



OFFICE OF THE PRINCIPAL

SHAHEED HIMAYUN MUZZAMIL MEMORIAL

Govt. Degree College, Anantnag

Khanabal, Anantnag - 192101 (J&K) NAAC ACCREDITED GRADE "B+" (CGPA: 2.53)

No. DCA/ICA/23/2971

Dated 19/12/2023 :-

List of some the courses relevant to cross cutting criteria taught during the session 2023-24

S. No.	Name of Course	Course Code	Semester
1.	FUNDAMENTALS OF ACCOUNTING (ACCOUNTING & TAXATION - COMMERCE)	ATT122J	I, MAJOR/MINOR
2.	BUSINESS ADMINISTRATION: PRINCIPLES OF MANAGEMENT	POM122J	I, MAJOR/MINOR
3.	BIOCHEMISTRY	BCH122J	I, MAJOR/MINOR
4.	INFORMATION TECHNOLOGY - BASIC COMPUTING	BIT122J	I, MAJOR/MINOR
5.	BOTANY-I: BIODIVERSITY (MICROBES, ALGAE, FUNGI AND ARCHEGONIATE)	BOT122J	I, MAJOR/MINOR
6.	BIO-TECHNOLOGY (BIOMOLECULES STRUCTURE AND FUNCTION)	BTG122J	I, MAJOR/MINOR
7.	COMPUTER APPLICATIONS - COMPUTER FUNDAMENTALS	CAP122J	I, MAJOR/MINOR
8.	CLINICAL BIOCHEMISTRY - FUNDAMENTALS OF CLINICAL BIOCHEMISTRY	CBC123J	I, MAJOR/MINOR
9.	CHEMISTRY - FUNDAMENTALS OF CHEMISTRY AND CHEMICAL ANALYSIS-I	CHM123J	I, MAJOR/MINOR
10.	DISASTER MANAGEMENT (HAZARDS AND DISASTERS)	DMG122J	I, MAJOR/MINOR
11.	ECONOMICS - BASIC MICROECONOMICS	ECO122J	I, MAJOR/MINOR
12.	EDUCATION	EDU122J	I, MAJOR/MINOR
13.	ENVIRONMENTAL SCIENCE (ENVIRONMENT AND ECOLOGY)	EVS122J	I, MAJOR/MINOR
14.	FAZILA (QURAN AND HADITH - I)	FAZ122J	I, MAJOR/MINOR
15.	INDIAN FINANCIAL SYSTEM (FINANCE - COMMERCE)	FIN122J	I, MAJOR/MINOR
16.	FOOD SCIENCE AND TECHNOLOGY - FOOD CHEMISTRY AND MICROBIOLOGY-I	FST123J	I, MAJOR/MINOR
17.	GENDER STUDIES (UNDERSTANDING GENDER)	GDS122J	I, MAJOR/MINOR
18.	GEOLOGY (FUNDAMENTALS OF GEOLOGY)	GLY122J	I, MAJOR/MINOR
19.	GEOGRAPHY - PHYSICAL GEOGRAPHY	GGY122J	I, MAJOR/MINOR



OFFICE OF THE PRINCIPAL

SHAHEED HIMAYUN MUZZAMIL MEMORIAL

Govt. Degree College, Anantnag

Khanabal, Anantnag - 192101 (J&K) NAAC ACCREDITED GRADE "B+" (CGPA: 2.53)

No _____

Dated _____

:-

20.	ISLAMIC STUDIES (AN INTRODUCTION TO ISLAMIC CIVILIZATION-I)	IST122J	I, MAJOR/MINOR
21.	PRINCIPLES OF MARKETING (MANAGEMENT - COMMERCE)	MGT122J	I, MAJOR/MINOR
22.	PUBLIC ADMINISTRATION INTRODUCTION TO PUBLIC ADMINISTRATION	PAD122J	I, MAJOR/MINOR
23.	PHYSICS MECHANICS	PHY122J	I, MAJOR/MINOR
24.	POLITICAL SCIENCE (INTRODUCTION TO POLITICAL THEORY)	PLS122J	I, MAJOR/MINOR
25.	BUSINESS ADMINISTRATION: PRINCIPLES OF MANAGEMENT	POM122J	I, MAJOR/MINOR
26.	PSYCHOLOGY (FOUNDATIONS OF PSYCHOLOGY)	PSY122J	I, MAJOR/MINOR
27.	SOCIOLOGY (INTRODUCTION TO SOCIOLOGY)	SOC122J	I, MAJOR/MINOR
28.	SOCIAL WORK: INTRODUCTION TO SOCIAL WORK PROFESSION	SWK122J	I, MAJOR/MINOR
29.	WATER MANAGEMENT- INTRODUCTION TO WATER	WMG122J	I, MAJOR/MINOR
30.	BIOCHEMISTRY: ENZYMOLOGY	BCH322J	III, MAJOR/MINOR
31.	BIOTECHNOLOGY: MOLECULAR CELL BIOLOGY	BTG322J	III, MAJOR/MINOR
32.	BOTANY: MORPHOLOGY OF ANGIOSPERMS	BOT322J	III, MAJOR/MINOR
33.	BIOTECHNOLOGY: MOLECULAR CELL BIOLOGY	BTG322J	III, MAJOR/MINOR
34.	CLINICAL BIOCHEMISTRY CLINICAL PHYSIOLOGY AND DIAGNOSTICS-II	CBC322J	III, MAJOR/MINOR
35.	FUNDAMENTALS OF DISASTER MANAGEMENT	DMG322J	III, MAJOR/MINOR
36.	ECONOMICS MONETARY ECONOMICS	ECO322J	III, MAJOR/MINOR
37.	Environmental Science: Environmental Chemistry	EVS322J	III, MAJOR/MINOR
38.	Corporate Financial Analysis & Reporting Semester - III	FIN322J	III, MAJOR/MINOR
39.	Food Technology: FOOD CHEMISTRY AND MICROBIOLOGY-II	FST322J	III, MAJOR/MINOR
40.	COURSE TITLE: EMERGENCE OF WOMEN AND GENDER STUDIES	GDS322J	III, MAJOR/MINOR
41.	Geography: Geographical Thought	GGY322J	III, MAJOR/MINOR
42.	GEOLOGY SEDIMENTOLOGY	GLY322J	III, MAJOR/MINOR
43.	History: HISTORY OF MODERN INDIA	HST322J	III, MAJOR/MINOR



OFFICE OF THE PRINCIPAL

SHAHEED HIMAYUN MUZZAMIL MEMORIAL

Govt. Degree College, Anantnag

Khanabal, Anantnag - 192101 (J&K) NAAC ACCREDITED GRADE "B+" (CGPA: 2.53)

No. _____

Dated _____

:-

44.	Home Science: Development Communication and Extension	HSC322J	III, MAJOR/MINOR
45.	Islamic Civilization under the Abbasids and the Muslim Spain	IST322J	III, MAJOR/MINOR
46.	MEDIA ETHICS	MCM322 J	III, MAJOR/MINOR
47.	Business Organization	MGT322J	III, MAJOR/MINOR
48.	Public Administration: Development Administration	PAD322J	III, MAJOR/MINOR
49.	Political Science: International Politics	PLS322J	III, MAJOR/MINOR
50.	Sociology: Classical Sociological Tradition	SOC322J	III, MAJOR/MINOR
51.	Social Work: Society and Humanitarian Work	SWK322J	III, MAJOR/MINOR
52.	WATER MANAGEMENT _ WATER CHEMISTRY	WMG322J	III, MAJOR/MINOR
53.	Zoology: Comparative Anatomy of Vertebrates	ZOL322J	III, MAJOR/MINOR
54.	Higher Accounting	AAT422J1	IV, MAJOR/MINOR
55.	BIOCHEMISTRY: BASICS OF METABOLISM AND BIOENERGETICS	BCH422J1	IV, MAJOR/MINOR
56.	BOTANY _ PLANT TAXONOMY	BOT422J1	IV, MAJOR/MINOR
57.	CLINICAL BIOCHEMISTRY _ MEDICAL MICROBIOLOGY	CBC422J1	IV, MAJOR/MINOR
58.	CHEMISTRY _ CONCEPTS IN ANALYTICAL CHEMISTRY	CHM422J1	IV, MAJOR/MINOR
59.	Business Economics	FIN422J1	IV, MAJOR/MINOR
60.	Disaster Mitigation and Preparedness	DMG411J1	IV, MAJOR/MINOR
61.	ECONOMICS OF DEVELOPMENT	ECO422J1	IV, MAJOR/MINOR
62.	EDUCATION _ INDIAN EDUCATION IN HISTORICAL PERSPECTIVE	EDU422J1	IV, MAJOR/MINOR
63.	ENVIRONMENTAL SCIENCE _ HUMAN AND ENVIRONMENT	EVS422J1	IV, MAJOR/MINOR
64.	PRINCIPLES AND METHODS OF PROCESSING	FST422J1	IV, MAJOR/MINOR
65.	Geography: Geomorphology	GGY422J1	IV, MAJOR/MINOR
66.	GEOLOGY _ PALEONTOLOGY AND STRATIGRAPHY	GLY422J1	IV, MAJOR/MINOR
67.	History: History of Ancient Kashmir	HST422J1	IV, MAJOR/MINOR
68.	PUBLIC ADMINISTRATION _ COMPARATIVE PUBLIC ADMINISTRATION	PBA422J1	IV, MAJOR/MINOR
69.	Political Science: Indian Political Thought	PLS422J1	IV, MAJOR/MINOR
70.	Psychology: Behavioural Neuroscience	PSY422J1	IV, MAJOR/MINOR
71.	SOCIOLOGY _ INDIAN SOCIETY - STRUCTURE AND CHANGE	SOC422J1	IV, MAJOR/MINOR



OFFICE OF THE PRINCIPAL

SHAHEED HIMAYUN MUZZAMIL MEMORIAL

Govt. Degree College, Anantnag

Khanabal, Anantnag - 192101 (J&K) NAAC ACCREDITED GRADE "B+" (CGPA: 2.53)

No. _____

Dated _____

72.	Social Work: Social Case Work: Working with individuals	SWK422J1	IV, MAJOR/MINOR
73.	WATER MANAGEMENT _ WATER POLLUTION	WVG422J1	IV, MAJOR/MINOR
74.	BIO-CHEMISTRY: BIO-PHYSICAL AND BIO-CHEMICAL TECHNIQUES	BCH520D	V, CORE-CBCS
75.	BOTANY - CELL AND MOLECULAR BIOLOGY	BOT516DA	V, CORE-CBCS
76.	BIO-TECHNOLOGY: BIOTECHNIQUES	BT520DA	V, CORE-CBCS
77.	GEOGRAPHY OF TOURISM	GG516D1	V, CORE-CBCS
78.	STRUCTURAL GEOLOGY/PLATE TECTONICS	GL521DA	V, CORE-CBCS
79.	ENGINEERING AND ENVIRONMENTAL GEOLOGY	GL521DB	V, CORE-CBCS
80.	HISTORY: INDIA SINCE INDEPENDENCE	HS520DA	V, CORE-CBCS
81.	ISLAMIC STUDIES: ISLAMIC CULTURE AND SOCIETY IN KASHMIR	IS520DA	V, CORE-CBCS
82.	POLITICAL SCIENCE: WESTERN POLITICAL THOUGHT	PS520D1	V, CORE-CBCS
83.	PSYCHOLOGY: FOUNDATIONS OF PSYCHOLOGY	PSY120C	V, CORE-CBCS
84.	SOCIOLOGY: FAMILY, MARRIAGE AND KINSHIP	SOC520DA	V, CORE-CBCS
85.	SOCIAL WORK _ SOCIAL WORK RESEARCH	SW520D1A	V, CORE-CBCS
86.	WATER MANAGEMENT: WATER RESOURCE MANAGEMENT	WM520DA	V, CORE-CBCS
87.	ANIMAL BIOTECHNOLOGY	ZOO516DA	V, CORE-CBCS

Convenor,
Academic Affair

Principal

COMMERCE: ACCOUNTING & TAXATION

SEMESTER – 1st

MAJOR COURSE

ATT122J: FUNDAMENTALS OF ACCOUNTING (ACCOUNTING & TAXATION - COMMERCE)

CREDITS: THEORY: 04

PRACTICAL / TUTORIAL: 02

Course Description:

This course is designed to provide the basic understanding, knowledge and perspective of Accounting Fundamentals that business organizations use and apply to record, analyze, and interpret the business transactions and help them in the decision making. The course covers Accounting Principles, Concepts, Conventions and basis of accounting; and, also, acquaint the students with the preparation of Subsidiary-books, Trial Balance, Bank Reconciliation Statement, Financial Statements and treatment of Depreciation. Moreover, to keep the students abreast about the use of the computer-technology in the field of accounting, the course also includes the application of Accounting Software's in the preparation of Subsidiary Books and Financial Statements.

Course Objectives:

The broad course objectives are the following:

1. To enable the learners to have full understanding of basic Accounting Concepts and Conventions, and make them understand different Subsidiary Books, posting of Journal to Ledger, preparation of Trial Balance and rectification of errors.
2. To make the student understand how the Bank Reconciliation Statement is prepared and how accounting for Depreciation and Valuation of Inventory is done.
3. To enable the students, acquire the knowledge of Computerized Accounting like Tally and generating reports of Ledger, Trial Balance and Financial statements.

Learning Outcome:

After going through this course, the students are expected to have a clear understanding, knowledge and application of the Accounting skills as used in the business organizations.

Curriculum Details:

Unit – I

Theoretical Framework: The nature of financial accounting principles –Accounting: Principles, Concepts, Conventions, Bases of Accounting, Cash bases and Accrual bases, Accounting equation.

Identification of Financial Transactions; Source Documents, Journalizing, Rules of Debit and Credit,

(Knowledge, Comprehension and Skill)

Unit – II

Secondary Books: Purchase Book, Purchase return Book, Sales Book, Sales Return Book, Cash Book, Petty Cash Book, Ledger, types of Ledgers, posting of transactions to Ledger, balancing of ledgers.

Trial Balance, Rectification of Errors, Classification of Errors, Location of Errors, Suspense Account, Closure of temporary accounts, Prepare post-closing trial balance, post reversing entries.

(Knowledge, Comprehension and Skill)

Unit – III

Bank Reconciliation Statement: Meaning and Importance BRS, Types of BRS.

Depreciation Accounting, Depreciation and Amortization, Methods used to calculate Depreciation and Valuation of Inventory.

(Knowledge, Comprehension and Skill)

Unit-IV)

Accounting of Accruals and Deferrals: Preparation of Financial Statements, Post Adjusted Trial Balance, Trading Account, Profit and Loss Account, and Balance Sheet.

(Knowledge, Comprehension and Skill)

Unit -V and Unit – VI (Tutorial/Practical) Continuous Assessment

Computerized Accounting Systems

Tally: Creating a Company; Configure and Features settings; Creating Accounting Ledgers and Groups; Creating Stock Items and Groups; Vouchers Entry.

Generating Reports - Cash Book, Ledger Accounts, Trial Balance, Profit and Loss Account, Balance Sheet.

Note: The Teacher shall give assignments from the above topics to the students and students shall submit report for evaluation by the concerned teacher.

(Knowledge, Comprehension and Skill)

Suggested Readings:

- P.C. Tulsian, Financial Accounting, Tata McGraw Hill, New Delhi.
- A. K. Bhattacharyya, Financial Accounting for Business Managers, Prentice-Hall, New Delhi.
- S. A. Mccrary, Mastering Financial Accounting Essentials: The Critical Nuts & Bolts, John Wiley & Sons, Inc. New Jersey.
- J. J. Lerner, Bookkeeping & Accounting, McGrawhill, New York.
- S. N. Maheshwari, Financial Accounting, Vikas Publication, New Delhi.
- R.L. Gupta and V. K. Gupta, Principles and Practice of Accountancy Sultan Chand and Sons, New Delhi.
- J.R. Monga, Basic Financial Accounting, Mayur Paper backs, Darya Gang New Delhi.

Note: Latest edition of text books may be used

BACHELORS WITH BUSINESS ADMINISTRATION AS MAJOR 1st SEMESTER

POM122J: BUSINESS ADMINISTRATION: PRINCIPLES OF MANAGEMENT

CREDITS: THEORY: 4; TUTORIAL: 2

COURSE OBJECTIVE: *To acquaint the students with the basic principles of management and how the same can be applied to improve the efficiency and effectiveness of an organization in the present dynamic business environment.*

THEORY (4 CREDITS)

UNIT-I

Management: Basic concepts, Nature and Scope of Management, Managerial Roles, Managerial Roles, Skills and Activities, Evolution of Management thought, Classical, Scientific and Behavioural approach, Functions of Management.

UNIT-II

Planning: Basic concepts, Nature, Scope, Objective and Significance of Planning, Elements and Steps of Planning, Span of Control, Line and **Staff Relationship**, Authority, Delegation, Centralization Vs Decentralization, Organizational Design & Structures: Basic Concepts, types of organizational structure; functional structure, product structure, geographic structure & matrix structure, Virtual structure.

UNIT-III

Directing: Effective Directing, Supervision, Motivation, Different Theories of Motivation Maslow, ERG, Herzberg's theories, Concept of Leadership, Theories and Styles, Manager vs. leader, Qualities leader, Power & politics: basic concepts.

UNIT-IV

Controlling: Basic Concepts, Elements of Managerial Control, Management Control Techniques, Effective Control Systems, Forward, backward and concurrent control, Budget as a control tool, Efficiency & effectiveness.

TUTORIAL / PRACTICAL (2 CREDITS)

It will cover Industry visit, Management Games to understand Individual behaviour and group behaviour, Games for Leadership Development, Role playing, Seminars and Group Discussions and Brainstorming on Contemporary Management Issues.

Evaluation tutorials/ practical shall be done by the examiner(s) as per University norms/ notifications.

Suggested Readings:

1. Gilbert: Principles of Management, McGraw Hill.
2. Koontz & Heinz Weihrich: Essential of Management, McGraw Hill.
3. Luthans Fred: Organisational Behaviour, Tata McGraw Hill.
4. Robbins Stephen P: Organisational Behaviour, Pearson.
5. Management by Robbins, Coulter, Fernandez Pearson Publishing House.

SEMESTER -1st
MAJOR COURSE

BCH122J: BIOCHEMISTRY

CREDITS: THEORY: 4
PRACTICALS: 2

THEORY (4 CREDITS: 60 HOURS)

Unit I: Carbohydrates (15 HOURS)

Definition, classification and structure of monosaccharides. Open and Ring structure, anomeric forms, mutarotation. Reaction of monosaccharides with special reference to glucose, Structure and functions of important oligosaccharides, Structure and functions of important polysaccharides. Proteoglycans, Lipopolysaccharide, blood group polysaccharides. N-and O-type glycosylation in proteins, Role of lectins.

Unit II: Proteins (15 HOURS)

Amino acids: Structure & their classifications, stereoisomerisms and RSystem of designation, optical isomers. Biological role of Histidine, Tyrosine, Serine and Asparagine in protein structure, Zwitter ion, PI and its biological significance. Amino acid derived hormones and neurotransmitters.

Proteins: classification, composition and functions. Structure of peptide bond, chemical synthesis of polypeptides. Determination of the amino acid sequence of the polypeptide chain. Levels of structure in protein architecture, forces stabilizing the tertiary structure and quaternary structure of proteins. Denaturation and renaturation of proteins, Structure and function of Hemoglobin and myoglobin

Unit III: Lipids (15 HOURS)

Introduction, classification, nomenclature, structure and properties of Fatty acids. Saturated and unsaturated fatty acids. Essential fatty acids, chemical properties and characterization of fats - **hydrolysis, Saponification value, Reichert - Meissel number, Iodine number, rancidity of fats, Triacylglycerols and Cholesterol, Structure and functions of phospholipids and sphingolipids. Synthesis of prostaglandins and steroid hormones.**

Unit IV: Nucleic Acids and Vitamins (15 HOURS)

Evidence that **DNA is the genetic material, compositions of RNA and DNA,** generalized structural plan of nucleic acids, features of DNA double helix. Cot Curve. Structure and roles of different types of RNA, Central Dogma of Molecular Biology. Chromatin and its types.

Vitamins - Sources, physiological role and deficiency diseases

PRACTICAL (2 CREDITS: 60 HOURS)

- 1) Preparation of Standard buffers and determination of pH of a solution.
- 2) Qualitative tests for Carbohydrate
- 3) Qualitative tests for Proteins and Amino acids.
- 4) Qualitative tests for Lipids
- 5) Estimation of ascorbic acid
- 6) Titration curves of Amino acids

Books Recommended

1. Principles of Biochemistry by Lehninger, Nelson & Cox
2. Biochemistry by Lubert Stryer
3. Biochemistry by Dr Satyanarayan
4. Experimental Biochemistry by B A Ganai

**BACHELORS WITH INFORMATION TECHNOLOGY AS MAJOR
1st SEMESTER**

BIT122J: INFORMATION TECHNOLOGY _ BASIC COMPUTING

CREDITS: THEORY: 4; PRACTICAL: 2

UNIT I

Introduction to Computing-Computer Systems, Components of a computer system, Hardware and software, Evolution and generations of computers, and Classification of computers on the basis of capacity, purpose, and generation.

Data representation in digital computer. Number System: Bit, byte, binary, decimal, octal systems and hexadecimal conversion from one system to the other, representation of characters, integers and fractions. Binary Arithmetic: Addition, subtraction and multiplication. **Computer Codes-BCD, Gray Code, ASCII and Unicode.**

UNIT II

Problem Solving approaches top-down and bottom-up programming. Representation of Algorithm, Flowchart, Pseudo code and Source Code with examples. Transformation of Algorithms into source code.

The Role of Algorithms in Computing. Algorithms as a technology, analyzing algorithms, Designing algorithms, Growth of Functions.

Computer languages - Machine language, assembly language, higher level language, 4GL. Translator Programs - Compiler, Interpreter, Assembler.

UNIT III

Operating Systems-Introduction, Features, Functions- Process Management, Memory Management, File Management, Device Management etc. Introduction to different Operating Systems. Different types and classification of Operating Systems.

Data, Information and Knowledge. Database, database management system, database System, Database Applications. Structured and Unstructured data. Big Data. Different kinds of databases.

UNIT IV

Internet, History of Internet, Features and uses of Internet. Internet Architecture, IP Address, Domain Name, Managing the Internet. Introduction to WWW, Web browsers, Websites, Email, Search Engine etc.

Connecting to the Internet, Internet Connections, Internet Address, Internet Services, Uses of Internet, Introduction to Internet of Things (IoT) and Cloud Computing. Introduction to E-commerce, E-governance, E-government, Smart homes with relevant examples like AMS, admissions systems etc.

