस. वड, िहŁीफाँU, गगलिहŁीफाँU आिदऔरसंचारसाधनोंके ΰयोगकातकनीकीकौशल ΰदानकरनाह।

उपलि: इसपाठ्यक्रमके अध्ययनसेिविhाथीिहŁीभाषाके ΰयोगके लिएआव4ककΠ्यूटरएवंसंचारसाधनोंके ΰयोगमőतकनीकीदक्षताΰाΠ करकΠ्यूटरकासाथकउपयोगकरसकőगे।

इकाई1 एम. एस. वड: परिचयएवंΰयोग।

इकाई2 इUरनेट: परिचय, विकासएवं ΰयोग, िहŁी फाँg, गगल िहŁी फाँg, मौखिक भाषा लिdाकन, हΠलेखलिdाकन।

इकाई3 ई-सामग्री: परिचयएवंΰयोग; ई- पΠक; ई-पिTका; ई-पΠकालय।

अिभ·ाािवत प्ु·क:

1. **1.** िहŁीकΠ्यूटिंग- िTभवननाथशु4, विकासΰकाशन, कानपर, 2017ई.
2. **2.** कΠ्यूटर– डॉ. सी. एल. गग, राजपालएंडसंस, िदW, 2021ई.
3. **3.** कΠ्यूटरyान– एक्सिडपिuकेशन, नईिदW, 2022ई.
4. **4.** बेसिककΠ्यूटरyान- एqमअटक, नईिदW, 2023ई.
5. वΠमान कΠ्यूटर yान एवं सूचना ΰौhोिगकी- डॉ. राजीव रंजन सिंह, उपकार ΰकाशन, नई िदW, 2021ई.

2ND SEM- SKILL ENHANCEMENT COURSE (SEC)

SEC-180: COMMUNICATION SKILLS

(Contact Hrs-45, Credits-3*)*

Learning Outcomes (LOs):

1. Comprehending the fundamentals of communication.
2. Assessing the importance of communication.
3. Equipping themselves with communication skills.
4. Enabling to communicate effectively.

Unit-I An introduction to Communication

- Concept, types, scope and process of communication
- Importance and purpose of communication
- Criteria of effective communication
- Barriers to communication

Unit-II Communication skills and techniques

- Listening, speaking, writing skills,
- Interacting skills, Negotiation skills,
- Influence skills, Assertiveness skills
- Communication techniques

Unit-III Activity based

Activities based on communication skills

- Listening Comprehension and Writing Skills
- E-Mail etiquette
- Presentation Skills
- Interview Handling Skills

Suggested readings:

1. Andreja. J. Ruther Ford, 2nd Edition, (2011). Basic Communication Skills for Technology. Pearson Education
2. Anjanee Sethi & Bhavana Adhikari (2009). Business Communication, Tata McGraw Hill
3. Baldoni, John (2003). Great Communication Secrets of Great Leaders. Tata McGraw-Hill Publishing Co., New Delhi.
4. Bhattanagar, O.P., and O.P. Dahama (1980). Education and Communication for Development. Oxford and IBH Publishing House, New Delhi.
5. Kumar, Sanjay, Pushpalata 1 st Edition (2011). Communication Skills, Oxford Press.
6. Konar, Nira (2022). Communication skills for Professionals, PHI Publishing, New Delhi.

7. Tuhovsky, Ian (2019). Communication Skills Training: A Practical Guide to Improving Your Social Intelligence, Presentation and Social Speaking, Rupa Publications, New Delhi, India
8. Singh, J.K. (2012). Text Book of Mass Communication. DVS Publishers, Guwahati.

SEC-181: CONFIDENCE BUILDING

(Contact Hrs-45, Credits-3)

Course Objectives: This course will help learners to explore the concept of self-confidence: how it is acquired, how it can be sabotaged, and how it can be changed. It will enable the learners to develop strategies, tools and techniques to build a positive self-image. It will also helpthe learners across all programs understand the nature of identity, the factors and forces that affect personal development, and maintenance of personal identity.