TUTORIAL: (2-CREDITS)

Note: The Tutorial Component shall be based on the Unit-I to Unit-IV

REFERENCEBOOKS

1. Introduction to Information Technology, V Rajaraman, PHI
2. Introduction to Computers, Peter Norton, 7th Edition, McGraw Hill Education
3. Fundamentals of Computers, V. Rajaraman, PHI Publications
4. Computer Fundamentals, Anita Goel, Pearson Education India

SEMESTER - 1st

MAJOR COURSE

BOT122J BOTANY-1: BIODIVERSITY (MICROBES, ALGAE, FUNGI AND ARCHEGONATE)

(CREDITS: THEORY - 4, PRACTICALS -2)

Objectives: To impart understanding to students about economic importance and diversity of viruses, bacteria, fungi, algae, bryophytes, pteridophytes and gymnosperms and to acquaint them about the classification, structure, morphology and reproduction of viruses, bacteria, fungi, algae, bryophytes, pteridophytes and gymnosperms.

THEORY (4 CREDITS)

UNIT I: MICROBES AND FUNGI

VIRUSES: Discovery, general structure, replication, DNA virus (T-phage); lytic and lysogenic cycle, RNA virus (TMV).

BACTERIA: General characteristics and cell structure; reproduction - vegetative, asexual and recombination (conjugation, transformation and transduction); economic importance.

FUNGI: General characteristics, classification (Alexopoulos, Mims & Blackwell), cell wall composition, nutrition and reproduction; life cycle of *Rhizopus* (Zygomycota), *Venturia* (Ascomycota), *Agaricus* (Basidiomycota).

SYMBIOTIC ASSOCIATIONS: Lichens and Mycorrhiza - general account and significance.

UNIT II: ALGAE

General characteristics, classification of algae (Round 1965), criteria for algal classification; range of thallus organization; morphology, reproduction and life cycle of *Nostoc*, *Chlamydomonas*, *Oedogonium*, *Vaucheria*, *Ectocarpus*, *Batrachospermum*; economic importance of algae.

UNIT III: BRYOPHYTES

ARCHEGONATE - General characteristics, adaptations to land habit.

BRYOPHYTES - General characteristics, Proskauer's classification (upto family); morphology, anatomy and reproduction (excluding developmental details) of *Marchantia* and *Funaria*; Evolution of sporophyte; apogamy and apospory; alternation of generation; economic importance of bryophytes.

UNIT IV: PTERIDOPHYTES AND GYMNOSPERMS

PTERIDOPHYTES - General characteristics; classification of pteridophytes (Sporne 1965); Early land plants (*Rhynia*); morphology, anatomy and reproduction (excluding developmental details) of *Equisetum* and *Dryopteris*; heterospory and origin of seed habit; evolution of stellar systems in pteridophytes.

GYMNOSPERMS - General characteristics, classification - Christenhusz et al. 2011 (upto family); morphology, anatomy and reproduction (excluding developmental details) of *Cycas* and *Pinus*; economic importance of gymnosperms.

PRACTICAL EXERCISES (2 CREDITS)

- Models / photographs of viruses - T-Phage and TMV, drawing / photograph of lytic and lysogenic Cycle.
- Types of bacteria from temporary/permanent slides/photographs; Gram staining

SEMESTER 1st
MAJOR COURSE

BTG122J: BIO-TECHNOLOGY (BIOMOLECULES STRUCTURE AND FUNCTION)

CREDITS: THEORY: 04, PRACTICALS: 02

THEORY (04 CREDITS)

UNIT-1; AMINO ACIDS AND PROTEINS

Physicochemical properties of water; Concept of pH, pK, pI & buffers; Structure and classification of amino acids; Levels of protein structure- primary, secondary, tertiary and quaternary; Types of proteins - fibrous and globular proteins; Forces stabilizing protein structure.

UNIT-2; ENZYMES

Nomenclature and classification of enzymes; Basic principles of enzyme catalysis; Concept of active site; Enzyme activity and its measurement, factors affecting **enzyme activity**; Michaelis-Menten kinetics; Lineweaver- Burk plot; Enzyme inhibition (competitive, non-competitive and uncompetitive)

UNIT-3; CARBOHYDRATES

General structure, classification and function of carbohydrates; Stereoisomerism in monosaccharides with special reference to the concepts of configuration and conformation; Breakdown of carbohydrates- **glycolysis**, TCA cycle, electron transport chain, oxidative phosphorylation.

UNIT-4; LIPIDS AND NUCLEIC ACIDS

Nomenclature and properties of fatty acids, Structure and functions of major types of lipids -triglycerides, phospholipids, sphingolipids, sterols, P-oxidation of saturated and unsaturated fatty acids. Structure and classification of nitrogenous bases, composition and bonding in nucleotides and polynucleotides. Types of DNA (A, B and Z) and their structure, Types of RNA (mRNA, tRNA and rRNA) and their structure.

PRACTICAL (02 CREDITS)

1. **Preparation of molar, molal, normal solution and buffers.**
2. Qualitative and quantitative estimation of carbohydrates in a given solution.
3. Qualitative and quantitative estimation of carbohydrates in a given solution.
4. Enzyme activity assay; Acid / Alkaline Phosphatase.
5. Quantification of **DNA** in a given solution.

**BACHELORS WITH COMPUTER APPLICATIONS AS MAJOR
1st SEMESTER**

CAP122J: COMPUTER APPLICATIONS _ COMPUTER FUNDAMENTALS

CREDITS: THEORY - 04; PRACTICALS - 02

Course Objectives:

1. To introduce to the students the basic understanding of the working of a computer system.
2. To familiarize the students with the basic notations and data representation methods used.
3. To familiarize the students with the various software and hardware aspects of computers.
4. To make the students understand the need and working of the interconnection and communication between computers.
5. To make the students familiar with the basic internet technology and concepts.

THEORY (4 CREDITS)

UNIT – I

Introduction to Computers. History, Generation of Computers, Data Processing, Memory Hierarchy, Input/ Output devices, BIOS, VDU

Data Representation - Binary, Decimal, Octal, Hexadecimal and their conversions, 1's and 2's compliment, Block Diagram of a **Basic Computer** and its working.

UNIT – II

Application Software and System Software, Open-Source Software and Proprietary Software.

Computer **Languages** and its types (Machine Language, Assembly Language, High Level Language) Translators, Compiler, Interpreter

Operating System and its functions, Types (Single-User, Multi-User, Multi-Tasking, Time-Sharing, Distributed, Real-Time)

UNIT – III

Data Communication - Need for Network Communication, Modes of Communication-Simplex, Duplex, Half-Duplex; Introduction to Networks, LAN, MAN, WAN

Protocols - Ethernet, IP, TCP, UDP, HTTP

Networking Elements - Switch, Router, Server, Firewall

UNIT – IV

Introduction of Internet and WWW, Basic working of a Web Browser, Introduction to popular web browsers, Concepts of URL, Domain Name, Web Server, Smartphone Apps, Email, Instant Messaging, ISP Communication and Collaboration: Using e-governance, search engines, Webhosting, netiquettes.

COMPUTER FUNDAMENTALS LAB. (2 CREDITS)

MS WORD BASICS:

1. Basics of Word Processing, Create, Save, Edit, open files.
2. Using the Interface (Menu Toolbars), Editing Text (Copy, Delete, Move Etc.) Finding and replacing text.
3. Insert: Table, images, textbox, word art, symbols.
4. Auto correct Feature, Grammar check Facility, Formatting and Editing, Font, Size, alignment paragraph, Bullets and numbering.
5. Table: Insert and Draw, changing cell width and height, insert/delete rows in columns.
6. Borders and shadings, Mail merge.

MS EXCEL BASIC:

Creating and opening worksheets, saving and data entry in cells.

7. Entry of Numbers, Text and Formulae, Moving Data in the Worksheet.
8. Selecting Data Range, Using the Interface (Toolbars, Menus).
9. Editing basics, working with Workbooks Saving, Cell Reference, Formatting, Editing.
10. Working with Data, charts, graphs.

BACHELORS WITH CLINICAL BIOCHEMISTRY AS MAJOR

1st SEMESTER

CBC123J: CLINICAL BIOCHEMISTRY _ FUNDAMENTALS OF CLINICAL BIOCHEMISTRY

CREDITS: THEORY: 4; PRACTICAL: 2

OBJECTIVES AND EXPECTED LEARNING OUTCOMES

The course is designed to give a general insight into clinical biochemistry as a subject and to acquaint the students with the basic ethics of laboratory, essentials of lab management, quality control and impart awareness about hazards and safety measures in the clinical laboratory. The students will also learn about basics of specimen collection and handling for diagnostic investigations.

(THEORY: 4 CREDITS)

UNIT-1 INTRODUCTION TO CLINICAL BIOCHEMISTRY (15 HOURS)

History and scope of clinical biochemistry, Basic concept of core laboratories, Point of care testing, Automation in clinical laboratories, Ethics of laboratory practice

UNIT-2 QUALITY CONTROL (15 HOURS)

Quality control in clinical biochemistry-Pre-analytical, analytical and post-analytical, Internal and external quality control, Quality control charts, Measures of diagnostic accuracy-precision, accuracy, sensitivity, specificity and predictive values

UNIT-3 LABORATORY HAZARDS AND SAFETY (15 HOURS)

Laboratory hazards- Biological, chemical, radiation and fire hazards; Bio-safety in clinical laboratory- biological safety, chemical safety and radiation safety, Safety equipments, Disposal of hazardous materials

UNIT-4 BODY FLUIDS AND SPECIMENS (15 HOURS)

Specimen collection of blood, urine, feces and other body fluids, Tube additives for blood- usage and mechanism, Handling of specimens- preservation, storage and transport, Pre-analytical variations, Concept of reference values

PRACTICAL (2 CREDITS: 60 HOURS)

1. Biochemical calculations- Molarity, molality, normality and percent solution
2. Preparation of standard buffers and determination of pH of solution
3. Working, principle and maintenance of common laboratory equipments
4. Methods of collection and preservation of blood samples- Colour coding of tubes
5. Fractionation of blood samples

RECOMMENDED BOOKS:

1. Teitz, Fundamentals of Clinical chemistry and Molecular Diagnostics by Nader Rifai. Publisher: Elsevier Publications
2. Clinical Chemistry: Techniques, Principles, Correlations by Michael L. Bishop, Edward P. Fody, Larry E. Schoeff. Publisher: Lippincott Williams & Wilkins
3. Henry's Clinical Diagnosis Management by Laboratory medicine by Richard McPherson, Matthew Pincus. Publisher: Elsevier Publications
4. Medical Laboratory Science - Theory And Practice by J Ochei and A Kolhatka. Publisher: Mc Graw Hill

BACHELORS WITH CHEMISTRY AS MAJOR
1st SEMESTER

CHM123J: CHEMISTRY _ FUNDAMENTALS OF CHEMISTRY AND CHEMICAL ANALYSIS-I

CREDITS: THEORY: 4, PRACTICALS: 2

COURSE OBJECTIVES:

- To introduce students to the basic concepts of Inorganic chemistry, chemical bonding, acid base theories and fundamental aspects of s block elements.
- To understand the basic concepts of organic chemistry, electron displacements, stereo chemistry and reactive intermediates
- To have knowledge about the gaseous, liquid and solid states of matter.

LEARNING OUTCOMES:

On completion of the course, the student should be able to:

- Understand the nature of different theories of chemical bonding, MO treatment of some molecules, bonding in electron deficient molecules, strength of forces between chemical constituents and different acid base concepts.
- Understand how periodic trends affect the reaction chemistry, complexing ability of s-block elements.
- Applications of s-block elements.
- Recognize the key reactive intermediates in organic chemistry and understand different aspects of stereochemistry.
- Understand the structural and behavioral aspects of states of matter.

UNIT 1- BASIC INORGANIC CHEMISTRY (15 HOURS)

Electronegativity, scales and applications. Effective nuclear charge and its calculation by Slater rules. Fajan's rules and its applications. Solvation energy and factors affecting solubility of ionic solids. VSEPR theory of simple molecules (AX_4 , AX_4E_2 , AX_5 , AX_5E , AX_3E_2 , AX_6) MO treatment of heteronuclear diatomic molecules (CO and NO). Multicenter bonding in electron deficient molecules.

Acid base theories: Arrhenius, Bronsted-Lowry, Lewis, Lux-Flood and Usanovich. HSAB-principle, concept and applications. Relative strengths of acids and bases. Differentiating and leveling solvents. **Non aqueous solvents: classification and comparison with aqueous solvents.** NH_3 as representative non aqueous solvent.

UNIT II - S-BLOCK CHEMISTRY (15 HOURS)

Chemical reactivity of s-block elements towards water, oxygen, hydrogen, and halogens. Anomalous behavior and diagonal relationship (Lithium, Beryllium, Magnesium and Aluminum). Chemical characteristics of the compounds of **alkali and alkaline earth metals (oxides, hydrides, hydroxides carbonates, nitrates, sulphates)**. Solutions of alkali metals in liquid ammonia, EDTA complexes of calcium and magnesium. Industrial importance of s blocks elements (Alkali metal ion batteries).

UNIT III: BASIC CONCEPTS IN ORGANIC CHEMISTRY-I (15 HOURS)

Electron displacements: Inductive, electromeric, conjugative and hyperconjugative effects, Tautomerism. Nucleophiles and electrophiles. Arrow formalism.

Reactive intermediates: Introduction, structure, generation, fate and stability of carbocations, carbanions, free-radicals and carbenes

Stereochemistry

Conformations of ethane, butane and cyclohexane. Interconversions: Wedge Formula, Newmann, Sawhorse and Fischer representations. **Geometrical and Optical isomerism**, concept of chirality, Enantiomerism, Diastereomerism and Meso compounds). Threo and erythro, Absolute Configuration; D and L; R/ S (up to two chiral centers), *cis-trans* and E / Z systems of nomenclature.

UNIT IV: STATES OF MATTER (15 HOURS)

Gaseous State: Kinetic molecular theory of gases, Root mean square, average and most probable velocities; qualitative discussion of Maxwell's distribution of molecular velocities. Deviation of gases from ideal behaviour, **van der Waal's equation of state**. PV isotherms of real gases, continuity of states, van der Waal's equation

isotherms. Relationship between critical constants and van der Waal's constants, the law of corresponding states, reduced equation of state.

Liquid State: Viscosity and surface tension of liquids, factors affecting viscosity and surface tension

Solid State: General characteristics of solids, Symmetry elements in crystals, Crystal lattice and unit cell, number of atoms in the unit cell, close-packed structures, packing efficiency, and Characteristic structures of ionic solids (NaCl, CaF₂, ZnS).

BOOKS RECOMMENDED:

1. Concise Inorganic Chemistry; J.D. Lee; 5th Edn., OUP/Wiley India Pvt. Limited, 2008
2. Chemistry of the Elements; N. N. Greenwood, A. Earnshaw; 2nd Edn., Elsevier India, 2010.
3. Principles of Inorganic Chemistry; B.R. Puri, L.R. Sharma and K.C. Kalia; 33rd Edn., Milestone Publishers & Distributors/ Vishal Publishing Co., 2017
4. Advanced General Organic Chemistry: A Modern Approach; S.K. Ghosh; 3rd Revised Edn., New Central, 2010.
5. Organic Chemistry; R.T. Morrison, R.N. Boyd, S. K. Bhattacharjee; 7th Edn., Pearson India, 2011.
6. Organic Chemistry; P.Y. Bruice; 8th Edn., Pearson Education, 2017.
7. Advanced Organic Chemistry; Dr. Jagdamba Singh and LDS Yadav; Pragati edition, 2017.
8. Principles of Physical Chemistry; B.R. Puri, L.R. Sharma and L.S. Pathania; 47th Edn., Vishal Pubs & Co, 2017.
9. Physical Chemistry; T. Engel, P. Reid; 3rd Edn., Pearson India, 2013.
10. Elements of Physical Chemistry, Peter Atkins and Julio de Paula, 7th Edition, Oxford University Press, 2016.
11. Physical Chemistry, Concepts and Models, Volume 1, Nabakumar Bera, Subhasree Ghosh, Paulam Ghosh, Techno world,
12. Atkins' Physical Chemistry, Peter Atkins, Julio de Paula & James Keeler, 11th Edition, Oxford University Press, 2018.

Practical (2 credits: 60 Hours)

Section A: Volumetric Analysis (any two)

1. Preparation of solutions of different concentrations; Standardization of solutions (acids and bases).
2. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture.
3. Volumetric estimation of oxalic acid by titrating it with KMnO₄.

Section B: Quantitative Analysis (any two)

1. Purification of organic compounds by crystallization (from water and alcohol) and sublimation.
2. Detection of N, S and halogens in organic compounds.
3. Separation of mixtures by Chromatography:
Separation and Identification of the components in a given mixture of amino acids by paper chromatography.

Section C: Physico-chemical Analysis (any two)

1. Measurement of density and relative density of various liquids using pycnometer/density bottle.
2. Measurement of viscosity of given liquids using Ostwald Viscometer.
3. Measurement of surface tension of given liquids using stalagmometer.

Books Recommended:

1. Svehla, G. *Vogel's Qualitative Inorganic Analysis*, Pearson Education, 2012.
2. Mendham, J. *Vogel's Quantitative Chemical Analysis*, Pearson, 2009.
3. Comprehensive Practical Organic Chemistry: Qualitative analysis Ahluwalia, V.K. & Sunita Dhingra; Universities Press, India, 2004.
4. Advanced Practical Organic Chemistry; N. K. Vishnoi; 3rd Edn; Vikas Publishing, 2009.
5. Advanced Practical Physical Chemistry; J.B. Yadav; Krishna Prakashan Media (P) Limited, 2015.
6. Advanced Physical Chemistry Experiments; J. N. Gurtu, A. Gurtu, Pragati Prakashan, 2008.

1st Semester
Major Course

DMG122J DISASTER MANAGEMENT (HAZARDS AND DISASTERS)

CREDITS: THEORY 04, PRACTICAL 02

Course Outcome/Learning Objectives: This course has been designed to discuss the concept, nature, origin and types of hazards and Disasters. The course is expected to make the learners aware about the genesis of hazards arising out of Geological, Geophysical, Hydro-meteorological, Environmental and other Anthropogenic Processes.

THEORY (4 CREDITS)

UNIT-I

1. Concept of Hazard
2. Classification of Hazards
3. Characteristic Features of Hazards
4. Disaster: Definition and Concept

UNIT -II

Geological Hazards:

1. Earthquakes
2. Landslides
3. Volcanoes
4. Tsunamis

UNIT -III

Hydro-meteorological Hazards:

1. Floods
2. Droughts
3. Cyclones
4. Snow Avalanches

UNIT -IV

Human-induced Hazards:

1. Biological hazards
2. Urban and Wild Fires
3. Air and Water pollution
4. Technological hazards

PRACTICAL (2 CREDITS)

UNIT -V

1. Interpretation of Seismogram
2. Measuring of Earthquake Magnitude
3. Measuring of Earthquake Epicenter

UNIT -VI

Identification and Interpretation of the following in the field:

1. Hazards
2. Vulnerability
3. Elements at Risk

SUGGESTED READINGS

1. Encyclopedia of Disaster and Hazards Management, Oxford Book Company
2. Environmental Disasters; KK Singh, et. Al APH Publishers
3. Forest Fire Disaster Management, Satendra, 2014. A. D. Kaushik
4. Geological Hazards and Hydro-meteorological Hazards www.nidm.gov.in
5. Man-made Disasters; Barry A. Turner, Nick Pidgeon.
6. Earthquake & Natural Disasters; Manik Kar. Motilal Banarsidass Publishers Private Limited.
7. Encyclopedia of Disaster Management; PC Sinha. Anmol Publishing House.

BACHELORS WITH ECONOMICS AS MAJOR

1st SEMESTER

ECO122J: ECONOMICS _BASIC MICROECONOMICS

CREDITS: 4 + 2 = 6

Course Description: This is a core course of 06 credits (01 credit for each unit with last two units as tutorial). The course starts with some basic concepts required for understanding the essence of subject, followed by law of demand and supply along with the concepts like market equilibrium, utility, budget line and consumer's equilibrium. The course concludes with the basic concepts associated with producer's equilibrium. Overall focus of the course is to foster knowledge, comprehension and skills among the learners.

Course Objective: The course is designed to expose the students to the basic principles of microeconomic theory. The course illustrates how microeconomic concepts can be applied to analyze real life situations.

Learning Outcomes: After completing this course, the student is expected to:

LO1: Develop a basic understanding of theoretical concepts in microeconomics

LO2: Exhibit a broad understanding of the theory of demand and be in a position to calculate demand elasticity under different circumstances.

LO3: Demonstrate an understanding of utility theory and analyze changes in budget and its impact on consumer's equilibrium

LO4: Acquire the skills to calculate revenue and cost functions of a firm.

Unit I: Introduction (1 Credit)

Economics: nature & scope; methodology of economics; microeconomics and macroeconomics – distinction; central problems of an economy; basic economic concepts; the economic problem -scarcity and choice, concept of opportunity cost; production possibility curve.

Unit II : Demand & Supply (1 Credit)

Demand – concept and types, demand schedule & demand curve; determinants of demand; law of demand & its exceptions; movement vs. shift in demand. Supply-concept, types and determinants; law of supply. Elasticity of demand & supply; types and measurement of elasticity of demand, factors affecting elasticity of demand.

Unit III: Utility Analysis of Demand (1 Credit)

Consumer Preference's, Utility- concept and approaches, total utility and marginal utility and the relationship between the two; law of diminishing marginal utility and law of **equi-marginal utility**; utility function; indifference curve-concept, types, assumptions and properties; budget line; consumer's equilibrium, derivation of demand curve using indifference curve analysis.

Unit IV: Production, Cost & Revenue (1 Credit)

Production function, law of variable proportions, economies and diseconomies of scale, returns to scale. Isoquants - properties of isoquants; iso-cost line, producer's equilibrium - cost minimizing approach. Cost: concepts, short run and long run cost curves. **Revenue: concepts of revenue- total, average and marginal revenue and their relationship.**

Tutorial-I (2 Credits)

- Use of two-dimensional plan in economics – single and two variable graphs.
- Numerical examples of calculating elasticities – point and arc elasticities.
- A case study on giffen paradox
- Derivation of demand curve from market data.
- Numerical exposition on budget line
- Numerical exposition on total utility and marginal utility
- Numerical exposition on total cost, average cost and marginal cost

Basic Readings:

1. Mankiw, N. (2020). Economics: Principles and applications, 9th ed. Cengage Learning.
2. Snyder, C., Nicholson, W. (2010). Theory and Application of Intermediate Microeconomics, 10th Edition
3. Samuelson, P., & Nordhaus, W. (2010). Principles of Economics. McGraw-Hill, New York, 10th edition.
3. Karl E. Case, Ray C. Fair, Sharon E. Oster (2017), Principles of Microeconomics, Pearson.

Additional Readings:

1. Bernheim, B. Douglas, and Michael Dennis Whinston. 2014. *Microeconomics*. New York, NY: McGraw-Hill/Irwin.
2. Varian, H. (2010). Intermediate microeconomics: A modern approach, 8th ed. W. W. Norton.
3. Bergstrom, T., Varian, H. (2014). Workouts in intermediate microeconomics, W. W. Norton.
4. Stonier, A. W., & Hague, D. C. (2008). A textbook of economic theory, 5th Edition.

**Further Readings shall be as per the suggestions of the concerned teacher.*

SEMESTER 1st
MAJOR COURSE

EDU122J EDUCATION

CREDITS (THEORY: 4; TUTORIAL: 2)

Expected Outcomes:

The paper deals with the Philosophical base of Education. The content of the course will abreast the students with the concept of Philosophy and its influence on the Education System. The Course will enable the students to understand the educational implications of different schools of Philosophy. The paper also aims at enabling the students to understand the Educational contribution of different educational thinkers and their relevance in the contemporary Education Systems.

UNIT-I EDUCATION AND PHILOSOPHY:

- i. Education - Meaning and Importance.
- ii. **Philosophy- Meaning, Significance.**
- iii. Education and Philosophy- Relationship.
- iv. **Branches of Philosophy – Epistemology and Axiology.**
- v. **Scope of Educational Philosophy.**

UNIT-II IDEALISM AS A SCHOOL OF PHILOSOPHY

- i. Meaning of Idealism.
- ii. Aims of Education.
- iii. Curriculum and Methods of Teaching.
- iv. Concept of **Freedom** and Discipline.
- v. Role of Teacher.

UNIT-III PRAGMATISM AS A SCHOOL OF PHILOSOPHY

- i. Meaning of Pragmatism.
- ii. Aims of Education.
- iii. Curriculum and Methods of Teaching.
- iv. Concept of Freedom and Discipline.
- v. Role of Teacher.

UNIT-IV **LIFE SKETCH AND EDUCATIONAL THOUGHT:**

- i. Swami Vivekananda.
- ii. Maulana Abul Kalam Azad.
- iii. Allama Iqbal.
- iv. Maria Montessori.

TUTORIAL- ACTIVITY BASED (2 CREDITS):

UNIT V

- i. Book Review on any of the recommended Book in syllabus
- ii. Seminar Presentation (PPT) on any topic in syllabus
- iii. Preparation of Philosophical Terms (Glossary Type) at least 20

UNIT- VI

- i) Life sketch and Educational Contribution of any of the thinkers prescribed in Unit IV
- ii) Seminar presentation (PPT) / assignment writing from the sub topics of Unit IV.
- iii) Preparation of the Lesson Plan on the basis of project method Advocated by John Dewey

SEMESTER 1st
MAJOR COURSE

EVSI22J: ENVIRONMENTAL SCIENCE (ENVIRONMENT AND ECOLOGY)

(4+2 CREDITS)

Paper outcome: This paper is designed to introduce the basic concepts of Environment and Ecology leading to better understanding of inter-connections of Environmental Science as a discipline.

THEORY (4 CREDITS)

UNIT 1: BASICS OF ENVIRONMENT

Environmental science: Scope and importance, Components of environment: Atmosphere, Lithosphere, **Hydrosphere**, Biosphere (structure and function), Brief account of **Cryosphere** and Anthroposphere (Built Environment).

UNIT 2: POPULATION AND COMMUNITY

Concept of population, Population growth (Density dependent and density independent factors), Survivorship curves and age structure, Biotic potential and carrying capacity (r and k strategists), Population interactions: Mutualism, Protocooperation, Commensalism, Competition, Herbivory, Predation, Parasitism, Community: Concept and characteristics, Ecological succession.

UNIT 3: ECOSYSTEMS

Ecosystem: Concept, Organization and significance. Types of ecosystems. Food chains, Food webs and trophic levels, Ecological pyramids, Energy flow in ecosystems, Ecosystem productivity, Decomposition, Biogeochemical cycles: Carbon, Nitrogen, Phosphorus and Sulphur.

UNIT 4: HUMAN ECOLOGY

Global and regional human population growth, Theories of human population growth (Malthusian and neo-malthusian), Drivers of human population change, Growth curves and population projections, Earth's carrying capacity and ecological footprint, Brief account of Anthropocene.

LABORATORY COURSE (2 CREDITS)

1. **Study of water flow and discharge from any water body**
2. **Study of meteorological parameters (temperature, humidity, rainfall)**
3. Study of the soil profile in any ecosystem
4. Study of vegetation in a particular ecosystem (**lake**, forest, agricultural, grassland etc)
5. Study of fauna in a particular ecosystem (**lake**, forest, agricultural, grassland etc)
6. Study of biomass and carbon stock of herbaceous vegetation in any ecosystem (**lake**, forest, agricultural, grassland etc)
7. Case study of approaches used by any country or region for human population management
8. Field /Environmental visit to understand various environmental components

BIBLIOGRAPHY

1. Basics of Environmental Science: Michael Allaby
2. Environmental Sciences (system and solutions): McKinney and Schoch
3. Environmental Science: Botkin, Keller
4. Environmental Science: Tyler Miller
5. Essentials of Geology: Chernicoff, Fox, Venkatakrishnan
6. Concepts of Ecology: E.J. Kormondy
7. Environment Principles & Applications: Chris Park,
8. Fundamentals of Ecology: E.P. Odum
9. Population Ecology: P.S. Aaradhana
10. Ecology and Environment: P.D. Sharma
11. Ecology, Environment and Resource Conservation, Singh, J.S., Singh, S.P. and Gupta, S.R.
12. Environmental Chemistry, De, A.K.

Unit-I الوحدة الأولى

تعريف القرآن الكريم، ظاهرة الوحي، معنى الوحي، أنواع الوحي، الوحي بمعناه اللغوي، الوحي بمعناه الشرعي، وحي الله إلى ملائكته، وحي الله إلى رُسُلِهِ من البشر، المكي والمدني: صفات المجتمع المكي والمدني عند نزول القرآن، تعريف المكي والمدني، خصائص القرآن المكي، خصائص القرآن المدني، منهج العلماء لمعرفة المكي والمدني فوئد العلم بالمكي والمدني من القرآن الكريم.

Unit-II الوحدة الثانية

سورة الفاتحة (كاملاً)

تفسير سورة البقرة من الآية 1 إلى 20 (الم:..... وَلَوْ شَاءَ اللَّهُ لَذَهَبَ بِسَمْعِهِمْ وَأَبْصَارِهِمْ، إِنَّ اللَّهَ عَلَى كُلِّ شَيْءٍ قَدِيرٌ) ومن الآية 142 إلى 145 (سَيَقُولُ السُّفَهَاءُ مِنَ النَّاسِ..... إِنَّكَ إِذَا أَنِيتَ الظَّالِمِينَ)

Unit-III الوحدة الثالثة

(أ) الحديث لغةً واصطلاحاً، الخبر لغةً واصطلاحاً، الخليفة التاريخية للحديث، تقسيم الخبر بالنسبة لوصوله إلينا، الخبر المتواتر وشروطه، المتواتر اللفظي والمعنوي، خبر الآحاد: الآحاد لغةً واصطلاحاً، حكمه، تقسيم خبر الآحاد بالنسبة إلى عدد طرقه، المشهور لغةً واصطلاحاً المستفيض لغةً واصطلاحاً، أشهر المصنفات في الأحاديث المشهورة على الألسنة، الغريب لغةً واصطلاحاً، أقسام الغريب

(ب) كتاب الإيمان الكامل من مختارات من الأحاديث (الجزء الرابع)

Unit-IV الوحدة الرابعة

كتاب الطهارة (الكامل) من مختارات من الأحاديث (الجزء الرابع)

Tutorial (2 Credits: 30 Hours)

١- فضل سورة البقرة ٢- وصف أصناف الناس في السورة ٣- استخلاص آدَم في الأرض في ضوء السورة

الكتب المقررة للدراسة:

١: المصحف المؤكل ٢: بحوث منهجية في علوم القرآن لمؤلفي إبراهيم ٣: الفوز الكبير في أصول تفسير لشاه ولي الله الدهلوي

الكتب المعاونة:

١: تفهيم القرآن لمولانا السيد أبي الاعلى المودودي ٢: قرآن مجيد لحافظ نذراحميد
٣: مطالعة قرآن مجيد ذا كثر جهات زيب ٤: معارف القرآن لمفتي محمد شفيق العثماني

COMMERCE: FINANCE

SEMESTER – 1st	MAJOR COURSE
FIN122J: INDIAN FINANCIAL SYSTEM (FINANCE - COMMERCE)	CREDITS: THEORY: 04 PRACTICAL / TUTORIAL: 02

Course Description:

The course covers the entire gamut of Indian Financial system such as Financial Instruments, Financial Markets, Financial Institutions and Financial Services. It also highlights how important the efficient financial system is for the economic growth & development.

Objectives:

This course is aimed with the following specific objectives:

- To build conceptual understanding about various aspects of a financial system with particular reference to Indian Financial System;
- To grasp mechanics of various financial instruments, financial services and institutions;
- To understand mechanism of various types of financial markets.

Learning Outcomes:

After going through this course, the students are expected to:

- Have a thorough understanding of the rationale and significance of a financial system in supporting the acceleration of economic growth and development.
- Have an understanding of different of different money market instruments and how each of the segments of this market operates.
- How primary and secondary capital markets in India operate?
- How to invest directly or indirectly in the capital market?

Curriculum Details**Unit- I:**

Financial Systems: Significance, Functions and structure of financial system, Indian financial system, Financial Dualism, Financial Sector reforms, SEBI Role & its Functions; Financial instruments, Debentures, Shares, ADRs, GDRs and ECBs. Derivative trading – Futures & options contracts.

Unit -II:

Money Market: Meaning and Functions, Constituents of Money Market: Call Money Market, Treasury Bill Market, Certificate of Deposit Market, Commercial Bills Market and Commercial Paper Market. Method of Auction of Treasury bills, RBI's Negotiated Dealing System, CCIL and its role as inter-bank market maker, FIMMDA and its role in money market.

Unit -III

Capital Market – Structure and Functions of Capital Market; Primary Market its role & Functions, Methods of selling securities in Primary Market, SEBI Guidelines for different types of issues, procedures for Pricing of new issues, Appointment & role of Merchant Bankers, Underwriters, Lead Managers, Brokers, Bankers & Registrars, Allotment of shares, Secondary Market stock exchanges. Types of stock exchanges, Listing & De-listing of securities, Screen based Trading System and Settlement.

Unit -IV

Financial Institutions: RBI; Commercial Banks; Developmental Financial Institutions; Fee Based Financial Services, Fund Based Financial Institutions.

Unit-V and Unit-VI (Tutorial/Practical)

Review of Offer Document, Analysis of Public Issues and Analysis of Monthly Monetary Policy of RBI. Analysis of Indian Stock Markets. Assignment on new developments in the Indian Stock Market. Analysis of Bull and Bear Market Phases.

Note: The Teacher shall give assignments from the above topics to the students and students shall submit report for evaluation by the concerned teacher.

SUGGESTED READINGS:

- Pathak, Bharti, The Indian Financial System, 2nd Edition, Pearson Education, India 2008
- Khan, M. Y. Indian Financial System, Tata McGraw Hill New Delhi.
- Bhole, L. M., Indian Financial System, Tata McGraw Hill New Delhi.
- Bhole, L. M., Financial Institutions & Markets Structure, Growth & Innovations, Tata McGraw Hill New Delhi.
- Varshney, Indian Financial System Sultan P.N. Chand & Sons, New Delhi.
- Desai, Vasant, The Indian Financial System, Himalaya Publishing House, New Delhi.

BACHELORS WITH FOOD SCIENCE AND TECHNOLOGY AS MAJOR
1st SEMESTER

FST123J FOOD SCIENCE AND TECHNOLOGY _ FOOD CHEMISTRY AND MICROBIOLOGY-I

CREDITS: THEORY-4; PRACTICAL - 2

OBJECTIVES/EXPECTED LEARNING

- To acquaint the students to different types of microorganisms associated with food spoilage and food preservation
- To acquaint the students about the structure and properties of different components of food

THEORY (4 CREDITS): 60 HOURS

UNIT- 1 (15 HOURS)

- History and scope of food microbiology–Historical development in food preservation, food spoilage and food poisoning
- Microbial growth pattern–Growth curve of microbial cultures, its application to food preservation.
- Factors affecting microbial growth–pH, moisture content, Eh, nutrient content, antimicrobial constituents, biological structures and extrinsic factors

UNIT- 2 (15 HOURS)

- **Bacteria–Morphological & structural features of Gram +ve & Gram –ve bacteria**, physiological characteristics
- **Mold–General characteristics, morphological features, reproduction, physiological requirements, common molds associated with foods**
- **Yeast–General Characteristics, reproduction, cultural characteristics, physiological characteristics**
- **Viruses–Structure and replication with particular reference to food born viruses**
- **Important food spoilage and pathogenic bacteria associated with foods**

UNIT- 3 (15 HOURS)

- **Food chemistry: Definitions & Scope**
- **Water: Structure of water, hydrogen bonding, common food components involved in hydrogen bonding**
- **Water solute interactions–Free water, bound water, interaction of water with ionic and non-ionic groups**
- **Water activity and its relation with shelf-life of foods**
- **Carbohydrates: Definition, chemistry, classification, sources and properties**
- **Proteins: Definition, chemistry, classification, sources, Amino acid structure, Acid base properties**

UNIT – 4 (15 HOURS)

- **Fats: Definition, Sources, classification, structure and properties**
- **Pigments in foods–Chlorophyll, carotenoids, anthocyanins: Classification, structure and properties.**
- **Vitamins: Definition, sources, classification, bioavailability, losses and stability**

PRACTICALS (2 CREDITS: 60 HOURS)

- **Microscope: Types and working of microscope**
- **Cleaning and sterilization of glassware**
- **Identification of different food bacteria, yeast and mold on the basis of morphological characteristics**
- **Preparation of nutrient media and techniques of inoculation**
- **Gram staining of microbes–Gram positive and gram negative bacteria**
- **Determination of microbial load in food samples using different plating techniques**
- **Determination of coliform count in foods**
- **Preparation and standardization of solutions**
- **Determination of moisture, ash, crude protein and crude fat content in food samples**
- **Qualitative tests of carbohydrates and amino acids**
- **Determination of total and reducing sugars in food**

REFERENCES:

- Frazier, W.C. (2017). Food Microbiology (5th Ed.). McGraw Hill Education (India) Private Ltd.
- Jay, J. (2012). Modern Food Microbiology. Springer Science & Business Media.
- George J. Banwart. (2012). Basic Food Microbiology. Springer Science & Business Media.
- Stainer et al. (1999). General Microbiology (5th Ed.). Palgrave Macmillan; 5th edition
- Ray, B. & Bhunia, A. (2013). Fundamentals of Food Microbiology. CRC Press.
- Owen R. Fennema. (2007). Food Chemistry. CRC Press
- Meyer. (1960). Food Chemistry. Reinhold Publishing Corporation.
- Wong. (2018). Mechanism & Theory in Food Chemistry. Springer International Publishing
- Belitz, H. D. (2009). Food Chemistry. Springer Science & Business Media

SEMESTER 1st
MAJOR COURSE

GDS122J: GENDER STUDIES (UNDERSTANDING GENDER)

CREDITS: THEORY – 4; TUTORIALS - 2

OBJECTIVES:

1. To familiarize students with the concept of sex and gender as used in feminist works and creating awareness on the way by which gender is constructed.
2. To make students understand the concept of masculinity and femininity and the need to treat gender as an analytical category.
3. To elaborate on the concept of patriarchy and male dominance in society and their impact on women's lives.
4. To introduce students to basic concepts in Women and Gender studies.

EXPECTED LEARNING OUTCOMES:

1. Understanding the socio-cultural basis of gender-based inequalities and establishment of gender as an analytical category.
2. Examine and critique gender assumptions underlying social aspects and comprehend the impact of gender on individuals' history and contemporary agency.
3. Critique ideology assumptions and different feminist thoughts to develop gender sensitive and gender just personalities among students.

THEORY (4 CREDITS)

Unit-1: Basic Concepts related to Gender Studies

- Difference between Sex and gender
- Need of Gender Sensitization and feminism.
- Social and cultural construction of Gender.

Unit-2: Understanding Patriarchy

- Patriarchy: Meaning and origin
- Social institution perpetuating patriarchy.
- Patrilineal and Patrilocal system, Matrilineal and Matrilocal system with special reference to India.

Unit-3: Status of Women in India

- Female Foeticide, Female Infanticide.
- Sex Ratio
- Child Sexual Abuse

Unit- 4: Issues related to third gender

- Issues of the rights of sexual minorities and transgender,
- Article 377 and beyond

TUTORIAL (2 CREDITS)

Unit -5: Tutorial: Gender and Society

- Gender and Caste
- Gender and Class
- Gender and Race

Unit 6: Tutorial: Women in Kashmir

- Women and drug Abuse
- Late Marriages
- Women's Unemployment

Suggested Readings:

- Bhasin, K. (2000). *Understanding Gender*. Kali for Women, New Delhi.
- Bhasin, K. (2004). *Exploring Masculinity*. Kali for Women, New Delhi.
- Bhasin, K. (2006). *What is Patriarchy?* Kali for women, New Delhi.
- Chakravarti, Uma, (2006). *Gendering Caste. Stree, Through Feminist Lens*. Bhatkal & Sen. New Delhi.
- John, M.E. (ed). (2008). *Women's Studies in India – A Reader*, Penguin Books, New Delhi.
- Desai N and Krishnaraj M (1986). *Women's Studies in India – Some Perspectives*, Popular Prakashan Private Ltd, Mumbai. Ajantha Publications, New Delhi.
- Jasbir, J. (2011). *Women in Patriarchy*. New Delhi
- Chakravarti, U. 2006. *Gendering Caste. Stree*, Kolkata.
- Lorbe, J. (1991). *The Social construction of Gender*, Sage, London.
- Ray R. (2012). *Handbook of Gender*, Oxford University Press, New Delhi.
- Geetha, V. (2002). *Gender, Stree*. Kolkata.
- Walby, Sylvia. (1986). *Patriarchy at work*, University of Minnesota Press Minneapolis.

SEMESTER 1st

MAJOR COURSE

GLY122J: GEOLOGY (FUNDAMENTALS OF GEOLOGY)

CREDITS: (4+2)

Objective/Expected learning outcomes:

The study of this course will strengthen student's knowledge with respect to understanding the essentials of the structural dynamics of the earth. The students will understand the origin of our solar system and planets, including earth. The students will understand the different surface processes and geomorphological features and their development. Besides, studying the basics of mineralogy will help the students in understanding and building the overall knowledge in Geology.

THEORY (4 CREDITS)

UNIT-1

Introduction to the science of geology: Definition, branches, scope and importance, History of Geology origin and evolution of Geological thoughts; Modern theories about the origin of the solar system; Origin of the Earth exogenous and endogenous process. Relation with other branches of sciences; Role of physics, chemistry, and paleobiology in the development of ideas about the earth. Role of Physics in **crystallography, gravity, geomagnetism**, isostasy, earthquakes and microscopy. Role of Chemistry in chemical bonds, crystal chemistry, **solution chemistry**, chemical energetic, introduction to fossils.

UNIT -2

Fundamental concepts: Catastrophism, uniformitarianism, Davis cycle of erosion, and base level of erosion. **Weathering: definition and types, agents of weathering**. Epeirogenesis and orogenesis. Mountains and types. **Volcanoes: types, distribution, and eruptional features**. **Glaciers: Definition and types**, snowline, glacial movements, and crevasses. Geological work of glaciers: **Erosion and deposition**. Aeolian processes: erosional and depositional features. Geological work of river: erosional and depositional features. **Drainage patterns**. Karst topography: Surface and sub-surface features. Structural landforms: Definition and types, Inversion of topography. Climate and landforms. **Soils: Soil formation, Soil profiles**. **Oceans: Topography of seafloor. – Continental shelves, slope, abyssal plains, Ocean ridges, submarine valleys, canyons, deep-sea trenches, and guyots. Oceanic erosion and deposition. Coral reefs and types.**

UNIT -3

Introduction to rocks and minerals: Rocks as natural mineral aggregates; **types of rocks: igneous rocks, sedimentary rocks, metamorphic rocks**. Preliminary knowledge about the most common rock-forming and economic minerals. Structure of earth: physical properties. Geology as the history of Earth: How the rocks record history, Geological Time Scale, Mineralogy and the texture, Structures, introduction to paleoclimate and paleogeography, Surface relief of the earth, Topography of sea floor. Various Geospheres.

UNIT -4

Mineralogy: Definition, scope, and classification of silicate minerals and ore-forming minerals. Scalar and vector properties of minerals. Moho's scale of hardness. Physical properties and mode of occurrence. Quartz, Feldspar, Mica, Amphibole, Pyroxene, Olivine, Garnet, Chlorite, and Carbonate. Optical Mineralogy: Polarizing microscope, mechanism of polarization and interference of light, use of accessory plates. Elements of optics, isotropic medium, anisotropic medium, refractive index, Snell's law of critical angle, Optical indicatrix: isotropic, uniaxial, and biaxial. Pleochroism and Birefringence. Optical properties of minerals under plane-polarized and cross-polarized light: Forms, cleavage, fractures and parting, refractive index and relief, Becke line and its use.

PRACTICAL (2 CREDITS)

UNIT-5

Field work (7 days in a semester)

Field Work: Study of landforms, erosional and depositional features. Handling of Clinometer and Brunton compass for measuring dip and strike, and plotting of field data on toposheets.

UNIT -6

Mineralogy: Study of the physical properties of important rock-forming minerals as included in the theory paper. Study of optical properties of important rock-forming minerals as included in the theory paper.

SUGGESTED READINGS:

- Berry & Mason, 1988: Mineralogy. CBS Pub.
Burbank, D. W. and Anderson, R.S., 2001: Tectonic Geomorphology Blackwell Sciences
Dexter Perkin: Minerals in Thin Sections
Gribble, D. D., 1988: Rutley's Elements of Mineralogy, DBS Publications.
Holmes, A., 1996: Principles of Physical Geology, EUBS, Chapman.
Judson, S. and Kaufman, M. E., 1990: Physical Geology, Prentice Hall.
Kerr, P. F., 1984. Optical Mineralogy.
Lutgens, F. K. and Tarbuck, E. J., 1998: Essentials of Geology, Prentice Hall.
Phillips, Wm. R. and Griffen, D.T., 1986: Optical Mineralogy. CBS Edition.
Press, F. and Seiver, R., 1989: The Earth, W. H. Freeman.
Putnis, A., 2001: Introduction to mineral Science. Cambridge University Press.
Read, H. H., 1986: Rutleys Elements of Mineralogy.
Richard, V. G., 1997: Dana's new Mineralogy. John Wiley.
Ritter, D. F., 1978: Process Geomorphology. Wm. C. Brown Publishers,
Tarbuck, E. J. and Lutgens, F. K., 1997: Earth Science, Prentice Hall.
Terry, G. W., 1958: Principles of Petrology, Mathuen.
Vishwas, S. K and Gupta, A., 2001: Introduction to Geomorphology Orient Longman.
S.N. Mathur, [www.GSI](http://www.GSI.Govt.in) Govt. in (Field Manual of GSI).