Learning Outcomes

At the end of the Course students are able to:

1. translate concepts to real life situations
2. identify the problems and situations
3. acquire skills and to achieve self-defined goals

Unit I Self –Confidence

- Concept and Types of Self – Confidence
- Self Confidence : Nature or Nurture
- Needs and Importance of Self- Confidence
- Goals – Setting for Building Self- Confidence

Unit II Skills for Confidence Building

- Physical exercise to boost confidence
- Yoga for mindfulness
- Outdoor confidence building activities
- Practice public speaking

Unit III Life Skills

- Practice communication skills in the classroom
- Interpersonal Relationship Skill with peer mates
- Self awareness building skills in the classroom
- Group activity in the classroom

Assignments (Choose any one)

1. Transforming Negative Self- Talk: Identify the things that triggers negative self-talk, and reframe these thoughts positively and boost confidence.
2. Maintain a Gratitude Journal by intentionally noticing the positive in the self, in others and the world around.
3. Maintain a Goal Journal by setting and achieving goals.

References

Adams, George Matthew. (2020). *You Can*. Fingerprint! Publishing.

Andrews, Bill. (2017). *Self Confidence: Unleash Your Hidden Potential and Breakthrough Your Limitations of Confidence: 1 (Self Confidence Books, Self Esteem, Building Self Confidence).* Createspace Independent Pub.

Branden, N. (2011). *How to Raise Your Self-Esteem*. Random House USA Inc.

Carnegie, Dale. (2016). *How to Develop Self-Confidence & Influence People by Public Speaking*. Rupa Publications India: India.

Carnegie, D. (). *How to Stop Worrying and Start Living*. Rupa & Co.

Elliott, Anthony. (2020). *Concepts of the Self*.4th Edition. Polity.

Giblin, Les. (2019). How to have Confidence and Power in Dealing with People. Manjul Publishing House.

Gradales, Apostolos. (2017). *Building Confidence: How to Overcome Self Doubt and Social Anxiety (Social Skills)*. Youniversal Publishing.

Kumari, Reeta. (2019). *Introduction To Psychology Text Book*. Vinita Publishing House: India.

Pillai, J. (2023). *Building Confidence Through Self-Love - A Guide to Achieving Self-Acceptance*. Notion Press.

Morgan, C., King, R. A., Weisz, J. R., & Schopler, J. (2022). *Introduction to Psychology* 7th Ed. Tata McGraw Hill.

Thomas, S. (2022). *Walk in Confidence - Building a healthy Self-Esteem*. Notion Press.

Tracy, Brian. (2012). *The Power of Self-Confidence: Become Unstoppable, Irresistible, and Unafraid in Every Area of Your Life*. Wiley.

Tucker, E. J. (2015). *A Matter of Self-confidence - Part I (A Matter of Self-Confidence: An Introduction to Self-Confidence Coaching in a Book).* Shepherd Creative Learning.

SEC-182: E-COMMERCE

***(*Contact Hrs-45, Credits-3)**

Course Objective: To provide exposure to students on E-Commerce and its intricacies.

Learning Outcomes: Students will:

a. Have an understanding of e-commerce and
b. Understand the major issues associated with online marketing, E-finance and Cyber security.

Unit – I: Introduction to E-Commerce

Brief history of E-Commerce in India; Meaning, characteristics, significance and limitations of E-Commerce; Types of E-Commerce; E-Commerce practices v/s Traditional commerce practices. Identifying E-Commerce Opportunities and International nature of E-Commerce

Unit – II: E-Payment, Marketing and Finance

Transactions through the Internet; Requirements of E-payment systems; Impact of E-commerce on market; Online Marketing(E-advertising, E-branding); Marketing issues in E-marketing; Areas of e-financing; Traditional v/s E-banking.

Unit – III: Cyber Security

Legal environment of E-Commerce. Use and protection of Intellectual property in Online business. Setting up Internet security; Maintaining secure information(Data Encryption, Digital Signature and other Security Measures); Laws Relating to online transactions – Salient Features; Ethical issues in E-Commerce.

Suggested References (latest editions)

- P.T. Joseph, S.J., "E-Commerce - An Indian Perspective", PHI.
- David Whiteley, "E-Commerce Strategy, Technologies and Applications", Tata McGraw Hill.
- Ravi Kalakota, Andrew B Whinston, "Frontiers of Electronic Commerce", Pearson.
- Daniel Amor: "E Business R(Evolution)" Pearson Edude.
- Krishnamurthy: "E-Commerce Management" Vikas Publishing House.
- Schnieder, Gary P, Ecommerce: Strategy and Implementation. Cengage Learning Publisher

SEC-183: PYTHON PROGRAMMING

(Contact Hrs-60, Credits-3)

Course Objectives (COs):

To Introduce Python Programming Language as Multipurpose Programming Language with Features and Applications. This course is designed to equip students with the basic skills and knowledge of python programming.

Learning outcomes (LOs):

Students shall be able to Develop programs in Python platforms using lists, tuples and strings along with several libraries. Learn core Python structures and flow control, Create and run python function. Install and use Python on Various Platform.

UNIT-I:Introduction to basics of Python (Theory) 15 Hours

Introduction to Python:Python overview, Python interpreter and shell, Python identifiers, keywords, variables, standard data types, numbers(integers, floating point numbers, complex numbers), operators, statement and expression, string operations, Boolean expression, control expressions, Iteration- while statement, break, continue and pass.

UNIT-II:Function, Built in data-structures (Theory) 15 Hours

Functions, Built-in functions, composition of functions, user defined functions, parameters and arguments, Function calls, Recursion, stack diagrams for recursive functions, the anonymous functions, writing Python scripts,errors and exceptions. Built-in Data structures in Python: Strings, Lists, Ranges, Tuples, Dictionaries, Text files, Directories, Manipulations Building blocks of python program.

UNIT-III: Practicals 30 Hours

Suggested Practical Assignments (Questions need not be restricted to this list)

Basic Practicals:

1. Write Python program to demonstrate the use of operators and expressions
2. Write Python program to demonstrate the use of control statements
3. Write Python program to demonstrate the use of integers, floating point and complex
4. Numbers.

5. Write Python program to demonstrate the use of built-in functions
6. Write Python program to demonstrate the use of user defined functions
7. Write Python program to demonstrate the use of Lists and ranges
8. Write Python program to demonstrate the use of dictionaries
9. Write Python program to demonstrate the use of strings.
10. Find all numbers between 2000 and 2500 which are multiples of 17, but not the multiple of 5.
11. Print the first 2 and first 3 Characters in a given String using string slicing.
12. Write a program that eliminates duplicates in a list.

Advance Practicals:

1. Implement shallow copy and deep copy of a list.
2. Find the largest of n numbers, using a user defined function largest().
3. Write a function that capitalizes all vowels in a string.
4. Read a line containing digits and letters. Write a program to give the count of digits and letters.
5. Write a function *myReversal()* which receives a string as an input and returns the reverse of the string.
6. Use the list comprehension methodology in Python to generate the squares of all odd numbers in a given list.
7. Generate a dictionary and print the same. The keys of the dictionary should be integers between *L* and *LO* (both inclusive). The values should be the cubes of the corresponding keys.
8. Create a nested dictionary. The roll number of a student maps to a dictionary. This inner dictionary will have name, age and place as keys. Read details of at least three students.
9. Enter a word. Create a dictionary with the letters of this word as keys, and the corresponding ASCII values as values.
10. Write a Python function that takes a list and returns a new list with distinct elements from the list.
11. Python program to search a Word location in String.
12. Write a Python program to find repeated items in a tuple.
13. Program to concatenate the two dictionaries and create a new one.

Instructions to Paper Setter

- Questions should be set according to the following scheme.

UNIT	**Questions**	
	To be set	**To be Answered**

I	2	1
II	2	1

For Practical a total of 10 questions, each carrying 19 marks, shall be set. For each question, there shall be two sub-questions, one carrying 9 marks and the other carrying 10 marks. A student shall be allotted any one of the questions on a LOTTERY basis.