BACHELORS WITH GEOGRAPHY AS MAJOR

SEMESTER 1st MAJOR COURSE

GGY122J GEOGRAPHY _ PHYSICAL GEOGRAPHY

CREDITS: THEORY 04, PRACTICAL 02

COURSE OUTCOME/LEARNING OBJECTIVES: *Student will gain the knowledge of physical geography. Student will have a general understanding about the geomorphological and geotechnical process and formation. They will be able to correlate the knowledge of physical geography with the human geography.*

THEORY (4 CREDITS)

UNIT-I

- 1) Introduction to Physical Geography
- 2) Structure of Earth's Interior
- 3) Wegner's Theory of Continental Drift
- 4) Concept of Seafloor Spreading, Plate Tectonics
- 5) Earthquakes: Origin, Scales of Measurement

UNIT -II

- 1) Classification and Characteristics of Rocks
- 2) Weathering: Factors and Types
- 3) Endogenetic and Exogenetic Processes
- 4) Landform Development: Fluvial and Glacial
- 5) Davisian Cycle of Landform Evolution

UNIT -III

- 1) Definition and Significance of Climatology
- 2) Insolation and Global Energy Budget
- 3) Atmospheric Pressure and Winds (Planetary, Periodic and Local Winds)
- 4) Precipitation: Forms, Types and Global Distribution Patterns
- 5) Atmospheric Disturbances: Tropical and Temperate Cyclones

UNIT -IV

- 1) Ocean Bottom Topography: Continental Shelf, Continental Slope, Abyssal Plain, Mid- Oceanic Ridges and Oceanic Trenches
- 2) Coral Reefs: Significance, Origin and Types
- 3) Tides: Origin and Types
- 4) Currents: Origin and Types
- 5) Oceans as Store-houses of Resources for the future

PRACTICALS (2 CREDITS)

UNIT - V

- 1) Cartography: Nature and Scope
- 2) Maps: Essentials and Classification
- 3) Scales: Concept, Types and Applications
- 4) Geographical Construction of Plain, Diagonal and Comparative Scales
- 5) Contours: Representation of different Landforms

UNIT - VI

- 1) Drawing of Profiles: Serial, Longitudinal, Superimposed, Composite and Projected
- 2) Graphical Representation of Socio-economic Data
- 3) Construction of Climograph and Hythergraph
- 4) Representation of Geographical Data: Choropleth, Isopleth, Chrocromatic and Chroschematic
- 5) Digital Cartography: Scope and Applications

SUGGESTED READINGS

- A. H. Strahler & A. N. Strahler, Modern Physical Geography, John Willy & sons, 1980.
- Barry, R. G & Chorley, R.J., Atmosphere, Weather and Climate Routledge, 1998.
- Calcutta, 1997.
- Critchfield, H, General Climatology, Prentice Hall, New York, 1975.
- D. S. Lal, Physical Geography, Sharda Pustak Bhawan, 2009
- Gopal Singh, Map World and Practical Geography, Vikas Publishing House, 2000
- Graid, S, General Oceanography- An Introduction, John Wiley & Sons, New York,
- Inc. 2001.
- Kali Charan Sahu, Textbook of Remote Sensing and Geographic Information
- King, C.A.M., Oceanography for Geographers, E Arnold, London, 1975.
- Majid Hussain, Physical Geography, Anmol Publications Pvt. Ltd., 2007
- Publishers New Delhi, 1979.
- Robinson, A.H et al., Elements of Cartography, John Wiley & Sons, U.S.A., 1995.
- S. A. Qazi, Principals of Physical Geography, AHP Publishing Co. 2004
- Sarkar, A.K., Practical Geography: A Systematic Approach, Oriental Longman,
- Satopa Mukherjee, Understanding Physical Geography, Oriental Longman 2002
- Savindra Singh, Physical Geography, Prayag Pustak Bhawan, 2000
- Singh, R.L and Dutt, P.K., Elements of Practical Geography, Kalyani
- Singh, S.: Geomorphology, Prayag Pustakalaya, Allahabad, 1998.
- Sparks, B.N.: Geomorphology, Prayag Pustakalaya, Allahabad, 1998
- Stringer, E.T Foundation of Climatology, Surjeet Publication, Delhi, 1982.

BACHELORS WITH ISLAMIC STUDIES AS MAJOR

SEMESTER: 1st

IST122J: ISLAMIC STUDIES (AN INTRODUCTION TO ISLAMIC CIVILIZATION-I)

CREDITS: 4+2

Objectives / Expected Learning Outcomes:

The objective of the course is to have preliminary knowledge of Islamic Studies as an academic subject along with the doctrine and ritual worship (ibadah) as propounded in the teachings of Islam and Prophet Muhammad ﷺ including his role in establishing a welfare society at Madinah. The course also forms a study of the early development of Islamic civilization.

THEORY (4 CREDITS)

Unit 1: Islamic Studies as an Interdisciplinary Subject

- (i) Islamic Studies: Meaning and Definition
- (ii) Islamic Studies: Nature and Scope
- (iii) Islamic Studies in Higher Educational Institutions of India
 - (a) Aligarh Muslim University
 - (b) Shah-i-Hamadan Institute of Islamic Studies, Kashmir University
- (iv) Islamic Studies at Global Level
 - (a) International Islamic University Malaysia
 - (b) McGill University Canada

Unit-2: Jahiliyyah Arabia

- (i) Topography
- (ii) Religious Beliefs & Practices
- (iii) Society
- (iv) Economy

Unit-3: Prophet Muhammad ﷺ at Makkah (570-622 C.E.)

- (i) Early Life of Prophet Muhammad ﷺ: Major Events
- (ii) *Da'wah*: Challenges and Strategies
- (iii) Major Events at Makkah
 - (a) *Mi'raj*
 - (b) Pledges of *al-Aqabah*
- (iv) *Hijrah*: Causes and Consequences

Unit-4: Prophet Muhammad ﷺ at Madinah (622-632 C.E.)

- (i) Establishment of Islamic Society at Madinah and its Salient Features
- (ii) The Constitution of Madinah (*Mithaq-i-Madinah*) and its Implications
- (iii) *Ghazwat: Badr, Uhud and Khandaq*
- (iv) Consolidation of Madinian State: Treaty of *Hudaibiyah* and *Fath-i-Makkah*

TUTORIALS (2 CREDITS)

- (i) Visit to Prominent Islamic Studies Departments of J&K
- (ii) Book Review of Prominent *Sirah* work on Prophet Muhammad ﷺ
- (iii) Students' Presentation
- (iv) Group Discussion

Books Recommended

- 1) Hamidullah, Muhammad, *Muhammad Razullulah (s.a.w)*, V. P. Book Depot, New Delhi.
- 2) Hassan, Masudul, *History of Islam*, Adam Publishers & Distributors, New Delhi.
- 3) Hitti, P. K., *History of the Arabs*, Macmillan Company, USA.
- 4) Mubarakpuri, Safi ur Rahman, *Al-Raheeq al-Makhtum* (The Sealed Nectar), Darus Salam Publishers, Riyadh.
- 5) Nadwi, Shah Muin ud Din, *Tarikh Islam*, Darul Musanifeen, Azamgarh.
- 6) Nicolson, R. A., *A Literary History of the Arabs*, Adam Publishers and Distributors, New Delhi.
- 7) Rafiabadi, Hamid Naseem, *Hijrah: A Turning Point in Islamic Movement*, Adam Publishers and Distributors, New Delhi.
- 8) Relevant Articles in *Encyclopedia of Islam*.
- 9) Relevant Articles in *Encyclopedia of Modern Muslim World*.
- 10) Relevant Articles in *Insight Islamicus* (Vol. 1-20), ISSN: 0975-6590, Shah-i-Hamadan Institute of Islamic Studies, University of Kashmir, Srinagar.

COMMERCE: MANAGEMENT

SEMESTER – 1 st	MAJOR COURSE
MGT122J: PRINCIPLES OF MARKETING (MANAGEMENT - COMMERCE)	CREDITS: THEORY: 04 PRACTICAL / TUTORIAL: 02

Course Description:

This is core course of 06 credits (01 credit for each unit with last two units as tutorials). This course is designed to provide a wider perspective on the Principles of Marketing to help decision-making in various business settings. The course will cover the Evolution of Marketing Concepts, Consumer Behaviour and Market Segmentation. Besides, the course will also focus on Marketing-mix variables and Strategies. The course will divulge in detail each element of market mix variable, i.e., Product, Price, Placement and Promotion.

Course Objectives:

The objective of this course is to provide basic knowledge of concepts, principles, tools and techniques of marketing.

Learning Outcomes:

After completing this course, the student is expected to:

LO1: develop basic understanding of marketing concepts.

LO2: develop an understanding and importance of consumer behaviour and market segmentation for effective managerial decisions.

LO3: understand the practical implication of product and price related decisions.

LO4: improve their understanding related to channel structure and promotional decisions.

CURRICULUM DETAILS:**Unit- 1**

Marketing: Nature, Scope and Importance; Marketing Concepts; Selling v/s Marketing; Concept of Marketing mix. Consumer Behaviour: Nature and Importance, Consumer buying decision process; Factors influencing consumer buying behaviour. Market segmentation: Concept, Importance and Bases.

(Knowledge, Comprehension)

Unit- II

Product: Concept and importance, Product classifications; Concept of product mix; Branding, packaging and labeling; Product life-cycle; New Product Development Process; Pricing: Significance; Factors affecting price of a product; Pricing policies and strategies.

(Knowledge, Comprehension)

Unit- III

Distribution Channels: Meaning and Importance; Types of distribution channels; Factors affecting choice of distribution channel; Wholesaling and retailing; Types of Retailers.

(Knowledge, Comprehension)

Unit -IV

Promotion: Nature and importance of promotion; Communication process; Types of promotion: advertising, personal selling, public relations & sales promotion; Factors affecting promotion mix decisions.

(Knowledge, Comprehension)

TUTORIAL/PRACTICAL (2 CREDITS)

Unit – V and Unit – VI (Internal Assessment: Tutorial/Practical)

Concerned Teacher to identify a case study from Unit-1, Unit-2, Unit-3 and Unit-4 and the Student would analyse the Case and make a presentation of the case.

Each student, at the instructions of the concerned teacher, will submit an assignment and deliver a presentation on the case assigned to him/her.

SUGGESTED READINGS:

1. Kotler, Philip, Gary Armstrong, Prafulla Agnihotri and Ehsanul Haque. Principles of Marketing. 13th edition. Pearson Education.
2. Michael, J. Etzel, Bruce J. Walker, William J Stanton and Ajay Pandit. Marketing: Concepts and Cases. (Special Indian Edition), McGraw Hill Education
3. William D. Perreault, and McCarthy, E. Jerome., Basic Marketing. Pearson Education.
4. Majaro, Simon. The Essence of Marketing. Pearson Education, New Delhi.
5. The Consumer Protection Act 1986.
6. Iacobucci and Kapoor, Marketing Management: A South Asian Perspective. Cengage Learning.
7. Dhruv Grewal and Michael Levy, Marketing. McGraw Hill Education.
8. Chhabra, T.N., and S. K. Grover. Marketing Management. Fourth Edition. Dhanpat Rai & Company.
9. Neeru Kapoor. Principles of Marketing. PHI Learning

SEMESTER 1st
MAJOR COURSE

PAD122J: PUBLIC ADMINISTRATION_ INTRODUCTION TO PUBLIC ADMINISTRATION

(CREDITS: THEORY: 04; TUTORIALS: 02)

Course Description: The course is introductory in nature and shall help students to understand the basic concepts in Public Administration. It will acquaint the learners with the conceptual understanding clarity and sharpen their path towards the more advanced theoretical debates in **Administrative Theory and Administrative Thought**. Furthermore, the Field- work/Internship offers an opportunity to understand the working and nature of public processes, functions and governance models.

Learning Outcome:

1. To introduce students to basic conceptual and terminological categories in Public Administration
2. To make them familiar with the advanced theoretical debate in Administrative Theory & Practice
3. To relate concepts to daily experiences of people with their administrative system
4. To bridge gap between theory and practice of Public Administration
5. To enhance skill and job potential of students.

THEORY (04 CREDITS)

UNIT I

- 1.1 Understanding Public Administration
- 1.2 Public versus Private Administration: Comparison
- 1.3 Relationship of Public Administration with other Social Sciences
- 1.4 New Public Management

UNIT II

- 2.1 Principles of Organization: POSDCORB Model
- 2.2 Conceptual understanding of: Hierarchy, Span of Control and Unity of Command
- 2.3 Governance: SMART Governance
- 2.4 E-Governance: Challenges and Prospects

UNIT III Theories of Administration:

- 3.1 Bureaucratic Theory (Weber)
- 3.2 Scientific Management Theory (Taylor)
- 3.3 Human Relations Theory (Mayo)
- 3.4 Decision Making Theory (Simon)

UNIT IV

- 4.1 Decentralization vs Centralization
- 4.2 Democratic Decentralization and Local Self Government: Significance
- 4.3 Debate on Decentralization and Development: Top-down or Bottom Top
- 4.4 Peoples' Participation in Development Process

TUTORIALS: 2 CREDITS (FIELD STUDY)

5.1 Governance at Local Levels (Panchayat/Municipality) a. Working of Local-self Government (Field Study Report) b. Internship with Local Body Representatives

5.2 Reservation and Empowerment

a. Impact of Women's Participation on Gender Empowerment in Panchayats and Municipalities

SUGGESTED READINGS:

1. Avasthi & Maheshwari (2012) Public Administration, Lakshminarayana Agarwal, Agra.
2. Arndt Christian and Charles Oman (2006) Uses and Abuses of Governance Indicators, OECD, Paris.
3. Bhattacharya, Mohit (2013), New Horizons of Public Administration, Jawahar Publishers, New Delhi.
4. Donald Menzel and Harvey White (eds) (2011) The State of Public Administration: Issues, Challenges and Opportunities, New York, M.E. Sharpe.
5. Henry, Nicholas (2006) Public Administration and Public Affairs, Prentice Hall of India, New Delhi.
6. Jan - Erik Lane (2000) New Public Management: An Introduction, Routledge, London.
7. Ravindra Prasad, D. Prasad, VS Prasad, Satyanarayana, P., and Y. Pardhasaradhi (eds) (2013) Administrative Thinkers, Sterling, New Delhi.
8. Frank J. Goodnow, Politics and Administration: A Study in Government, Transaction Publishers, New York, 2003.
9. O'Leary, Rosemary et al (2010) The Future of Public Administration around the World: The Minnowbrook Perspective, Georgetown University Press, D.C.
10. Martin Albrow (1970) Bureaucracy, MacMillan, London.
11. UN, Department of Economic and Social Affairs, Development Administration: Current Approaches and Trends in Public Administration for Development, New York, UN, 1975.
12. Wilson Woodrow, 'The Study of Administration' Political Science Quarterly 2 (June 1987).
13. Heady F. (1996) Public Administration: A Comparative Perspective (5th ed.) New York: Marcel Dekker.
14. Heaphey J. (1968) Comparative Public Administration: Comments on current characteristics, Public Administration Review, 28 (3), 242-249.
15. Montgomery, J. (1966) Approaches to Development Politics, Administration and Change, New York, McGraw Hill.
16. Pai Panandikar, V.A. (1964) Development Administration: An Approach, Indian Journal of Public Administration, 10 (1), pp. 38-44.

SEMESTER Ist
MAJOR COURSE

PHY122J: PHYSICS _ MECHANICS

CREDITS: 04 + 02

THEORY (04 CREDITS)

Unit - I

Cartesian co-ordinate system, spherical & cylindrical coordinate system with expression for velocity and acceleration, Laws of motion: Inertial and non-inertial frames of references, uniformly rotating frame, Coriolis force & its applications, Newton's laws of motion, dynamics of a system of particles, centre of mass.

Unit - II

Momentum and energy: Conservation of linear momentum in system of particles. Work and energy, Conservation of energy. Motion of rockets (principle and equation). Rotational motion: Angular velocity and angular momentum. Torque. Conservation of angular momentum in system of particles. Special theory of relativity: Galilean and Lorentz transformations. Postulates of special theory of relativity. Length contraction. Time dilation. Relativistic addition of velocities.

Unit - III

Gravitation: Newton's laws of Gravitation. Motion of a particle in a central force field. Kepler's Laws. Satellite in circular orbit and applications. Geosynchronous orbits. Weightlessness. Basic idea of **global positioning system (GPS)**. Oscillations: Simple harmonic motion. Differential equation of SHM and its solutions. Kinetic and potential energy. Total energy and their time averages. Damped oscillations

Unit - IV

Elasticity: Hooke's, Stress-strain diagram. Elastic moduli. Relation between elastic constants. Poisson's ratio-expression for Poisson's ratio in terms elastic constants. Work done in stretching and work done in twisting a wire * Twisting couple on a cylinder.

Viscosity, Streamline and turbulent motion: Derivation of Poissulle's Equation, Stoke's law, Effect of temperature on viscosity.

TEXTBOOK:

Mechanics Berkeley Physics course, Volume-I: Charles Kittel, et al. 2007, Tata McGraw-Hill.

REFERENCE BOOKS:

1. University Physics, F. W. Sears, M. W. Zemansky and H. D. Young, 1986, Addison Wesley
2. Physics, Resnick, Halliday & Walker 9/e, 2010, Wiley.
3. Engineering Mechanics, Basudeb Bhattacharyya 42nd edn., 2015, Oxford U
4. University Physics, Ronald Lane Reese 2003, Thomson Brooks/Cole
5. Special Theory of Relativity, Robert Resnik, Addison-Wily.

LABORATORY COURSE (PRACTICAL) (CREDITS: 02)

1. Measurements of length (or diameter) using vernier calliper, screw gauge and travelling microscope.
2. To determine the Height of a Building using a Sextant.
3. To determine the Moment of Inertia of a Flywheel.
4. To determine the Young's Modulus of a Wire by Optical Lever Method/bending of beam.
5. To determine the Modulus of Rigidity of a Wire by Maxwell's needle.
6. To determine the Elastic Constants of a Wire by Searle's method.
7. To determine g by Bar Pendulum.
8. To determine g by Kater's Pendulum.
9. To determine g and velocity for a freely falling body using Digital Timing Technique.
10. To study the Motion of a Spring and calculate (a) Spring Constant (b) value of g.

REFERENCE BOOKS:

1. Advanced Practical Physics for students, B L Flint and H T Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers.
3. Engineering Practical Physics, S. Panigrahi & B. Mallick, 2015, Cengage Learning India P1. Ltd
4. A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Ma hal, New Delhi.

SEMESTER 1st

MAJOR / MINOR COURSE

PLS122J: POLITICAL SCIENCE (INTRODUCTION TO POLITICAL THEORY)

(Credits: Theory = 04 + Tutorials = 02 Credits)

COURSE DESCRIPTION: The course is introductory in nature and shall help students to understand the basic concepts in Political Theory. The conceptual understanding will smoothen their path towards the more advanced theoretical debates in **Political Theory and Political Philosophy**. Furthermore, the Field-work/Internship offers an opportunity to understand the working and nature of political institutions and processes.

LEARNING OUTCOME:

1. To introduce students to basic conceptual categories
2. To make them familiar with the advanced theoretical debate in Political Theory & Political Philosophy
3. To relate concepts to daily political practice
4. To bridge gap between theory and practice of Political Science
5. To enhance skill and job potential of students.

LECTURES: 04 CREDITS

UNIT I INTRODUCTION

- 1.1 Understanding politics
- 1.2 Perspectives on politics: Liberal, Marxist and Communitarian
- 1.3 Normative and Scientific Debates in politics
- 1.4 The Idea of political: Liberal vs Conservative

UNIT II POLITICAL THEORY AND STATE

- 2.1 What is Political Theory? Why do we need it?
- 2.2 State: Theories of its Origin
- 2.3 Distinction between State, Civil Society and Nation
- 2.4 Perspectives on State: Liberal, Marxist and Feminist

UNIT III CONCEPTS-I

- 3.1 Liberty: Negative vs Positive
- 3.2 Equality: Liberal, Socialists, Libertarian
- 3.3 Justice: Procedural and Distributive
- 3.4 Citizenship: Liberal and Communitarian theories

UNIT IV CONCEPTS-II

- 4.1 Democracy: Procedural and Substantive
- 4.2 Rights: Universalism and particularism
- 4.3 Obligations: Grounds and Limitations
- 4.4 Power and Legitimacy: Gramsci and Althusser

TUTORIALS: 2 CREDITS (FIELD STUDY)

WORKING OF DEMOCRACY AT LOCAL LEVELS (PANCHAYAT/MUNICIPALITY)

- a. Working of Local-self Government (Field Study Report)
- b. Internship with Local Body Representatives
- a. Impact Assessment of Affirmative action on selected communities (Field study)

BACHELORS WITH BUSINESS ADMINISTRATION AS MAJOR 1st SEMESTER

POM122J: BUSINESS ADMINISTRATION: PRINCIPLES OF MANAGEMENT

CREDITS: THEORY: 4; TUTORIAL: 2

COURSE OBJECTIVE: To acquaint the students with the basic principles of management and how the same can be applied to improve the efficiency and effectiveness of an organization in the present dynamic business environment.

THEORY (4 CREDITS)

UNIT-I

Management: Basic concepts, Nature and Scope of Management, Managerial Roles, Managerial Roles, Skills and Activities, Evolution of Management thought, Classical, Scientific and Behavioural approach, Functions of Management.

UNIT-II

Planning: Basic concepts, Nature, Scope, Objective and Significance of Planning, Elements and Steps of Planning, Span of Control, Line and Staff Relationship, Authority, Delegation, Centralization Vs Decentralization, Organizational Design & Structures: Basic Concepts, types of organizational structure, functional structure, product structure, geographic structure & matrix structure, Virtual structure.

UNIT-III

Directing: Effective Directing, Supervision, Motivation, Different Theories of Motivation Maslow, ERG, Herzberg's theories, Concept of Leadership, Theories and Styles, Manager vs. leader, Qualities leader, Power & politics: basic concepts.

UNIT-IV

Controlling: Basic Concepts, Elements of Managerial Control, Management Control Techniques, Effective Control Systems, Forward, backward and concurrent control, Budget as a control tool, Efficiency & effectiveness.

TUTORIAL / PRACTICAL (2 CREDITS)

It will cover Industry visit, Management Games to understand Individual behaviour and group behaviour, Games for Leadership Development, Role playing, Seminars and Group Discussions and Brainstorming on Contemporary Management Issues.

Evaluation tutorials/ practical shall be done by the examiner(s) as per University norms/ notification.

Suggested Readings:

1. Gilbert: Principles of Management, McGraw Hill.
2. Koontz & Heinz Weihrich: Essential of Management, McGraw Hill.
3. Luthans Fred: Organisational Behaviour, Tata McGraw Hill.
4. Robbins Stephen P: Organisational Behaviour, Pearson.
5. Management by Robbins, Coulter, Fernandez Pearson Publishing House.

SEMESTER 1st
MAJOR COURSE

PSY122J: PSYCHOLOGY (FOUNDATIONS OF PSYCHOLOGY)

CREDITS: THEORY=4; PRACTUM=2

OBJECTIVES: *To understand the basic psychological processes and their applications in everyday life.*

LEARNING OUTCOMES:

1. *The student will be able to understand Psychology as a science.*
2. *The student will be able to understand different psychological processes.*
3. *The student will be able to understand and use the principles of Psychology to the day-to-day problems.*

UNIT 1: Introduction: Psychology as a science, origin and development of psychology, perspectives (psychoanalytic, behavioural, cognitive, humanistic & Socio-cultural), methods (Experimental & Quasi-Experimental).

UNIT 2: Cognitive processes: Attention and its types, Perception and laws of perceptual organization, learning: conditioning, observational learning; memory-processes, information processing model, techniques for improving memory.

UNIT 3: Motivation and Emotion: Motives: biogenic, Psychogenic and sociogenic, Emotions: aspects of emotions, key emotions (Paul Ekman's model).

UNIT 4: Personality: nature and theories (Allport, Freud and McCrae & Costa); Intelligence: nature & Theories (Spearman, Gardner and Sternberg).

PRACTICUM: 2 CREDITS (MINIMUM OF TWO FROM THE BELOW 4 PRACTICALS)

1. Learning
2. memory
3. personality
4. intelligence

READINGS:

1. Weitan, W. (2020) Psychology Themes and Variations (10 Edition). Cengage India.
2. Chadha, N.K. & Seth, S. (2014). The Psychological Realm: An Introduction. Pinnacle Learning, New Delhi.
3. Ciccarelli, S. K & Meyer, G.E (2008). Psychology (South Asian Edition). New Delhi: Pearson
4. Wani, N. A. (2019). Introduction to Psychology. Wisdom Press New Delhi.
5. Feldman S.R.(2009). Essentials of understanding psychology (7th Ed.) New Delhi: Tata Mc Graw Hill.
6. Glassman, W.E.(2000). Approaches to Psychology(3rd Ed.) Buckingham: Open University Press.

**1st Semester
MAJOR COURSE**

SOC122J SOCIOLOGY (INTRODUCTION TO SOCIOLOGY)

Total Credits: 06 (Theory: 04; Tutorial: 02)

COURSE DESCRIPTION:

This is a core course of 6 Credits (with one credit for each unit and last two units as tutorials). The course is meant to introduce the learners to the discipline of sociology. Besides acquainting them with the evolution of the discipline, it also intends to familiarize the learners with the fundamental concepts and concerns of Sociology.

OBJECTIVES:

Broadly the course seeks to:

- *Acquaint the learners with the evolution of the subject;*
- *Develop among the learners fundamental clarity about the subject;*
- *Unravel the fundamental concerns of the discipline.*

LEARNING OUTCOMES

After finishing the course, the learners are expected to be well versed with the emergence and domain of the sociology. The learners are also expected to develop a very good understanding of the fundamental concepts and schools of thought in sociology.

1. INTRODUCTION

- a. Meaning and Subject Matter of Sociology
- b. Emergence of Sociology: French Revolution, Industrial Revolution and Enlightenment
- c. Sociological Imagination and Common Sense
- d. Relationship of Sociology with other Social Sciences: Anthropology, History and Economics

2. BASIC SOCIOLOGICAL PERSPECTIVES

- a. Evolutionism
- b. Functionalism
- c. Conflict Perspective
- d. Interactionist Perspective

3. BASIC CONCEPTS

- a. Society, Community and Institution
- b. Status and Role
- c. Norms and Values; Folkways and Mores
- d. Social groups: Primary, Secondary and Reference

4. SOCIAL PROCESSES

- a. Concept and Types of Social Processes
- b. Socialization: Concept and Stages
- c. Social Change: Concept and Types
- d. Social Control: Concept and Agencies

TUTORIALS

5. TUTORIAL I - CHANGING PATTERNS OF SOCIALIZATION

- a. Family and Socialization
- b. Media and Socialization
- c. School and Socialization
- d. Gendered Socialization

6. TUTORIAL II – UNDERSTANDING SOCIAL CHANGE

- a. Education and Social Change
- b. Technology and Social Change
- c. Women and Social Change
- d. Social Change among Marginalized

BACHELORS WITH SOCIAL WORK AS MAJOR (CT - I)

SEMESTER Ist

SWK122J: SOCIAL WORK: INTRODUCTION TO SOCIAL WORK PROFESSION

CREDITS: 4 (THEORY) +2 (TUTORIALS)

OBJECTIVES / EXPECTED LEARNING OUTCOMES:

1. Familiarize learner to the historical **evolution, core values and philosophy** of Social Work profession.
2. Enable the learner understand and differentiates social work and other related profession.

COURSE CONTENTS: (THEORY)

UNIT – 1: BASIC CONCEPTS RELATED TO SOCIAL WORK

(15 HOURS)

- Charity, Philanthropy
- Social Service, Social Security and Social Welfare, Social Reform
- Social Inequalities
- **Social Justice and Rights**

UNIT – 2: PHILOSOPHY OF SOCIAL WORK PROFESSION

(15 HOURS)

- Social Work: Nature and Scope
- Social work Goals & Functions
- Major Principles of Social Work
- Values Base of Social Work

UNIT -3 METHODS OF SOCIAL WORK

(15 HOURS)

- Primary Methods: Social Case work, Social Group Work
- Community Organization
- Auxiliary Methods: Social Work Research, Social Welfare Administration
- Social Action

UNIT – 4: SOCIAL WORK PROFESSION

(15 HOURS)

- Social Work as a Profession (Attributes)
- Professional Social Work Associations (NASW, NAPSWS)
- Code of **ethics** in Social Work
- Careers in Social Work

TUTORIALS (2 CREDITS)

TUTORIALS (2 CREDITS: 30 HOURS)

UNIT - 5: **CONTEMPORARY SOCIAL CONCERNS-I**

- **Poverty**
- **Unemployment**
- **Drug Addiction**
- **Mental health**

UNIT -6: CONTEMPORARY SOCIAL CONCERNS-II

- **Child Abuse**
- **Gender Based Violence**
- **Climate Change**
- **Suicide**

Tutorials with duration of 30 Hours shall be based on the assignments given to learners relevant to the course. Book review, Discussion on select readings, screening of documentaries and other feasible activities that the tutor deems relevant for the course.

SUGGESTED READINGS:

- Adams, Robert et al. (2002): Social Work: Themes, Issues and Critical Debates. Second Ed. Sage London.
- Chatterjee, Pranab (1996): Approaches to the Welfare State. National Association of Social Workers (NASW). Washington DC.
- Desai, Murla (2005): Ideologies and Social Work: Historical and Contemporary Analysis. Rawat Publication.
- Dubois, Brenda and Kalra, Krogund, Micky (2011): Social Work: An Empowering Profession 7th Edition. Pearson.
- Farley, W, Larry, L.S. and Scott, B.W. (2003): Introduction to Social Work. Allyn and Bacon. 6. Higham, Patricia (2004): Social Work: Introducing Professional Practice. Sage.
- Kumar, Hajra (1994): Social Work: An Experience and Experiment in India. Gitanjali Publishing House
- Morales, A.T., Sheafor, B.W. and Scott, M.E. (2010): Social Work: A Profession of Many Faces. London. Allyn and Bacon.
- National Association of Social Worker (NASW). (1999): Code of ethics. Available at www.socialworkers.org/pubs/code/code.asp. 1996, revised. Printed by BoltPDF (c) NCH Software. Free for non-commercial use only.

BACHELORS WITH WATER MANAGEMENT AS MAJOR (CT – I)

SEMESTER 1st

MAJOR COURSE

WMG122J: WATER MANAGEMENT - INTRODUCTION TO WATER

(4+2 CREDITS)

Course objective and outcome: The objective of this course is to impart the knowledge of hydrology that deals with the occurrence, distribution, movement and properties of water on the earth.

Paper outcome: This paper is to offer a better insight on basics of water ranging from importance, characteristics distribution and consumption patterns.

THEORY (4 CREDITS)

UNIT I: PROPERTIES OF WATER

Origin of water on earth, Unique properties of water (Polarity, Cohesion, Density, Surface Tension, Viscosity, Heat capacity, Boiling and freezing points, Temperature, Taste, Odour, Colour), Importance of water.

UNIT II: WATER RESOURCES DISTRIBUTION

Water as a resource, Concept of valuing water, Types of water resources, Inland water distribution and importance, Ground water distribution and importance, Cryosphere: Distribution and importance, Marine waters: Distribution and importance, Water resources of J&K (River systems and glaciers).

UNIT III: WATER AND HUMAN CIVILIZATION

Importance of water in human civilization (Mesopotamian and Indus), Water catastrophes: Historical perspective and consequences, Water infrastructure and tools (Ancient, Medieval and modern).

UNIT IV: WATER USE AND AVAILABILITY

Distribution of water, Availability and consumption patterns in domestic, industrial, and agricultural sectors, Concept of water stress and scarcity, Water footprint, Domestic water demand and consumption in urban and rural India, Sustainable Development Goal 6 (SDG)

LABORATORY COURSE (CREDITS-2)

1. Evaluation of per capita domestic water consumption pattern
2. Calculation of personal water footprint
3. Visit to any archeological/relevant site for demonstration of water infrastructure
4. Determination of water quality on basis of odor and color
5. Perception of stakeholders regarding drinking water quality available in the institution/College
6. Estimation of water temperature of different ecosystems
7. Questionnaire survey on water demands by various sectors (Domestic, Agriculture, Industry)
8. Visit to a any nearby drinking water supply scheme/source

SUGGESTED READINGS:

- Bansil, P.C. 2004. *Water Management in India*. Concept Publishing Company, India.
- Brebbia, C.A. 2013. *Water Resources Management VII*. WIT Press.
- CEA. 2011. *Water Resources and Power Maps of India*. Central Board of Irrigation & Power.
- Grumbine, R.E. and Pandit, M.K. 2013. Threats from India's Himalaya dams. *Science* 339: 36-37.
- Loucks, D.P., Stedinger, J.R. & Haith, D. A. 1981. *Water Resource Systems Planning and Analysis*. Englewood Cliffs, NJ, Prentice Hall.
- Mays, L.W. 2006. *Water Resources Sustainability*. The McGraw-Hill Publications.
- Schward and Zhang. 2003. *Fundamentals of Groundwater*. John Willey and Sons.
- Souvorov, A.V. 1999. *Marine Ecogonomics: The Ecology and Economics of Marine Natural Resource Management*. Elsevier Publications.
- Vickers, A. 2001. *Handbook of Water Use and Conservation*. Water Plow Press.

BACHELORS WITH BIOCHEMISTRY AS MAJOR
3rd SEMESTER

BCH322J: BIOCHEMISTRY: ENZYMOLOGY

CREDITS: THEORY-4, PRACTICAL-2

THEORY (4 CREDITS: 60 HOURS)

MAXIMUM MARKS: 100, MINIMUM MARKS: 36

Course Objectives:

The objective of the course is to provide a deeper insight into the fundamentals of enzyme structure and function, enzyme kinetics, enzyme catalysis and enzyme inhibition.

Course Outcomes:

The students will be able to describe the structure, regulation, functions and the mechanism of action of enzymes.

Unit I: Basic concepts of enzymes

Introduction of enzymes and historical developments in Enzymology (like contributions by Wilhelm Kühne, Berzelius, Louis Pasteur, James B. Sumner, Emil Fischer, Linus Pauling etc). Classification of enzymes: IUB enzyme classification, Nomenclature of enzymes, Isoenzymes and its physiological significance. Isoenzymes in health and disease (ALT, ALP, LDH, CK, GGT, amylase). Multi-enzyme complexes, Enzyme specificity, Active site, Features of active site, Enzyme assays, Units of measurement of enzyme assays.

Unit II: Enzyme Catalysis

Role of co-factors and co-enzymes NAD/NADP⁺, FMN/FAD, Co-enzyme A, Biotin, Cobalamine, Lipoamide, TPP, Pyridoxal phosphate, Tetrahydrofolate, **Metal ions with special emphasis on coenzyme functions, Acid base and covalent catalysis.**

Unit III: Enzyme Kinetics

Basics of enzyme kinetics, Enzyme concentration, Substrate concentration, **Effect of pH & Temperature on enzyme activity**, Michaelis-Menton equation, Determination of K_m and V_{max} by line-weaver Burk plot, Significance of K_m , Significance of V_{max} , Importance of K_m (hexokinase Vs glucokinase as example).

Unit IV: Enzyme Regulation

Reversible Inhibition (Competitive inhibition, Non-competitive inhibition, Un-competitive inhibition), Irreversible inhibition. Derivation of Michaelis-Menton equation for competitive inhibitors. Allosteric inhibition and regulation. Reversible and irreversible covalent modifications of enzymes.

PRACTICALS (2 CREDITS: 60 HOURS)

MAXIMUM MARKS: 50, MINIMUM MARKS: 18

1. **Verification of Beer Lambert Law**
2. Estimation of SGPT and SGOT in serum
3. **Effect of pH on enzyme activity and determination of optimum pH**
4. Determination of K_m of enzymes using Line-weaver Burk plot
5. Determination of V_{max} of enzymes using Line-weaver Burk plot

Books recommended:

- Enzymes, Biochemistry, Biotechnology, Clinical Chemistry, By T Palmer, P L Bonner · 2017
- Enzymes: Catalysis, Kinetics and Mechanisms by N. S. Punekar, Springer.
- Enzymes by Malcolm Dixon & Edwin Clifford Webb
- Biochemical Calculations- Segel IH-John Wiley and Sons, New York.

**3rd SEMESTER
BIOTECHNOLOGY AS MAJOR
BTG322J: BIOTECHNOLOGY: MOLECULAR CELL BIOLOGY**

Theory: 4, Practicals: 2

Objectives: Cell being the basic unit of life, this course is aimed to provide students an insight about basic cellular structure, functioning of cell organelles and cell cycle.

Expected Learning Outcomes: Students will be able to;

- Draw the organization of cell membrane and distinguish between different types of transport across it.
- Analyze the functioning of Endoplasmic reticulum, Golgi complex and associated vesicle transport.
- Describe the structure and functioning of nucleus and other organelles.
- Gain an understanding of the functions performed by the cytoskeleton and the significance of cell-cell interactions and distinguish between different phases of the cell cycle.

UNIT I 15 lectures

Introduction to cell (animal and plant cell). **Cell Membrane – structure and function.** Membrane organization (Fluid Mosaic Model). Transport across membrane – Active and Passive transport (Ca^{++} -ATPase, Na^+/K^+ ATPase, Na^+ -linked, Na^+ -linked Antiporter, Ca^{++} from cardiac muscle, symporters, diffusion and facilitated diffusion).

UNIT II 15 lectures

Endoplasmic reticulum, Golgi complex and Lysosomes: Structure and function.

Role in Protein sorting and transport. Mechanism of vesicular transport (COP I, COP II and Clathrin coated vesicles). Endocytosis, Pinocytosis and Phagocytosis.

Unit III 15 lectures

Mitochondria, chloroplast, ribosomes, vacuoles and peroxisomes: Structure and function. Structure and organization of nucleus, organization of nuclear pore. Structure and functions of microtubules, microfilaments and intermediate filaments.

UNIT IV 15 lectures

Extra cellular matrix and cell-matrix interactions. Cell-cell interactions: Adherence junctions, tight junctions, gap junctions, desmosomes, hemidesmosomes, focal adhesions and plasmodesmata. **Cell cycle (mitosis and meiosis)**, regulation of cell cycle. Apoptosis - brief idea.

Practicals:

1. Studying of different cellular organelles with animations and micrographs.
2. Studying the different stages of mitosis by preparing slides of onion root tip.
3. Staining of cells.
4. Karyotyping.
5. Observations on the permeability of Plasma membrane- effect of Isotonic, Hypotonic and Hypertonic solutions on Mammalian R.B.Cs or any other cell.
6. Field trip/subject tour/report.

Books:

1. Molecular Biology of the Cell by Alberts, B Taylor and Francis, New York. USA.
2. Cell and Molecular Biology: Concepts and Experiments by G. Karp, John Wiley & Sons.
3. Cell and Molecular Biology by De Robertis and De Robertis Lippincott Williams and Wilkins, Philadelphia.
4. The Cell: A Molecular Approach by Cooper, G.M. and Hausman, ASM Press.
5. The World of the Cell by Becker, Kleinsmith, Hardin. J. and Berton, Pearson Benjamin Cummings Publishing.

BACHELLORS WITH BOTANY AS MAJOR

Semester 3rd

BOT322J: BOTANY: MORPHOLOGY OF ANGIOSPERMS

(CREDITS: THEORY:04; PRACTICALS:02)

(CREDITS: THEORY:04; PRACTICALS:02)

Objectives: To impart knowledge to the students about morphology of angiosperms and to acquaint them about the importance of morphology in understanding Botany.

THEORY(4CREDITS)

Unit I:Introduction to plant morphology; plant habit, habitat, life forms; root: types and modifications;stem: types, habit, modifications and branching patterns, bark and its types

Unit II:Leaves: parts of leaf; structural types, attachment, venation, phyllotaxy, stipules, leaf shapes, leaf margin,leaf base, leaf apex, venation

Unit III:Inflorescence types;parts of flower, flower attachment and symmetry, perianth and its types, aestivation; androecium:stamen attachment, position, number and fusion; anther parts, types and attachment; nectaries.

Unit IV:Gynoecium: parts of carpel, carpel fusion and number; ovary attachment and position; placentation and its types; fruit and types; **seeds and their types**

PRACTICAL EXERCISES (2 CREDIT)

1. To study different types of leaves.
2. To study different types of inflorescences.
3. To study different flower types.
4. To study different types of fruits.
5. **To study different types of seeds.**
6. To study different types of root and stem modifications.
7. To study different types of trichomes and placentation under microscope.
8. Conduct of two botanical trips to study natural flora
9. Preparation of herbarium with minimum 40 sheets.

Books recommended

1. Plant Systematics (third edition, 2019) by Michael G. Simpson. ELSEVIER
2. Plant Systematics (fourth edition, 2021) by Gurcharan Singh. CBS Publishers and Distributors, New Delhi
3. Plant Systematics (2021) by A K Pandey and S. Kasana. Jaya Publishing House, New Delhi

**3rd SEMESTER
BIOTECHNOLOGY AS MAJOR
BTG322J: BIOTECHNOLOGY: MOLECULAR CELL BIOLOGY**

Theory: 4, Practicals: 2

Objectives: Cell being the basic unit of life, this course is aimed to provide students an insight about basic cellular structure, functioning of cell organelles and cell cycle.

Expected Learning Outcomes: Students will be able to;

- Draw the organization of cell membrane and distinguish between different types of transport across it.
- Analyze the functioning of Endoplasmic reticulum, Golgi complex and associated vesicle transport.
- Describe the structure and functioning of nucleus and other organelles.
- Gain an understanding of the functions performed by the cytoskeleton and the significance of cell-cell interactions and distinguish between different phases of the cell cycle.

UNIT I 15 lectures

Introduction to cell (animal and plant cell). Cell Membrane – structure and function. Membrane organization (Fluid Mosaic Model). Transport across membrane – Active and Passive transport (Ca^{++} -ATPase, Na^+/K^+ ATPase, Na^+ -linked, Na^+ -linked Antiporter, Ca^{++} from cardiac muscle, symporters, diffusion and facilitated diffusion).

UNIT II 15 lectures

Endoplasmic reticulum, Golgi complex and Lysosomes: Structure and function. Role in Protein sorting and transport. Mechanism of vesicular transport (COP I, COP II and Clathrin coated vesicles). Endocytosis, Pinocytosis and Phagocytosis.

Unit III 15 lectures

Mitochondria, chloroplast, ribosomes, vacuoles and peroxisomes: Structure and function. Structure and organization of nucleus, organization of nuclear pore. Structure and functions of microtubules, microfilaments and intermediate filaments.

UNIT IV 15 lectures

Extra cellular matrix and cell-matrix interactions. Cell-cell interactions: Adherence junctions, tight junctions, gap junctions, desmosomes, hemidesmosomes, focal adhesions and plasmodesmata. **Cell cycle (mitosis and meiosis)**, regulation of cell cycle. Apoptosis - brief idea.

Practicals:

1. Studying of different cellular organelles with animations and micrographs.
2. Studying the different stages of mitosis by preparing slides of onion root tip.
3. Staining of cells.
4. Karyotyping.
5. Observations on the permeability of Plasma membrane- effect of Isotonic, Hypotonic and Hypertonic solutions on Mammalian R.B.Cs or any other cell.
6. Field trip/subject tour/report.

Books:

1. Molecular Biology of the Cell by Alberts, B Taylor and Francis, New York, USA.
2. Cell and Molecular Biology: Concepts and Experiments by G. Karp, John Wiley & Sons.
3. Cell and Molecular Biology by De Robertis and De Robertis Lippincott Williams and Wilkins, Philadelphia.
4. The Cell: A Molecular Approach by Cooper, G.M. and Hausman, ASM Press.
5. The World of the Cell by Becker, Kleinsmith, Hardin, J. and Berton, Pearson Benjamin Cummings Publishing.

BACHELORS WITH CLINICAL BIOCHEMISTRY AS MAJOR

3rd SEMESTER

CBC322J: CLINICAL BIOCHEMISTRY _ CLINICAL PHYSIOLOGY AND DIAGNOSTICS-II

CREDITS: THEORY: 4; PRACTICAL: 2

OBJECTIVES AND EXPECTED LEARNING OUTCOMES

This course encompasses the basic knowledge of endocrinology and the understanding of endocrine disorders as well as their laboratory diagnosis. The student will also learn about the role of vitamins in metabolism and the disorders associated with various vitamin deficiencies.