Exam Duration:

Theory	**Practical**
2 Hours	2 Hours

Evaluation of marks for practical Exam:

10% :Syntax and input/output screens
30% :Logic and efficiency(source code, pseudo code, and algorithm)
20% :Error trapping(illegalorinvalidinput,stackoverflow,underflow,insufficientphysicalmemoryetc.)
20% :Completion
20% : Result

Suggested Readings:

Text Books:

1. R.Thareja, Python Programming: Using Problem Solving Approach, First Edition, Oxford University Press, 2019.
2. E. Balaguruswamy , Introduction to Computing And Problem Solving Using Python, 1st Edition, McGraw Hill, 2016.

Reference Books:

1. S. Gowrishankar, A. Veena , Introduction to Python Programming, 1st Edition, CRC Press/Taylor & Francis, 2018.
2. J. W. Chun, Core Python Programming, Second Edition, Pearson, 2010.
3. M. C. Brown, Python: The Complete Reference, Osborne/McGraw-Hill, 4th Edition, 2018.

2ND SEM- VALUE ADDED COURSE (VAC)

VAC-190: HEALTH AND WELLNESS

(Contact Hrs: 45, Credits: 3)

Course objective:

The course is designed to provide a general concept of health and its importance in wellbeing of individual, community and nation as a whole. It will provide ways and means to stay fit by adopting healthy lifestyle, indulging in physical activities such as games and sports, dance movement therapy, yoga etc. and avoiding sedentary lifestyle and alcohol, tobacco and drug abuses.

Learning outcome:

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

1. The general concept of good health and wellness and its significance.
2. The benefit of exercises for fitness and wellness.
3. The role of parents and the community for healthy society.
4. Role of balanced diet and water in maintaining good health and wellness.
5. The significance of having appropriate life style and body weight management.
6. Sleep and its health benefits.
7. Different types of exercise for good health and overall wellness.
8. How to prevent diseases through general fitness and wellbeing.
9. Sedentary lifestyle and its harmful impact of health and wellness.
10. Prevention of cardiovascular diseases and influence of exercise in healthy ageing.
11. The harmful effects of alcohol, tobacco and drug abuse and addiction management strategies.
12. The ways of stress management and spirituality.
13. The concept of yoga and its beneficial effects in health and wellness.
14. The health benefits of dance movement therapy and different forms of dance for wellness.

Unit 1- Health-meaning, dimensions of health and their interrelationships; Importance of health for individual, family, community and nation; Spectrum of health; Definition of fitness & wellness; Components of fitness & wellness; Benefits of exercise &health; Fitness & wellness strategy; Fitness potential for popular sports; Fitness & wellness activities; Role of parents & community for the maintenance of fitness &wellness.

Unit 2- Factors affecting Health; Balanced diet and water; Life style changes &weight management; Daily Schedule effect on health and wellness; Socio-economic factors & wellness; Sleep: Definition, types & health benefits; Principles of training & physical fitness; Benefits of exercise & health, Walking exercise & fitness; Components of physical and performance related fitness; Calisthenics & health.

Unit 3- Concept on diseases; Sedentary lifestyle; Prevention of diseases through fitness &wellness; BMI; Diabetes & exercise; Cardiovascular diseases and exercise; Ageing and exercise; Contemporary health problems of youth-alcohol, drugs, use of tobacco (chewing, sniffing, smoking) & their harmful effects; substance abuse management; Addiction management; Stress management, Spiritual management; Origin of yoga, definition and scope of yoga, limitations and misconceptions; Importance of yoga; Dance movement therapy; Different forms of dance & wellness.

Suggested readings:

1. Anspaugh D and Ezell G (2012). Teaching Today's Health, 10th Edition. Pearson; UK.
2. Balayan D (2007). Swasthya Shiksha Evam Prathmik Chikitsa. Khel Sahitya. Delhi.
3. Clear J (2018). Atomic Habits, 1st edition. Cornerstone Digital, San Diego, California.
4. Debnath M (2007). Basic Core Fitness through Yoga and Naturopathy. Sports Publication, India.
5. Dougherty NJ et al. (2002). Sport, Physical Activity and the Law. Sagamore Pub. Champaign, USA.
6. Driskell JA and Wolinky I (2002). Nutritional Assessment of Athletes. CRC Press, Boca Raton, USA.
7. Greenberg JS Diutriman GB and Oakes BM (2004). Physical Fitness and Wellness: Changing the way you look, feel and perform. Human Kinetics. Champaign, USA.
8. Hoeger WW and Hoeger S (2007). Fitness & Wellness. Thomson Wadsworth, USA.
9. Kumar ER (1988). Heal Yourself With Yoga: Specific Disease. Taraporevala, India.
10. Maughan RJ Burke LM and Coyle EF (2004). Food, Nutrition and Sports Performance II: The International Olympic Committee Consensus on Sports Nutrition. Routledge, USA.
11. Siedentop D (2004). Introduction to physical education, Fitness and sports. McGraw Hill, USA
12. Singh MK and Jain P (2008). Yoga aur Manoranjan. Khel Sahitya Kendra, India.