(THEORY: 4 CREDITS)

UNIT-1: INTRODUCTION TO HORMONES (15 HOURS)

General characteristics and classification of hormones. Difference between enzymes and hormones, Mechanism of hormone Action, Regulation of hormone secretion

UNIT-2: HORMONES-I (15 HOURS)

Physiology and associated disorders of Hypothalamus, Pituitary Gland, Thyroid Gland- Hypo-Hyperthyroidism, Grave's disease, Hashimoto hypothyroidism and Goiter, Thyroid function tests, Adrenal gland- Cushing syndrome, **Addison's disease**

UNIT-3: HORMONES-II (15 HOURS)

Physiology and associated disorders of Gonadal hormones and Gastro-intestinal hormones, Pancreatic hormones and glucose homeostasis, Parathyroid hormones and calcium homeostasis

UNIT-4: VITAMINS AND DEFICIENCY DISORDERS (15 HOURS)

General Classification of Vitamins, Metabolic role, **sources and dietary requirements of Vitamin A,D,E,K,C and B** complex vitamins: Disorders associated with vitamin deficiencies

PRACTICAL (2 CREDITS: 60 HOURS)

1. Estimation of Glucose in serum
2. Oral Glucose tolerance test
3. Estimation of Vitamin D level in serum
4. Estimation of Calcium level in serum
5. Estimation of Thyroid hormones-T₃, T₄, TSH

RECOMMENDED BOOKS:

1. Guyton and Hall Textbook of Medical Physiology by John E. Hall, Michael E. Hall. Publisher: Elsevier Publishers
2. Textbook of Medical Biochemistry by MN Chatterjea and Rana Shinde. Publisher: Jaypee
3. Lippincott Illustrated Reviews Biochemistry by Denise R. Ferrier. Publisher: Wolters Kluwer
4. Clinical Chemistry: Techniques, Principles, Correlations by Michael L. Bishop, Edward P. Fody, Larry E. Schoeff. Publisher: Lippincott Williams & Wilkins
5. Harper's Illustrated Biochemistry by Robert K Murray. Publisher: Mc Graw Hill Lange Publications

Bachelors with Disaster Management as Major
3rd Semester

Course Code:- DMG322J:- Fundamentals of Disaster Management (3rd Semester)

CT1 4+2

Credit-I

1. **Concept of Disaster**
2. Elements of Disaster (Hazard, Vulnerability, Exposure)
3. Classification of Disasters
4. Characteristic of Disasters

Credit-II

1. Concept of Disaster Management
2. Paradigm shift in Disaster Management
3. Elements of Disaster Management
4. Disaster management Cycle

Credit-III

1. Disaster Management: Need and significance
2. Disaster Management: principles
3. Disaster Management: International Perspective
4. **Historical Evolution of Disaster Management**

Credit –IV

1. Disaster Management Policy: Need and Significance
2. **Principles of Disaster Management Policy**
3. Essential Components of Disaster Management Policy
4. **Disaster Management Policy of India**

Credit-V

1. Appraisal of Disaster management Policy of Bangladesh

Credit-VI

1. Appraisal of Disaster Management Plan of Odhisa (India)

BACHELORS WITH ECONOMICS AS MAJOR
3rd SEMESTER

CREDITS: THEORY: 4; TUTORIAL: 2

ECO322J - ECONOMICS _ MONETARY ECONOMICS

Course Description: This is the core course of 06 credits (01 credit for each unit with the last two units as tutorials). The course starts with some basic concepts required for understanding the essence of the subject. It covers topics such as money supply, monetary standards, and the structure of Indian financial system. The course also includes tutorials that explore additional aspects such as inflation targeting, credit creation, and the impact of digital money and crypto-currency.

Course Objective: The objective of this course "Monetary Economics" is to provide students with a comprehensive understanding of concepts and measures of money supply. The course enables the students to understand the structure of Indian Financial System and conduct of monetary policy by the RBI.

Learning Outcomes: After completing this course, the students are expected to:

- L01:* Demonstrate a clear understanding of the fundamental concepts of money, its evolution, and the functions it serves in an economy.
- L02:* Analyse and evaluate how to measure the money supply, and the factors influencing money supply, including high-powered money.
- L03:* Analyse the structure of Indian Financial System including its various components.
- L04:* Evaluate the role of the Reserve Bank of India in conducting monetary policy.

Unit I: Basic Concepts

Concept of Money and its Functions, Kinds of Money, Approaches to Definition of Money: Conventional, Chicago, Gurley and Shaw, and Central Bank Approaches. Evolution of Monetary Standards from Gold Standard to Paper Standard, Gresham's Law, Principles of Note Issue: **Currency and Banking Principle, Methods of Note Issue.**

Unit II: Money Supply

Measures of Money Supply, Concept of High-Powered Money, Determinants of High-Powered Money, Concept of Money Multiplier, Credit Multiplier and Deposit Multiplier, **Reserve Bank Money, RBI's analysis of Money Supply**

Unit III: Indian Financial System

Role of Finance in an Economy: Overview of Indian Financial System; Banks and Non-Banking Financial System; Commercial Banks; RRB's and Development Banks; Financial Markets: Money & Capital Market and Their Instruments; Stock Exchange Markets (NSE & BSE, Nifty & Sensex); Role of SEBI.

Unit IV: RBI and Conduct of Monetary Policy in India

RBI: Evolution and Functions, Monetary Policy: Objectives, Instruments: SLR, CRR, OMOs, LAF: Repo and Reverse Repo Rate, Market Stabilization Scheme, Marginal Standing Facility and Standing Deposit Facility, Bank Rate, **Analysis of Current Monetary Policy.**

Unit V: Tutorial – I

- Reports of I, II, and III Working Groups on Money Supply by the RBI
- Measurement of Liquidity Aggregates
- **Working of Digital Money and Cryptocurrency (Bitcoin)**
- Assets and liabilities of commercial banks.

Unit VI: Tutorial – II

- Concept and Working of Inflation Targeting
- Role and Structure of Monetary Policy Committee (MPC)
- **Credit Creation by Commercial Banks – Using Hypothetical Data**
- **Demonetisation in India**

REFERENCES:

1. Gupta, S. B. (2010). *Monetary Economics: Institutions, Theory & Policy*. S Chand & Company (1 December 2010).
2. Sethi, T.T (2005). *Money, Banking and International Trade*. S Chand Publication.
3. Khan, M. Y. (2015). *Indian Financial System*. McGraw Hill Publication.

ADDITIONAL READINGS:

1. Bhalla, V. K. (2020). *Money, Banking, and Financial Markets in India*. S. Chand Publishing.
2. Mishkin, F. S. (2018). *Money, Banking, and Financial Markets*. Pearson Education.
3. Pathak, B. V. (2019). *Indian Financial System*. Pearson Education.

Bachelors with Environmental Science as Major
3rd Semester

EVS322J: Environmental Science: Environmental Chemistry

CREDITS: (Theory-4, Practical -2)

Maximum Marks:100

Minimum Marks: 36

Course learning outcome: This course introduces the students to basic analytical chemistry relevant to the course and is designed to equip the students to handle the analytical instruments. Emphasis is laid to have an understanding of the chemistry of atmosphere, water and soil. **The students will also learn basic principles of various chemical processes occurring in the different components of the environment.**

THEORY (4 credits: 60 hours)

Unit I: Analytical Chemistry (15 hours)

- 1.1. Stoichiometry
- 1.2. Titrimetry and Gravimetry
- 1.3. Spectrophotometry: UV-Visible
- 1.4. Flame photometry and AAS
- 1.5. Chromatography: Paper and TLC

Unit II: Atmospheric Chemistry (15 hours)

- 1.1. Evolution of Earth's atmosphere
- 1.2. Ions and radicals in the atmosphere
- 1.3. Inorganic and organic particulate matter
- 1.4. Photochemical reactions in the atmosphere
- 1.5. Thermochemical reactions in the atmosphere

Unit III: Water Chemistry (15 hours)

- 1.1. Physico-chemical properties of water
- 1.2. Solubility of gases in water
- 1.3. Biochemical oxygen demand and chemical oxygen demand
- 1.4. Carbonate-bicarbonate system
- 1.5. Nutrients in water: Phosphorus and nitrogen

Unit IV: Soil chemistry (15 hours)

- 1.1. Pedogenesis
- 1.2. Soil profile
- 1.3. Inorganic and organic components of soil
- 1.4. Physical, chemical and biological properties of soils
- 1.5. Soil classification and types

PRACTICALS: (2 credits) (30 hours)

- 1. Standardization of reagents – titrants (acids, bases)
- 2. Experimental verification of Beer-Lambert's law
- 3. Measurement of ozone gas concentration by ozone sensor
- 4. Estimation of dry deposition from the atmosphere
- 5. Determine pH and conductivity of water samples
- 6. Determination of dissolved oxygen content in water samples
- 7. Determination of soil texture
- 8. Determination of pH and conductivity of soil samples

Graduation Programme in Commerce (Finance)

Corporate Financial Analysis & Reporting Semester – III	Course Code: <i>FIN322J</i> Course: <i>Major</i>
Credits: 6 (4+2)	Term End Examination Marks: 100 Continuous Internal Assessment (CIA) Marks: 50 Total Marks: 100

UNIT-I

Joint Stock Companies; Public Limited & Private Limited Companies. Banking & Insurance Companies, Regulatory Framework for preparation and reporting of financial statements in India. Standalone Financial Statements, Consolidated Financial Statements, Comparative Financial Statements, Cash-Flow Statement. Window Dressing of Financial Statements, Important Cases of Window Dressing.

UNIT-II

Financial Statement Analysis: Significance and Limitations. Techniques of Financial Statement Analysis: Liquidity Analysis, Operational Analysis, Solvency Analysis, Profitability Analysis, Valuation Analysis, Common Size Statements. Excel for Financial Analysis and Modelling.

UNIT-III

Regulatory Framework for Annual Reports in India; Contents of Annual Report; Directors Report; Auditors Report; Corporate Social Responsibility Reports; Sustainability Reports; Corporate Governance Reports; Value Added Reports.

UNIT-IV

Prospective Analysis: Projection Process, Process of Projecting Income Statement & Balance Sheet, Prospective Analysis in the Residual Income Valuation Model. Sensitivity Analysis. Forecasting Tools & Techniques: Moving Average and ARIMA Model.

Unit-5 and Unit-6(Tutorial/Practical) Continuous Assessment
(30)

(Marks:

Note: The Teacher shall give tutorial classes, Assignments, Case Study, Presentations, Quizzes etc from the above topics to the students and on the basis of this/these shall evaluate the students to check their knowledge, skill and comprehension.

Bachelors with Food Technology as Major

3rd SEMESTER

FST322J: Food Technology: FOOD CHEMISTRY AND MICROBIOLOGY-II

CREDITS: THEORY-4 PRACTICAL - 2

Objectives/Expected Learning

To acquaint the students to different types of microorganisms associated with food spoilage and food preservation

To acquaint the students about the structure and properties of different components of food

UNIT- 1 (15 HOURS)

- Microbial spoilage of fruits, vegetables, cereal and cereal products
- Microbial spoilage of milk, milk products, meat, fish and poultry
- Microbiology of water and air
- Spoilage of canned products–Causes of spoilage, types of spoilage of canned foods by yeast, molds and bacteria
- Biochemical changes caused by microorganisms–Degradation of carbohydrates, fermentation, degradation of lipids, degradation of proteins and amino acids; putrefaction

UNIT- 2 (15 HOURS)

- Food borne disease–Staphylococcal gastroenteritis, Botulism, Listeriosis, Salmonellosis, Shigillosis
- Toxicants of microbial origins–Aflatoxins, ochratoxins, patulin, enterotoxins
- Non-bacterial agents of food borne illness–fungi and food borne viruses
- Probiotics and their role in mitigating diseases.

UNIT- 3 (15 HOURS)

- Starch: Chemistry, functional properties and food application
- Starch gelatinization and retrogradation
- Functional properties of proteins: Hydration, solubility and emulsification
- Protein stability and denaturation
- Non enzymatic browning reactions in foods–Caramelization and Maillard reaction
- Oxidative rancidity: Mechanism, Factors affecting and its control

UNIT- 4 (15 HOURS)

- **Enzymes in foods–Nomenclature; General properties; classification; sources of enzymes; extraction and purification of enzymes**
- **Factors affecting enzymatic activity, mechanism of enzyme inhibitors; immobilization of enzymes**
- **Enzyme cofactor, Theory of enzyme catalysis, Kinetics of enzyme catalyzed reaction.**
- **Proteases, lipases, pectinase, cellulase and amylase-Sources and their in food processing.**

PRACTICALS (2 CREDITS: 60 HOURS)

- Indole, methyl red, Voges-Proskauer, and citrate tests (IMViC) test
- Most probable number (MPN)
- Microbial analysis of canned food
- Determination of total starch and amylose in food
- Estimation of Vitamin C in foods
- Estimation of carotenoids and chlorophyll in foods
- Inactivation of polyphenol oxidases by blanching (Gauicol Test)
- Estimation of anthocyanin
- Estimation of FFA and iodine value

Bachelors with Gender studies as Major
SEMESTER 3rd

COURSE TYPE: MAJOR COURSE CODE: GDS322J

COURSE TITLE: EMERGENCE OF WOMEN AND GENDER STUDIES

CREDITS: 4

TUTORIALS: 2

OBJECTIVES

1. *This paper aims to explain necessary historical context facilitated the emergence and growth of women's studies as an academic representative of Women's movements in India and west.*
2. *To make students aware of the women's exclusion from knowledge and need of women's studies as an academic discipline.*
3. *To trace the evolution of Gender Studies from Women's Studies.*

Unit I: Emergence of Women studies/ Gender Studies in West

- To understand the need and importance of Women's studies in Higher Education.
- Evolution of Women /Gender studies as an academic discipline in the West.
- Women's Studies Programmes in Colleges and Universities of USA.

UnitII: Emergence of Women studies in India

- Evolution of Women/Gender Studies as an academic discipline in India.
- Establishment of Women's Studies Centre under UGC Guidelines.
- Growth and Changing perspectives of Women's Studies and Research

Unit III: Women Studies in Indian Universities

- Focus areas of Women Study Centers.
- Contribution of Women Studies Centers from last 4 decades.
- Paradigm Shift from Women Studies to Gender Studies.

Unit IV: Relevance of Women & Gender

- Pedagogies in Women's Studies & gender studies.
- Interdisciplinary and multi disciplinary nature of Women's & Gender Studies.
- Challenges faced by Women's Studies Centers in India.

Tutorial I

- Essay Writings in Women's Studies from gender perspective

Tutorial II

- Workshops on Gender sensitization.

Bachelors with Geography as Major
3rd Semester

GGY322J: Geography: Geographical Thought

Credits: Theory=4

Practical=2

Unit-I

1. Changing Nature of Geography
2. Fundamental Concepts in Geography: Spatial Process and Pattern, Areal Differentiation, Spatial Organization
3. Approaches in Geography- Positivism, Pragmatism, Humanistic & Behaviouralism,
4. Dualism in Geography- Physical vs. Human, General vs. Regional, Ideographic vs. Nomothetic
5. Dichotomies in Geography- **Environmental Determinism**, Possibilism, **Neo-determinism**, **Environmentalism**

Unit-II

1. Paradigms in Geography: Modernism & Post Modernism
2. Quantitative Revolution and its Impact
3. Impact of Darwin's Theory on Development of Geography
4. Foundation of Scientific Geography
5. Development of Geography in India

Unit-III

1. Contribution of Phoenicians in Geography
2. Contribution of Greeks
3. Contribution of Romans
4. Dark Age in Geography
5. Contribution of Arabs

Unit-IV

Major Schools of Geographical Thought-

1. German- Ratzel & Alfred Hettner
2. French- Vidal de la Blache & Jean Brunhes
3. British- Meckinder & Stamp
4. American- W.M Davis & E. Churchill Semple,
5. Soviet Union- V.V. Dokuchaiev & Voeikov

Practical

Unit-V

1. Quantitative Techniques and their Relevance in Geography
2. **Discrete and Continuous Data, Population and Samples**
3. Sources and Collection of Geographical Data
4. Scales of Measurement- Nominal, Ordinal, Interval, Ratio
5. **Sampling: Significance and Methods**

Unit-VI

1. **Measures of Central Tendency- Mean, Median, Mode, Partition Values**
2. **Measures of Dispersion- Mean Deviation, Standard Deviation, Variance and Coefficient of Variation**
3. **Correlation Analysis- Scatter Diagram and Karl Pearson's Method**
4. **Regression: Linear**
5. **Hypothesis Testing: Chi-square Test**
6. **Field Trip within Kashmir Valley**

BACHELORS WITH GEOLOGY AS MAJOR

3rd SEMESTER

CREDITS: THEORY: 4, PRACTICAL: 2

GLY322J: GEOLOGY _ SEDIMENTOLOGY

Objective/Expected learning outcomes

Upon studying this course, the students will gain an understanding of the processes involved in the formation of sedimentary rocks, their textures, structures, classifications and their importance. They will also be able to identify primary and secondary sedimentary structures and their depositional environments. Upon completion of this course, students will be able to identify sedimentary rocks and their depositional environments with stratigraphic sequence aspects.

UNIT -1 (15 HOURS)

Introduction to sedimentology: Origin of sediments. Grain size, concept and scale. The process involved in the formation of **sedimentary rocks: erosion, transportation, deposition, and lithification**. Sedimentary Textures, structures and environment. Primary and syn-sedimentary structures

UNIT -2 (15 HOURS)

Basic Hydraulics: sediment transport mechanism. Fluid flow: flow regime, **laminar and turbulent flow**. Mass flow types and deposits. Particle entrainment, transport and deposition. Paleocurrent analysis: data acquisition, methodology, different palaeocurrent patterns.

UNIT -3 (15 HOURS)

Siliciclastic rocks: components and classification(s) of conglomerates, sandstones, mudrocks. General introduction to carbonate rocks, BIF, chert, Components and classifications of **limestone, dolomites** and dolomitisation.

UNIT -4 (15 HOURS)

The elementary idea on sedimentary facies and environment. Classification of sedimentary facies. **Facies models for glacier, meandering, fluvial, deltaic, and shelf depositional settings**. Diagenesis, Concepts of Diagenesis, Stages of diagenesis, Compaction and cementation.

PRACTICAL (2 CREDITS: 60 HOURS)

Identification of sedimentary structures in hand specimens. Statistical analysis of particle size distribution. Paleocurrent analysis. Petrographic study of clastic and non-clastic rocks in thin sections. **Field visit for identification of various sedimentary structures.**

BOOKS RECOMMENDED

Allen, J.R.L. (1985). Principles of Physical Sedimentology. George Allen and Unwin, London. Prothero, D. R. and Schwab, F. (2004). Sedimentary geology. Macmillan.

Tucker, M. E. (2001). Sedimentary Petrology, Third Edition Blackwell Science.

Collinson, J. D. and Thompson, D. B. (1988). Sedimentary structures. Unwin- Hyman, London. Nichols, G. (2009). Sedimentology and Stratigraphy. Second Edition. Wiley Blackwell.

Folk, R. L. (1974). Petrology of Sedimentary Rock. Hemphill Publishing Company, Austin, Texas.

Bachelors with History as Major
3rd Semester

HST322J: History: HISTORY OF MODERN INDIA Credits: THEORY-4, TUTORIAL: 2
THEORY 4 Credits: 60 HOURS

Course Overview:

This course offers a comprehensive exploration of the history of modern India, covering the period from the inception of British rule in India till its demise in 1947. It examines the different historical processes that shaped the politico-economic and socio-cultural structures/ aspects of life during the colonial period and helps in developing among the learners a nuanced understanding of the functioning and impact of colonialism. How the British empire was reared and sustained and what were the different ways and methods through which the colonized responded to colonialism are critically analysed to broaden the historical imagination of the learners. Through well thought out tutorial and assignments an attempt is made to take the learners out of the classroom settings to promote experiential learning, appreciate the value of heritage and gather history from ground.

Course Learning Outcomes:

After successful completion of the course the learners are expected to:

- a. Develop proper understanding of the historical processes and dynamics that led to the establishment of British rule in India
- b. Understand the nature and purpose of British rule in India
- c. Develop a nuanced understanding of the different events and episodes in Modern India history by locating them [events/ episodes] in a space-time context.
- d. Appreciate the contribution of masses and leaders in the struggle for freedom

UNIT I

- I. Foundation of British rule: Battle of Plassey; Battle of Buxar
- II. Expansion of British Empire: Subsidiary Alliance and Doctrine of Lapse
- III. Consolidation of British Empire: Orientalism and Utilitarianism

UNIT II

- I. **Economic Impact of British Rule**
- II. Growth of Modern Education-Macaulay's Minute and Woods Dispatch
- III. **Socio-Religious Reform Movements-BrahmoSamaj, Aligrah Movement and Arya Samaj**

UNIT III

- I. Revolt of 1857-Causes, Nature and Significance
- II. Indian National Congress-Role of Moderates and Extremists
- III. **Muslim League- Foundation and Role**
- IV. Gandhian Era: Non-Cooperation and Civil Disobedience Movement

UNIT IV

- I. Major Constitutional Developments [Acts of 1909, 1919 & 1935]: Salient Features
- II. Second World War and **Indian Politics**-Crips Mission and Quit India Movement
- III. **Cabinet Mission and Mountbatten Plan**
- IV. **Freedom and Partition: Debate**

TUTORIALS (2 CREDITS; 30 HOURS)

TUTORIAL I:

- I. Debates/Group discussions on select themes relevant to the course
- II. Biographical essay on any of the freedom fighters or social reformers of Modern India.

TUTORIAL II:

- I. Debates/ Group discussions on any course relevant documentary/book/report of historical importance

Bachelors with Home Science as Major
3rd Semester

HSC322J: Home Science: Development Communication and Extension

(Credits: Theory-4, Practical-2)

Learning Outcomes:

1. Understand the concept and Management Extension Education
2. Know about the various extension methods and communication
3. Learn about the various aspects of extension programme planning

Unit I: Introduction to Extension and Communication

- Concept, Need, Importance and Scope of Extension
- Objectives, Principles, Extension Education System
- Challenges in Extension, Steps in Extension teaching
- Extension Educational psychology

Unit II: Programme Planning Process

- Meaning and components of Programme Planning Process
- Characteristics of a good extension programme
- Principles of Programme Planning as applied to extension programme.
- Steps of Programme planning and involvement of people in Programme Planning.

Unit III: Communication Techniques

- Concept and functions of communication, communication channels
- Problems in communication, communicator-communicatee relationship
- Communication approaches and audio visual aids; visual aids, audio aids--their merits and demerits
- Communication through written words and satellite; SMCRE Model

Unit IV: Extension Teaching Methods

- Extension teaching methods: Classification, group discussion, farm and visit methods, demonstration
- Teacher Centred methods
- Learner Centred methods
- Content focussed methods, interactive/participative methods.

Practical: 2 Credits

- Developing skills in planning and conducting small group communication.
- Review of media on selected issues; design and use of graphic media

References

1. Barker, L. (1990). "Communication", New Jersey: Prentice Hall, Inc; 171.
2. Devito, J. (1998) Human Communication. New York: Harper & Row. Patri and Patri (2002); Essentials of Communication. Greenspan Publications
3. AXINN, G.H., 1988. Guide on alternative extension approaches. Rome. FAO.
4. MURTON, T.A., 1965. Extension hand book. Adopter categories. Government Press. RSA.
5. OAKLEY, P. & GARFORTH, C., 1985. Guide to extension training: Understanding extension, food and agriculture. Organisation of the United Nations, Rome.
6. RÖLING, N., 1995. What to think of extension? A comparison of three models of extension practise. Article for Franchophone issue of AERDD Bulletin. Edited by Nouridin Salamna, ICRA.
7. Dhama, O.P., 2001. Communication and Extension Methods, Arnup Publication, New Delhi

Bachelors with Islamic Studies as Major

3rd Semester

Paper: Islamic Studies (Major)

Course Type 1

Semester: Third

Course Code: IST 322J

Course Title: Islamic Civilization under the Abbasids and the Muslim Spain

Credits: 4+2

Objectives / Expected Learning Outcomes:

The course aims at the study of Islamic civilization in terms of polity, society, education and sciences under the Abbasids and in Muslim Spain. It will also acquaint the students with the rich intellectual, scientific and architectural heritage of Islam that had an impact on the West as well.

Unit I: Rise of the Abbasids

- 1) Establishment of the Abbasid Dynasty
- 2) The Golden Age of the Abbasids: Al-Mansur and Al-Mamun
- 3) Abbasid Administration: Central and Judiciary

Unit II: Intellectual Developments under the Abbasids

- 1) Development of Educational System
- 2) *Bayt ul Hikmah* and Translation Movement
- 3) Intellectual Contribution to the Development of:
 - (a) Science and Medicine
 - (b) History, Geography and Philosophy

Unit III: Islam in Spain

- 1) Socio-Political Conditions of Spain on the eve of Muslim Rule: An Overview
- 2) Establishment of Muslim Rule in Spain
- 3) Contribution of Abd al-Rahman-I and Abd al-Rahman-III

Unit IV: Intellectual and Cultural Developments in Muslim Spain

- 1) Natural Sciences (Astronomy and Medicine)
- 2) Social Sciences (History and Philosophy)
- 3) Contribution to the Development of Arts and Architecture

Tutorials (2 Credits)

- (i) Group Discussion
- (ii) Students' Presentation
- (iii) Book Review (relevant to the contents of the Syllabus)
- (iv) Documentary (relevant to the contents of the Syllabus)

Bachelors with Mass Communication and Multimedia Production as Major

3rd SEMESTER

MCM322J: MEDIA ETHICS

CREDITS: THEORY – 4, TUTORIAL: 2

THEORY (4 CREDITS: 60 HOURS)

MAXIMUM MARKS: 100

MINIMUM MARKS: 36

Course Learning Outcomes:

To focus on ethical dimensions of issues related to media and understand ethical and moral standards of media professionalism. Students will be able to explore various ethical dilemmas that confront media professionals and know code of ethics of the profession.

UNIT – 1 (15 HOURS)

- Ethics in Journalism: An Introduction
- Understanding Truth and Accuracy
- Conflict of Interest, Freebies
- Sensationalism, Privacy

UNIT – 2 (15 HOURS)

- Media bias, Plagiarism
- Sting Operation, Phone tapping
- Misinformation, Disinformation
- Paid News, Fake News

UNIT – 3 (15 HOURS)

- Ethical aspect of live reporting
- Obtaining Consent, Anonymity
- Ethical considerations in covering marginalized groups, children and gender
- Ethical dilemmas while covering violence and disability

UNIT – 4 (15 HOURS)

- Media Trial, Accountability and Transparency
- Social Media Ethics: Ethical Practices while using Social Media
- SPJ Code of conduct for journalists

TUTORIALS (2 CREDITS: 30 HOURS)

MAXIMUM MARKS: 50

MINIMUM MARKS: 18

Case Studies based on Media Ethics

Suggested Reading:

Merino, Noel. (2012). Media Ethics, Greenhaven

Graduation Programme in Commerce(Management)

Business Organisation Semester – III	<i>Course Code: MGT322J</i> <i>Course: Major</i>
Credits: 6 (4+2)	Term End Examination Marks: 100 Continuous Internal Assessment (CIA) Marks: 50 Total Marks: 150

Unit I

Business Organization: Definition, Concept, Characteristics, Objectives, Significance, Components, Functions. Evolution of Business Organisation; Difference between Industry and Commerce and Business and Profession, Industry – types: Primary, secondary, tertiary. Business Organization Environment: Economic and Technological Dimensions, Political and Legal Dimensions. The Internal Environment: Owners, Board of Directors, Employees, Physical Work Environment. The Task Environment: Competitors, Customers, Suppliers, Strategic Partners. The Global Environment.

Unit II

Promotion of Business: Considerations in Establishing New Business. Qualities of a Successful Business person. Forms of Business Organisation: Sole Proprietorship, Partnership, Joint Stock Companies & Co-operatives, Not for Profit Organization, their Characteristics and relative merits and demerits, Difference between Private and Public Company, Concept of One Person Company. Choosing an appropriate business form.

Unit III

Emerging modes of business: E-commerce: Business to Business Model (B2B), Business to Consumer Model (B2C), Consumer to Consumer Model (C2C), E-Commerce Revenue Model. E-Services: match making services, information selling, E-entertainment, auctions. Outsourcing: Concept & Characteristics; Public Private Partnership (PPPs): Concept & Characteristics; Franchising, Four Ps of Franchising, Features of Franchising, Types of Franchises. Multi-National Corporations (MNC'S) & Transnational Organizations: Concept and Characteristics.

Unit IV

Plant Location: Concept, Meaning, Importance, Factors Affecting Plant Location. Alfred Weber's and Sargent Florence's Theories of Location. Plant Layout –: Meaning, Objectives, Importance, Types and Principles of Layout. Factors Affecting Layout. Size of Business Unit–: Criteria for Measuring the Size and Factors Affecting the Size. Optimum Size and factors determining the Optimum Size.

Unit-5 and Unit-6 (Tutorial/Practical) Continuous Assessment

Note: The Teacher shall give tutorial classes, Assignments, Case Study, Presentations, and Quizzes etc from the above topics to the students and on the basis of this these shall evaluate the students to check their knowledge, skill and comprehension.

**Bachelors with Public Administration as Major
3rd Semester**

PAD322J: Public Administration: Development Administration

Credits: Theory=4: Tutorial=2

Unit I

- 1.0 Meaning, Nature and Scope of Development Administration
- 1.1 Characteristics of Administration in Developing and Developed Countries

Unit II

- 2.0 **Bureaucracy and Development** Administration
- 2.1 Public Administration as Administration for Development

Unit III

- 3.0 Peoples Participation in Administration
- 3.1 **Rural and Urban Local self government**
- 3.2 Development Planning in India- Patterns and emerging trends

Unit IV

- 4.0 **Functions of Institutions of Development Administration in India**
 - (a) **Niti Ayog**
 - (b) **Inter-state Council**
 - (c) **District Development Board**

TUTORIALS (2 CREDITS)

Unit I & II

- 1.0 Discussion on "Why state has to be an engine of development in developing countries?"
- 1.1 Debate On "Bureaucracy has become a New Despotism in contemporary times"

Unit III & IV

- 2.0 Discussion on "Why peoples' participation in administration is a must in Democratic Governance Model"
- 2.1 Discussion on the concepts of:
 - (a) Ombudsman
 - (b) Social Audit Committee at Gram Panchayat Level

BOOKS RECOMMENDED

- 1. Pai Panandikar, Development Administration in India
- 2. Riggs, F.W. Frontiers of Development Administration
- 3. Unapathy, M. Development Administration Today
- 4. Sparu, R.K. Development Administration in India
- 5. Verma S.P. and Sharma, S.K. Development Administration
- 6. Bidyut Chakarvarty & Prakash Chand; Public Administration in a Globalizing World

BACHELORS WITH POLITICAL SCIENCE AS MAJOR

3rd SEMESTER

PLS322J: Political Science: International Politics (Course Code:)

Credits: Theory=4, Tutorial=2

Course Objective: The course provides an overview of international politics. It provides a comprehensive understanding of emergence of modern state system and the development of international politics as a distinct field of study. It will also provide students with the background of the evolution of the discipline along with the changing nature and scope of international politics. The course further provides a broad overview of the major key concepts of the subject. It also introduces the emergence of UN system, its working and reforms, along with Cold War, Nam and end of bipolarity and the emergence of uni-polar moment in the aftermath of end of Cold War. Finally the course also provides an overview of contemporary dynamics of international politics, by focusing on the issues of Globalization, IPE, Regional Integration and the current dynamics of emerging multi-polarity and the return of Great Power politics in Asia.

Unit 1: Introduction

- 1) Growth of International Relations as a Discipline
- 2) Nature and Scope of International Relations
- 3) Significance of International Relations as a Discipline
- 4) Nation-State System: Emergence and Features

Unit 2: Key Concepts

- 1) National Power: Meaning and Elements
- 2) National Interest: Meaning and Components
- 3) Arms Race and Disarmament
- 4) Balance of Power

Unit 3: Post World War Phenomena

- 1) Cold War: Ideological Basis, Phases and end
- 2) Post-Cold War Era: Features and major global Issues
- 3) Working of UNO: Issues and Challenges
- 4) Globalisation: Different Perspectives

Unit 4 Issues and Different dimensions

- 1) Non Alignment and its contemporary relevance
- 2) North-South Divide: Dimensions and Emerging Trends
- 3) Politics on Climate Change: North Vs Global South
- 4) Global Justice Debates

TUTORIALS (2 CREDITS)

Unit I

- 1.0 Discussion on 'How can the study of international relations be made more scientific'?
- 1.1 Debate On "How the Cold War became a series of confrontations between the United States and the Soviet Union".

Unit II

- 2.0 Discussion on "Everyone agrees that reform of the UN Security Council is necessary. What proposals for reform would you support and Why?"
- 2.1 Debate on "Global warming and other environmental issues"

Bachelors with Sociology as Major
3rd Semester

SOC322J: Sociology: Classical Sociological Tradition

Total Credits:6 Theory:4; Tutorial:2)

COURSE DESCRIPTION: This is a core course of 6 Credits (with one credit for each unit and last two units as tutorials). The course is meant to introduce the learners to the classical sociological tradition. Besides acquainting them with the founding fathers of the discipline, it also intends to familiarize the learners with their perspectives and major concerns.

OBJECTIVES: Broadly the course seeks to:

- To familiarize the students with the founding fathers of Sociology;
- To introduce students to the trends in classical sociology;
- To offer an overview of different approaches to the study of society and various perspectives of the founders of sociological theory.

LEARNING OUTCOMES: It will help students gain an understanding of some of the classical contributions in sociology, and their continuing relevance to its contemporary concerns.

Unit 1: August Comte

- Positivism
- Law of Three Stages
- Social Statics and Social Dynamics

Unit 2: Karl Marx

- Historical Materialism
- Class Struggle and Social Change
- Theory of Alienation

Unit 3 : Emile Durkheim

- Contribution to the Methodology of Sociology: The Study of Social Fact
- Division of Labour
- Suicide

Unit 4: Max Weber

- Social Action
- The Ideal Type
- Bureaucracy and Authority

TUTORIALS

TUTORIAL 1: Relevance of Durkheim in Contemporary Society

- Religion
- Collective Consciousness
- Morality

TUTORIAL 2: Relevance of Weber in Contemporary Society

- Bureaucracy
- Charismatic Authority
- Religion

Essential Readings

- Abrams, P. 1968. The Origins of British Sociology. Chicago: University of Chicago Press.
- Durkheim, E. 1933. The Division of Labour in Society. Glencoe: The Free Press.
- Durkheim, E. 1982. The Rules of Sociological Method. London: Macmillan.
- Durkheim, E. and M. Mauss. 1969. Primitive Classifications. London: Cohen & West.
- Marx, K. 1924. The Class Struggle in France (1848-1850). New York: New York Labour News.
- Marx, K. 1954. Capital - Vol. I. Moscow: Progress Publishers. (Chapter 1,10 and 14).
- Marx, K. 1964. Pre-capitalist Economic Formations. London: Lawrence and Wishart.
- Marx, K. and F. Engels. 1976. The Manifesto of the Communist Party, in Marx & Engels Collected Works - Vol. 6. London: Lawrence and Wishart.
- Nisbet, R. A. 1967. The Sociological Tradition. London: Heinemann.

Bachelors with Social Work as Major
3rd Semester

SWK322J: Social Work: Society and Humanitarian Work Credits: Theory-4, Tutorial-2
Theory (4 Credits: 60 Hours) Maximum Marks: 100 Minimum Marks: 36

Course Objectives

- Students are familiar with the political concepts related to social work theory and practice.
- Students are familiar with the economic concepts related to social work theory and practice.
- Students have a good understanding of the humanitarianism, and different types of institutions, agencies involved in humanitarian work at different levels in the world.
- Students have basic understanding of some of the key foundational concept used in social work practice.

UNIT – I: Political Dimensions of Indian Society

- Fundamental rights and Fundamental duties
- Directive principles of state policy
- Participation, and Representation
- Governance and Accountability

UNIT – 2: Economic Dimensions of Indian society

- Resources, Scarcity and Economic inequality
- Economic growth and development
- Human Development Index, Gross Domestic Product, Per Capital Income.
- Concept of Globalization, Liberalization

UNIT – 3: Humanitarianism and social work profession

- Concept of Humanitarian Aid, and International Humanitarian Law
- Concept of charity and philanthropy
- Understanding humanitarian agencies (GOs, NGOs, CSOs)
- Concept of Multilateral, International, National and local organization

Unit – 4: Foundations of Social Work Practice

- Social inequality and social Justice
- Social reforms and social movements
- Social service and social security
- Social networks, Advocacy and lobbying

TUTORIALS

(2 Credits=30 Hours) Max. Marks=50
Min. Marks=18

Tutorials with duration of 30 Hours shall be based on the assignments given to course. Field tour and report, book review, discussion on select readings, screening of documentaries and other feasible activities that the tutor deems relevant for the course.

READINGS:

- Lewis, M. A. & Widerquist, K. (1993) *Economics for social workers*. New York: Columbia University Press.
- Allen, C.K. (1950), *Aspects of Justice*, Stevens and Sons, London.
- Beveridge (1942), *Sir William, Social Insurance and Allied Services* - Report presented to British Parliament.
- Divekar, V. D. (1991) *Social Reform Movements in India: A Historical Perspective*. New Delhi: Bharat Itihas Samshodhak Mandal.
- Keen, D. (2008) *Complex Emergencies*. Cambridge: Policy Press
- Allen, T., Macdonald, A., Radice, H. (2020) *Humanitarianism: A Dictionary of Concepts*. London: Taylor & Francis Group.
- Barnett, M., Weiss, T. G. (2012) *Humanitarianism in Question: Politics, Power, Ethics*. London: Cornell University Press.
- Schaaf, R. (2013) *Development Organizations*. New York: Routledge.
- Avner, M. (2013) *The Lobbying and Advocacy Handbook for Nonprofit Organizations*. 2nd Ed. Minnesota: Fieldstone Alliance.

BACHELORS WITH WATER MANAGEMENT AS MAJOR

3rd SEMESTER

WMG322J: WATER MANAGEMENT _ WATER CHEMISTRY

CREDITS: (Theory-4, Practical -2)

Course Learning Outcomes: Water chemistry is an introductory course that explores the chemical properties, composition, and behaviour of water. The aim of the course is to develop a comprehensive understanding of the fundamental concepts and principles of water chemistry. The course is designed to develop critical thinking and problem-solving skills in the context of water chemistry. The student will be able to interpret and communicate results related to water quality.

THEORY (4 credits: 60 hours)

Unit I: Stoichiometry (15 hours)

- 1.1. Concept: Mole, molarity, normality, molality
- 1.2. Chemical equilibrium
- 1.3. Acid-base reactions
- 1.4. Titrimetry
- 1.5. Gravimetry

Unit II: Reactions in Water (15 hours)

2. 1. Composition of natural waters
- 2.2. Redox reactions in water
- 2.3. Movement of light in water
- 2.4. Movement of heat in water
- 2.5. Photosynthesis in water

Unit III: Analytical Chemistry (15 hours)

- 3.1. Potentiometry
- 3.2. Conductimetry and Turbidimetry
- 3.3. Spectrophotometry: UV-Visible
- 3.4. Flame photometry
- 3.5. Chromatography: principle and applications

Unit IV: Chemistry of water (15 hours)

- 4.1 Solubility of gases in water
- 4.2. Biochemical oxygen demand
- 4.3. Chemical oxygen demand
- 4.4. Carbonate-bicarbonate system
- 4.5. Nutrients in water (N and P)

PRACTICALS: (2 credits) (60 hours)

1. Standardization of reagents - titrants (acids, bases)
2. Measurement of suspended solids in different water samples
3. Determine of transparency in a lake ecosystem
4. Estimation of salinity in water samples
5. Experimental verification of Beer-Lambert's law
6. Determination of turbidity of water samples
7. Determination of dissolved oxygen content in water samples
8. Determination of CO₂ in water samples

Bachelors with Zoology as Major
3rd Semester

ZOL322J: Zoology: Comparative Anatomy of Vertebrates

Total Credits: 4 Theory, Practicals-2

Course objective: This course is designed to give a learner the fundamental understanding of the structure of organ systems of vertebrates so as to lay a strong foundation in understanding their life processes. **Learning outcome:** After the completion of course, a student should be able to understand the structure of different organ systems in vertebrates and shall become a subject expert in animal anatomy

Theory: (4 Credits)

Unit I: Integument & its Derivatives

- General structure of skin; comparative structure of integument in vertebrates
- Derivatives of integument: scales, beaks, horns, digital tips- claws, hoofs & nails
- Feathers- structure & types; hair- structure & development
- Epidermal glands: mucous, preening, sweat, sebaceous & mammary glands

Unit II: Digestive & Excretory system

- Digestive system: structural organization of gastrointestinal tract and its associated glands
- Teeth: development, structure & types; dental formula in Mammals
- Excretory system: kidneys-structure & position; urinary ducts, bladders; structure of nephrons
- Evolution of kidney

Unit III: Circulatory & Respiratory system

- Circulator system- nature & types; heart -structure & types; blood vessels- structure& development
- Formation & composition of blood & lymph
- Respiratory system: structure of gills, lungs & air sacs; accessory respiratory organs
- Origin and phylogeny of lungs

Unit IV: Life controlling & coordinating systems

- Nervous system: CNS & PNS; sense organs- eye & ear
- Endocrine system: endocrine glands-structural organization & histology
- Skeletal and muscular system
- Male & female reproductive systems

Practicals: (2 Credits)

Section I:

1. Preparation of temporary mounts or slide study of placoid, cycloid and ctenoid scales
2. Demonstration of feathers, claws, hooves etc., & their types
3. Slide study of sections of different organs: oesophagus, stomach, duodenum, ileum, liver, lung, kidney etc., as per availability
4. Slide study of sections of skin, mammary glands, pituitary, pancreas, testis, ovary, adrenal, thyroid and parathyroid glands as per availability

Section II:

1. Dissections: alimentary canal & cranial nerves of scoliodon / fish / fowl, as per availability
2. Study of various organ systems in fish / fowl / rat
3. Dissection of eye and brain of sheep to show their different parts
4. Study of kidney, heart, brain through charts / models

Suggested books:

1. Chordate Zoology by E. L. Jordan P. S. Verm. S. Chand and company, New Delhi
2. Life of Vertebrates by J. Z. Young New York Oxford University Press.
3. Text Book of Zoology Vol-11 Parker and Haswel AZTBS Publishers New Delhi
4. The Vertebrate Body by Romer and Parso Saunders Company
5. Chordate Zoology by P S Dhami J K O Howu / Pradeep Publications, Jalandhar
6. Modern Text Book of Zoology (Vertebrates) R L Kotpal Rastogi Publications
7. Comparative Anatomy of Vertebrates K K Saxena and Saxena Viva Books Pvt. Ltd.
8. Introduction to the Comparative Anatomy of Vertebrates M. L. Sirivatava
9. Comparative Anatomy of Vertebrates G C. Kent and R.K. Carr
10. Manual of practical Zoology Chordates P S Verma S. Chand and Company Ltd.

AAT422J1: ACCOUNTING AND TAXATION (COMMERCE) _ HIGHER ACCOUNTING

Higher Accounting Semester – IV	Course Code:AAT422J1 Nature of Course: Major
Credits: 4 (3+1)	Term End Examination: 75 Tutorials: 25 Total Marks: 100

Course Description:

This course is designed to provide the understanding, knowledge and perspective of Higher Accounting of business organizations to students. The Course covers Hire Purchase and Installment system, Royalty & Lease Accounting, Branch & Departmental Accounting, Accounting for Non-Profit Organizations, Consignment Accounting and Branch Accounting.

Course Objectives

- 1. To enable the learners to have full understanding of Higher Accounting aspects related to recording and Purchase & Installment system and Royalty and Lease Accounting.*
- 2. To make the student understand how the Branch Accounts are prepared and how accounting for Departmental Accounting is done.*
- 3. To enable the students, acquire the knowledge of Branch and Departmental Accounting.*
- 4. To enable the students, acquire the knowledge of Accounting for Non- Profit Organizations, Consignment Accounting and Joint Venture Accounting.*

Course Outcome

After going through this course, the students are expected to have a clear understanding, knowledge and skills to prepare and analyze the accounts related to application of the Higher Accounting skills as used in the business organizations related to Hire Purchase and Installment system, Royalty & Lease Accounting, Branch & Departmental Accounting, Accounting for Non-Profit Organizations, Consignment Accounting and Branch Accounting.

UNIT-I**Hire Purchase & Instalment System**

Nature & Features of Hire Purchase Agreement. Ascertainment of Total Cash Price: With & Without Annuity Table. Ascertainment of Interest. Accounting Treatment of Transactions in Books of Hire Purchaser & Hire Vendor. Repossession of Goods, Complete & Partial. Instalment System. Difference between Instalment & Hire Purchase System.

Royalty & Lease Accounting

Royalty Accounts: Need & Importance. Concept Accounting Treatment of Minimum Rent. Short-workings. Concept & Accounting Treatment of Sub-Lease.

Lease Accounting: Concept, Nature & Importance. Accounting Treatment in Lessor's & Lessee's Accounts.

UNIT-II

Branch Accounting

Nature & Types of Branches. Accounting of Dependent Branches: Debtor System, Final Account System, Stock & Debtor System. Accounting of Independent Branches: Inter-Branch Transactions. Adjustment & Reconciliation of Branch & Head Office Accounts. Foreign Branches: Accounting & Techniques for Foreign Currency Translation.

Departmental Accounting

Nature of Departmental Accounting. Methods of Departmental Accounting. Allocation of Common Expenditures among different Departments. Inter-Department Transfers. Memorandum of Stock & Memorandum Mark-Up Account.

UNIT-III

Accounting for Non-Profit Organizations

Preparation of Receipt & Payment Account. Preparation of Income & Expenditure Account. Preparation of Balance Sheet. Treatment of Special Items.

Consignment Accounting

Nature & Importance. Consignment Vs. Sale. Commission Vs. Discount. Accounting for Consignment Transactions. Valuation of Stock Lying with the Consignee. Treatment of Normal & Abnormal Loss. Invoicing Goods Above Cost.