VAC-191: LIFE SKILLS EDUCATION

(Contact Hours: 45, Credits-3)

Learning Outcomes (LOs):

1. Acquainting with concept of life skills
2. Understanding core life skills, its concept, process
3. Enhancing one's ability to be adaptive
4. Acquiring career skills and fully pursue to partake in a successful career path

Unit-I Introduction to Life skills

- Concept, characteristics and significance of life skills
- Livelihood and survival skills
- Life skills approach
- Core Life skills

Unit-II Fundamentals of Life skills education

- Concept and understanding Life skills education
- Genesis of Life skills education
- Perspectives in Life skills education
- The Four Pillars of Education - Learning to Know - Learning to Do - Learning to Live Together - Learning to Be and Learning Throughout Life.

Unit-III Career skills activities

- Resume, its importance and essential components of a good resume
- Interview Skills - Preparation and Presentation
- Meaning and types of interview (F2F, telephonic, video, etc.)
- Approach and Response (STAR Approach) for facing an interview

Suggested readings:

1. Debra McGregor, (2007). Developing Thinking; Developing Learning - A guide to thinking skills in education, Open University Press, New York, USA
2. Duffy Grover Karen, Atwater Eastwood, (2008). (8th Edn.), Psychology for Living Adjustment, Growth and Behaviour Today, Pearson Education Inc, New Delhi.
3. Family Health International, NACO, USAID (2007), Life Skills Education tool kit for Orphans and vulnerable children in India
4. Mahajan, Gourav (2022). Life Skills Education, Shipra Publications, New Delhi.
5. Nair. A. Radhakrishnan, (2010). Life Skills Training for Positive Behaviour, Rajiv Gandhi National Institute of Youth Development, Tamil Nadu.
6. Nair .V. Rajasenan, (2010). Life Skills, Personality and Leadership, Rajiv Gandhi National Institute of Youth Development, Tamil Nadu.
7. Prakash B. (Ed). (2003). Adolescence and life skills. Common Wealth Youth Program, Asian Center, Common wealth Secretariat. New Delhi: Tata McGraw Hill.
8. Rao, K. Ravikanth and Dr. P. Dinakar (2021). Life Skills Education, Neelkamal Publications, New Delhi.

9. RGNIYD. (2008). Facilitators Manual on Enhancing Life Skills. Tamil Nadu
10. Santrock, W. J. (2007). Adolescence, Tata Mc Graw Hill, Boston
11. Stella Cottrell, (2005). Critical Thinking Skills: Developing Effective Analysis and Argument, Palgrave Macmillan Ltd., New York.

VAC- 192: UNDERSTANDING INDIA

(Contact Hrs: 45. Credits-3)

Objective

To provide an overview of the growth and development of the socio-cultural past and heritage of India from ancient to the modern period.

Learning Outcome

It will acquaint students with the historical trajectory of India's composite culturalheritage.

Unit I The concept and evolution of India: Bharatvarsha, Hindusthan and India; Geographical Background of India's Culture; Harappan civilization, India through the lens of visitors- select foreign accounts (Megasthenes, Hiuentsang, Alberuni, Ibn Batuta, Marco Polo, Francois Bernier)

Unit II Literature and Religious Tradition: Vedic, Brahmanical and Sramanic traditions, ,Tantrism- cult of Mother Goddess; Islam; Sufism; Bhakti movement: South India - Vaishnava *Alvars* and Shaiva *Nayanars* ; North India- Chaitanya, Kabir, Guru Nanak; Assam-Sankaradeva and Neo-Vaishnavism; Christianity in Northeast India.

Unit III Social Institutions: Caste and Tribe in India; Indian Awakening and Socio-religious reform movements – Brahmo Samaj, Arya Samaj, Ramakrishna Mission,Wahabi and Farazi Movements; Aligarh Movement; Seng Khasi; Non-Brahmin movements in western and southern India - Jyotirao Phule, Shree Narayan Guru and E. V. Ramaswami Naicker; Contribution of Northeast India to Indian Culture.

Suggested Readings

Asif, Manan Ahmed,	*The Loss of Hindusthan: The Invention of India,* HarvardUniversity Press, 2020
Basham,A. L.,	*A Cultural History of India,* Oxford University Press, 1997
---------	*The Wonder that was India*, Rupa, New Delhi, 1994
Chattopadhyaya, B.D.,	*The Concept of Bharatavarsha and Other Essays,* Permanent Black, 2019
Dirks, Nicholas B.,	*Castes of Mind: Colonialism and the Making of Modern India*, Princeton University Press, New Jersey, 2001.

Habib, Irfan, *Medieval India: The Story of a Civilisation*, National Book Trust, 2007

Jaiswal, Suvira, *Caste, Origin Function and Dimensions of Change*, Manohar, New Delhi, 2000.

Jones, Kenneth, *Socio- religious Reform Movements in British India*, Cambridge University Press, 1989

Khilnani,Sunil, *The Idea of India*, New York, 1999

Majumdar, R.C., (ed.), *History and Culture of Indian People* (Relevant Volumes and Chapters), Bhartiya Vidya Bhawan Series, Bombay

Rizvi,S.A.A., *The Wonder that was India*, Rupa, New Delhi, 2002

Sastri, K.A.N., *A History of South India from Prehistoric Times to the Fall of Vijayanagar*, Oxford University Press, 1955

Srinivas,M.N., *Social Change in Modern India*, Orient Longman, 1972

Bayly,Susan, *Caste, Society and Politics in India from the Eighteenth Century to the Modern Age*, Cambridge University Press, 1999.

Bhandarkar, D.R., *Some Aspects of Ancient Indian Culture*, Asian Educational Services, New Delhi, 1989.

Barua, B.K., *A Cultural History of Assam*, SatyaRanjanDey, Bina Library, Gauhati, 1986

Chand, Tara, *The Influence of Islam on Indian Culture*, The Indian Press, Ltd., Allahabad, 1986.

Chatterjee, S.K, *Kirata-Jana-Kriti, Assam Publishing Company*, Guwahati, 2015.

Habib, Irfan, *People's History of India*, Tulika Books, New Delhi. (relevant volumes)

Inden, Ronald, *Imagining India*, Indiana University Press, 2000.

Kakati, Banikanta, *The Mother Goddess Kamakhya*, Publication Board Assam, Guwahati, 1989.

Kharchandy, D. A, (ed.), *Understanding the Tribes of Asia*, Lakshi Publishers, New Delhi, 2018.

Lahiri,Nayanjot, *Marshaling the Past: Ancient India and its Modern Histories*, Permanent Black, 2012.

Luniya, B.N., *Evolution of Indian Culture, Lakshmi Narain Agarwal*, Agra, 1994.

Mawlong, C.A., Gurung, T., (ed.), *Religion and Society in Northeast India:An Interface*, DVS,Publishers, Guwahati, 2022.

Mehta, J.L., *Advanced Study in the History of Medieval India, Vol. III*, Sterling Publishers, New Delhi, 1981.

Sarkar, Jagadish Narayan, *Thoughts on Trends of Cultural Contacts in Medieval India*, Creative Media Partners, LLC, Sacramento, 2015

Singh,K.S, (ed.) *Tribal Situation in India :An Anthropo-Historical Perspective*, Manohar, New Delhi, 1986.

Srivastava, M.P., *Society and Culture in Medieval India*, Chugh Publications, 2007

Thapar, Romila, *Ancient Indian Social History; Some Interpretations*, Orient Longman,New Delhi, 1978.