Joint Venture Accounting.

Concept, Need & Features of Joint-Venture Accounting. Methods of Recording Joint Venture Transactions. Memorandum Joint Venture Method.

BACHELORS WITH BIOCHEMISTRY AS MAJOR

4th SEMESTER

BCH422J1: BIOCHEMISTRY: BASICS OF METABOLISM AND BIOENERGETICS

CREDITS: THEORY-3, PRACTICAL-1

THEORY (3 CREDITS: 45 HOURS)

MAXIMUM MARKS: 75, MINIMUM MARKS: 27

Objectives/Expected Learning Outcomes:

This course aims to introduce the students to basics of metabolism and bioenergetics with an expectation to learn how the principles of bioenergetics and thermodynamics hold good in biological systems also and how are these central in understanding metabolism.

Unit-I: BIOLOGICAL THERMODYNAMICS (15 HOURS)

Thermodynamic states, Zeroth law of thermodynamics, First law of thermodynamics and its implications in biological system, Second law of thermodynamics and its significance in biological system, Concept of third law of thermodynamics, Isothermal and adiabatic processes, Concept of heat of a reaction, thermodynamic systems, Thermodynamic properties, Importance of thermodynamics in biological systems.

Unit-II: BIOENERGETICS (15 HOURS)

Concept of work and energy, Bioenergetics, Energy change during a biochemical reaction, Endergonic and Exergonic reactions, Energy transformation in biological systems, Total internal energy, Gibbs free energy concept, Significance of free energy, Entropy and its significance, Enthalpy, Relation between entropy, enthalpy and free energy, Spontaneity of a biochemical reaction.

Unit-III: BASICS OF METABOLISM (15 HOURS)

Metabolism, Catabolism, Anabolism, Amphibolism, Types of metabolic reactions, Oxidation- reduction reactions, Redox potential, dehydrogenation reactions, Energy rich compounds in living organisms, classification of energy rich compounds, Phosphoryl transfer potential, Coupled reactions, ATP as energy currency, ATP-ADP cycle, Concept of Biological oxidation, Methods used to study metabolism in living organisms.

PRACTICALS (1 CREDITS: 30 HOURS) MAXIMUM MARKS: 25, MINIMUM MARKS: 09

1. Determination of heat of neutralization by treating acids and bases
2. Calculation of viscosity of different percentage solutions of carbohydrate, protein and fats
3. Specific heat determination by calorimeter
4. Principle of autoclave

Books recommended:

- Biological Thermodynamics by Donald Haynie.
- Thermodynamics-Principles and Applications by NC Dey.
- Text book of Biochemistry by Lubert Stryer.
- Text book of Biochemistry by Voet and Voet

BACHELORS WITH BOTANY AS MAJOR

Semester 4th

BOT422J1 BOTANY _ PLANT TAXONOMY

(CREDITS: THEORY: 03; PRACTICALS: 01)

Objectives: To give students understanding about the concept, components and scope of plant taxonomy, classification and identification of plants, importance of herbaria and botanical gardens, and to learn about principles and rules of nomenclature.

Theory = 60 lectures

UNIT I: Plant Taxonomy and Classifications

Components, aims and phases; types of classification - artificial, natural and evolutionary; phenetics; principles and methods; cladistics: concept, terms and methods; classification systems - Bentham and Hooker (up to series), Angiosperm Phylogeny Group (AGP-IV) (up to order level).

UNIT II: Taxonomic Characters and Institutions

Morphological characters (vegetative and reproductive); Role of anatomical, embryological, cytological, palynological, phytochemical and molecular characters (elementary idea); Herbaria: purpose, preparation and functions, index herbariorum; major herbaria of world and India, virtual herbarium; **Botanical garden: criteria and uses, important botanical gardens of world and India;**

UNIT III: Identification and Nomenclature

Taxonomic literature: flora, monograph, manual, field guides; Taxonomic keys (indented, bracketed and numbered), **DNA barcoding (an elementary idea);** Scientific names, principles of nomenclature, rules of nomenclature (taxa and ranks, author citation, names of hybrids and cultivated plants), typification (concept and types); Biocode and Phylocode (brief idea).

Practical exercises

- Preparation of herbaria of types of leaves and inflorescences
- Study of different types of flowers.
- Construction of dichotomous identification keys
- Study of the following families: Liliaceae (*Hemerocallis* / *Tulipa*); Poaceae (*Avena* / *Poa*); Ranunculaceae (*Ranunculus* / *Consolida*); Fabaceae (*Trifolium* / *Robinia*); Rosaceae (*Rosa* / *Fragaria*); Asteraceae, (*Helianthus* / *Taraxacum*); Solanaceae (*Solanum* / *Datura*); Apiaceae (*Daucus* / *Scandix*); Lamiaceae (*Salvia* / *Nepeta*)
- Mounting of a properly dried and pressed specimen of 50 wild plants with herbarium label (to be submitted in the record book).
- Two single-day botanical trip to a natural area.**

Suggested Readings

- Pandey, AK and Kasana, S. (2021) *Plant Systematics* (1st edition). Jaya Publishing House, New Delhi.
- Singh, G. (2021) *Plant Systematics: An Integrated Approach* (4th edition). CRC Press, India
- Simpson, MG (2010). *Plant Systematics* (2nd edition). Elsevier, California, USA.
- Judd, WS et al (2016). *Plant Systematics: A Phylogenetic Approach* (4th edition). Sinauer Associates, Inc. Sunderland, USA.
- Stuessy, TF (2009) *Plant Taxonomy* (2nd edition). Columbia University Press. New York

**BACHELORS WITH CLINICAL BIOCHEMISTRY AS MAJOR
4th SEMESTER**

CBC422J1: CLINICAL BIOCHEMISTRY _ MEDICAL MICROBIOLOGY

CREDITS: THEORY: 3; PRACTICAL: 1

OBJECTIVES AND EXPECTED LEARNING OUTCOMES

Based on a basic knowledge of biological mechanisms regulating infectious processes, the program will provide a deeper understanding of the field of microbiology. Moreover, they will acquire methodological skills and profound knowledge in infection biology and an understanding of how infectious biological events link people's, animal's and ecosystems health.

LEARNING OUTCOMES:

After completion of the course the student should be able to explain the basic principles of so-called emerging diseases, the concepts of hosts and vectors, pathogen transmission cycles in nature, and general principles to prevent transmission. Identify the most common food- and water-borne pathogens. Identify and analyse the most important infectious diseases

(THEORY: 3 CREDITS)

UNIT-1: INTRODUCTION TO MICROBIOLOGY (15 HOURS)

Historical perspective of microbiology, classification of microorganisms, importance of microorganisms in health and disease, normal human microflora.

UNIT-2: BACTERIOLOGY (15 HOURS)

Bacteria: classification and structure, gram positive and gram-negative bacteria, bacterial culture, growth, growth curve and stages, factors affecting growth, measurement of bacterial growth

UNIT-3: MICROBIAL DISEASES (15 HOURS)

Host-pathogen interaction, pathogenicity, virulence, common bacterial diseases (MTB, Pneumonia), viral diseases (AIDS and COVID). Antibiotics and antivirals; an introduction.

PRACTICALS (1CREDITS: 30 HOURS)

1. Sterilization Techniques.
2. Preparation of Culture Media.
3. Growth of different cultures
4. Staining of Gram positive and gram negative bacteria
5. Antibiotic sensitivity tests.

RECOMMENDED BOOKS:

1. Prescott's Microbiology: Textbook by Christopher J. Woolverton, Joanne M. Willey, and Linda Sherwood.
2. Microbiology: Book by Michael Pelczar and Roger Delbert Reid.
3. Microbiology: An Introduction: Textbook by Gerard J. Tortora

BACHELORS WITH CHEMISTRY AS MAJOR
4th SEMESTER

CHM422J1 CHEMISTRY _ CONCEPTS IN ANALYTICAL CHEMISTRY

CREDITS: THEORY-3, PRACTICAL-1

Theory (3 credits: 45 Hours)

Max. Marks: 75, Min Marks: 27

Course Objectives:

As the course is introductory the students will study and appreciate the new methods of separation and analyses, besides learning about reporting the data with accuracy and precision. The students will also learn about quantitative methods (gravimetry, titrimetry and column chromatography) and qualitative methods (paper and thin layer chromatography) of estimation.

Learning outcomes:

After completing this course, the student is expected to learn the following

- *Analytical chemistry and its significance and scope.*
- *About significant figures and errors, essential for reporting data/results in scientifically correct way.*
- *Different types of separation methods and their scope and limitations.*
- *Theory of gravimetry and titrimetry, which are important component of their laboratory courses*
- *Different methods of chromatography, its working and scope.*

Unit-I: Basic Concepts of Chemical Analysis

(15 Hours)

Analytical Chemistry: Introduction. Qualitative and quantitative analyses. Stages and methods of analyses.

Chemometrics: Errors, Accuracy, Precision, Significant Figures, Mean and Standard Deviation, Tests of significance (t-test and F-test)

Separation methods: Precipitation: Fractional Precipitation, Effect of Acids, Temperature and Solvent on Precipitate Solubility. Partition Coefficient, Solvent Extraction.

Complexation as a Separation Method. Electrophoresis, Dialysis, Electrodialysis and Crystallization (theory and significance).

Unit-II Gravimetric and Titrimetric Analysis

(15 Hours)

Gravimetry: Introduction and Principle. Precipitation Reagents and Methods. Essence of Essential Steps: Concentration, Super-saturation, Precipitation, Co-precipitation, Post-precipitation, Digestion, Washing and Filtration. Gravimetric calculations.

Complexometric Titrations. Introduction. EDTA: Structure, Standardization and Solution Chemistry and its Speciation Diagram. Metal ion Indicators: Structures and Working. Titration Curves. Mixture Titrations: Masking and Demasking. Back Titration.

Precipitation Titrations. Principle and applications.

Unit-III Chromatography-Analytical Aspects.

(15 Hours)

Chromatography: Introduction, Classification, Types and Principles. Stationary Phases and Mobile Phases.

Liquid Chromatography: Differential Migration, Nature of Partition Forces, Partition, Resolution (R_f factor), Column: Packing, Length and Diameter, Band Broadening and Tailing, Column Efficiency, Plate Theory: Theoretical Plates and Height of Plates.

Thin Layer, Paper and Gas Chromatography: Principle and applications.

Practical (1 credits: 30 Hours)

Max. Marks: 25, Min Marks: 9

Part A: Volumetric Analyses

1. Determination of Hardness of water by EDTA titration method.
2. Determination of acetic acid concentrations in commercial vinegar using NaOH.

Part B: Gravimetric estimations

1. Estimation of Nickel as $[\text{Ni}(\text{dmg})_2]$.
2. Estimation of Barium as BaSO_4 .

Part B: Chromatography

1. Identification of components of binary mixture of organic compounds using TLC.
2. Comparative mobile phase composition for binary mixture analysis of cations using ascending paper chromatography.

Books Recommended:

1. Vogel's text book of Quantitative Inorganic Analysis (revised); Bassett, J., Denney, R.C., Jeffery, G. H and Mendham, J.; 6th ed.; ELBS; 2007.
2. Experimental Inorganic Chemistry; Palmer, W.G.; Cambridge.
3. Analytical Chemistry; Gary D-Christian; 6th ed.; Wiley; 2008.
4. Vogel's Qualitative Inorganic Analysis; Svehla, G.; Pearson Education; 2012.
5. Vogel's Quantitative Chemical Analysis; Mendham, J.; Pearson; 2009.
6. Vogel's book of Practical Organic Chemistry; Furniss, B.S., Hannaford, A.J.; Rogers, V.; Smith P.W.G.; 5th ed.; ELBS; 2009.
7. Molecular Spectroscopy; 2nd edn; J L. McHale; CRC Press 2015.
8. Introduction of Spectroscopy; 4th edn.; D.L. Pavia, G. M. Lampman, G. S. Kriz, J. Vyvan; Cengage Learning, 2008.
9. Physical Methods for Chemists; R. S. Drago; 2nd edn; Saunders; 1992. 7. Fundamentals of Molecular Spectroscopy; C. N. Banwell, E. M. Mc Cash; 4th edn; Tata Mc Graw Hill; 1994.
10. Fundamentals of Analytical Chemistry; 6 th Indian Reprint; D. A. Skoog and D.M. West; Cenage Learning; 2012.

FIN422J1: FINANCE (COMMERCE): BUSINESS ECONOMICS

Business Economics Semester-IV Credits: (3+1=4)	Course Code:FIN422J1: Nature of Course: Major Term end Examination: 75 Tutorials: 25 Total Marks: 100
---	---

Course Description:

This course is designed to make students acquaint with the application of economics in business firms to take decisions regarding understanding and forecasting consumer demand, optimization firm's production, and pricing decision in various kinds of markets.

Course Objectives:

1. To make students understand the basic concepts and application of economics in business organizations.
2. To make students comprehend how firms optimize their production process.
3. To acquaint students regarding complexities of pricing decisions under various forms of the market.

Course Outcome

The students are expected to have a clear grasp regarding the applications of economic concepts, techniques and methods in business organizations and enhance their decision making capabilities as potential managers.

UNIT – I

Meaning Nature and Scope of Managerial Economics. Uses and limitations. Firm: Nature, Objectives & Rational. **The Concept of Economic Profit. Economics & Decision Making.** Production Function and Cost Analysis: Concept of production function. Law of Variable Proportions. Law of returns to scale Properties of Cob- Douglas and CE's production functions. Cost minimizing input choice. Short-run and Long-run cost function- traditional and modern approach.

UNIT – II

Pricing in Perfect Competition. Characteristics & Key Assumptions of Perfect Competition. The Equilibrium Price. Price-Output Decisions in Short-Run: Total Revenue-Total Cost Approach & Marginal Revenue-Marginal Cost Approach. Losses & Shut-Down Decision. Profit-Maximizing Output in Long-run.

Pricing in Monopoly. Characteristics of Monopoly. Price-output Decision in Short-Run. Price-Output Decision in Long-Run. Technical Inefficiency & Rent Seeking

UNIT-III

Pricing in Oligopoly: Rivalry & Mutual Independence. Price Rigidity: The Kinked Demand Curve Model. Interdependence: The Cournot Model. Special Pricing Strategies: Price Leadership, Cartels & Collusion. Non-Price Competition. Barriers to Entry in the Market.

Monopolistic Competition: Characteristics & Key Assumptions. Price-Output Decision in Short-Run. Price-Output Decision in Long-run.

Tutorials

Apart from the individual attention being given to the students, Tutorials shall include the following:

- A. Case Studies individually or in groups*
- B. Group Discussions on subject specific current issues/developments*
- C. Assignments*
- D. Project Work & Viva-Voice*
- E. Field Visits & Reports*
- F. Practicals wherever applicable*

Suggested Readings:

- 1. Raj Kumar and Kuldip Gupta, Managerial Economics, UDH Publishers and Distributors (P) Ltd.*
- 2. M.L.Jhingan and J.K. Stephen, Managerial Economics, Vrinda Publications (P) Ltd.*
- 3. L. C. Gupta, Managerial Economics, Himaliya Publishing House.*
- 4. S. L. Gupta and D. D. Chaturvedi, Business Economics, International Book House.*
- 5. Datt and Sindharam, Indian Economy, S. Chand.*
- 6. Varshney, R. L. and Maheshwari K. L., Managerial Economics, Sultan Chand.*
- 7. Jeol Dean, Managerial Economics, Prentice Hall of India.*

Note: Latest editions of text books may be used.

**Bachelors with Disaster Management as Major
(2022 and onwards)**

Course Title:- Disaster Mitigation and Preparedness

Course code:- DMG422J1

4th Semester

Credit-I

1. Disaster Mitigation: Concept and Principles
2. Disaster Mitigation Strategies: Structural and Non-structural
3. Disaster Mitigation Strategies with reference to Cyclones, Drought, Floods and Landslides
4. Emerging Trends in Disaster Mitigation

Credit-II

1. Disaster Preparedness: Concept and Significance
2. Disaster Preparedness Measures
3. Disaster Preparedness for People with Special Needs and Vulnerable Groups
4. Disaster Preparedness with reference to Housing and Infrastructure

Credit-III

1. Disaster Preparedness Plan: Concept and Significance
2. Essentials of Disaster Preparedness Plan
3. Community Based Disaster Preparedness- Need and Significance
4. Community Participation- Task Force Formation, Training and Capacity Building

Credit-IV

Conduct of Mock drill for

1. Earthquakes
2. Fires

BACHELORS WITH ECONOMICS AS MAJOR

4th SEMESTER

ECO422JI ECONOMICS _ ECONOMICS OF DEVELOPMENT

CREDITS-THEORY:3; TUTORIAL: 1

Course Description

This is the first part of a two-part course on economic development. The course begins with a discussion of alternative conceptions of development and their justification. It then proceeds to develop various measures of inequality and connections between growth and inequality are explored. The course ends by discussing various theories of economic development.

After completing this course, the students are expected to:

LO1: Demonstrate a good understanding of basic concepts of development, poverty and inequality.

LO2: Gain a comprehensive idea about historical and contemporary processes of development.

LO3: Understand the role of labour and migration in the process of economic development.

Unit I: Conceptions of Development

Concept of development and Development Gap; Alternative measures of development: HDI; A.K. Sen's concept of development- Capabilities approach ; Concept of Inequality; Lorenz curve, Kuznets ratio and Gini coefficient; Inequality and income- inverted U hypothesis; Estimation of Poverty; Multi-dimensional poverty index; Human poverty index.

Unit II: Theories of Economic Development - I

Classical Theories of Development: Adam Smith, David Ricardo and Karl Marx. Low Level equilibrium trap- Nelson model. The theory of big push; Schumpeter and Capitalistic Development; Balanced growth, Unbalanced growth- Hirschman strategy.

Unit III: Theories of Economic Development - II

Structural changes model- Lewis; Rural Urban migration Model- Haris-Todaro. The process of cumulative causation- Myrdal. New Economic Geography – Paul Krugman.

Unit IV. Tutorial I

- Problems related to measurement of Development Gap
- Measurement of inequality- Numerical Examples
- Measurement of HDI, MPI, HPI – Data Based
- UNDP Sustainable Development Goals – Case Studies

Readings:

- Abhijit Banerjee, Roland Benabou and Dilip Mookerjee, *Understanding Poverty*, Oxford University Press, 2006.
- Agarwal and Singh (1958), *The Economics of Underdevelopment*, Oxford University Press, New Delhi.
- Amartya Sen, *Development as Freedom*, OUP, 2000.
- Debraj Ray, *Development Economics*, Oxford University Press, 2009.
- Kaushik Basu, *The Oxford Companion to Economics in India*, OUP, 2007.
- Todaro, M.P. (1996), (6th Edition), *Economic Development*, Longman, London.
- Thirwal, A.P. (1999), (6th Edition), *Growth and Development*, Macmillan, U.K.

Bachelor with Education as Major
4th Semester

EDU422J1: EDUCATION _ INDIAN EDUCATION IN HISTORICAL PERSPECTIVE

Credits: Theory-3, Tutorial-1

Theory (3 Credits: 45 Hours)

Maximum Marks: 75

Minimum Marks: 27

Expected Learning Outcomes

- *Shall make the students understand about the education system in India during Ancient and Medieval period*
- *Shall abreast the learners about different educational policies during British period*
- *Shall make the students understand the recommendations of various committees and commissions during post-independence period*
- *Shall help the learners to prepare the seminar presentation and book review*

Unit-I Education in Ancient and Medieval India

- a. Vedic Education- Salient features, Aims, Methods of Teaching, Place of the Teacher and Curriculum
- b. Buddhist Education- Salient features, Aims, Methods of Teaching, Place of the Teacher and Curriculum &
- c. Muslim Education- Salient features, Aims, Methods of Teaching, Place of the Teacher and Curriculum

Unit-II Education in British India

- a. Macaulay's Minute (1835)
- b. Wood's Despatch (1854)
- c. Indian Education Commission (1882) &
- d. Sargent Report (1944)

Unit-III Education in Post-Independence Era

- a. Secondary Education Commission (1952-1954)
- b. Indian Education Commission (1964-66)
- c. National Policy on Education, NPE (1986)
- d. National Education Policy, 2020

Tutorials (1 Credit: 15 Hours)

Max. Marks: 25

Min. Marks: 9

Unit-IV

- a. Book Review on any of the books recommended in syllabus or by the teacher concerned
- b. Seminar presentation on any topic in the syllabus.
- c. Preparation of key terms/ glossary at least 20.

References:

Aggarwal, J. C. (2011). Development of Education System in India. New Delhi: Anmol Publication Pvt. Ltd.

Ganai, M. Y. & Bhat, S. A. (2012). Development of Educational System in India. New Delhi: Dilpreet Publishing House.

Government of India (1953) Secondary Education Commission (1952-53). New Delhi: MHRD

Government of India (1953) University Education Commission (1948-49). Government of India

(1986). National Policy on Education. New Delhi: MHRD

Government of India (2020). National Education Policy (NEP) Ministry of Education New Delhi:

BACHELORS WITH ENVIRONMENTAL SCIENCE AS MAJOR (CT-1)

4th SEMESTER

EVS422J1 ENVIRONMENTAL SCIENCE _ HUMAN AND ENVIRONMENT

CREDITS: (THEORY-3, PRACTICAL -1)

Course outcome: This course is designed to introduce students with a comprehensive conceptual, theoretical and empirical background between social systems and environment. The course explores important perspectives like environmental education, human cognition and behaviour, psychology, urban stress, Eco-philosophies, ethics and politics and policy. The students will be able to understand the social roots of ecological problems, and to unveil the social responses to the environmental crisis. The course also discusses the environmental history and the rise of environmentalism and environmental organizations.

THEORY (3 CREDITS: 45 HOURS)

UNIT I: ENVIRONMENTAL EDUCATION

Environmental education: aims, objectives and principles, Environmental protection and religious teachings, Environmental literacy and activism, Environmental ethics, Environmental policy and public attitude

UNIT II: ENVIRONMENTAL PSYCHOLOGY AND SOCIOLOGY

Environment psychology: concept and theory, Influence of environment on human cognition and behaviour, Urban environmental stress, Eco-philosophies: deep, social and feminist, Science, policy and society interface

UNIT III: ENVIRONMENTALISM

Environmentalism: concept and history, Environmental organizations (WWF, UNEP, IUCN, WHO). **Environmental justice**, The monetization frontier, Environmental politics

PRACTICALS: (1 CREDIT; 30 HOURS)

1. Formulation of questionnaire for the assessment of environmental education among the people.
2. Assessing the impacts of economic development on human lives.
3. Visit to marginalized localities for environmental education and environmental awareness.
4. Preparing a list of projects taken by WWF in India

Bachelors with Food Science and Technology as Major

4th semester

FST422J1: PRINCIPLES AND METHODS OF PROCESSING

CREDITS: THEORY-3 PRACTICAL - 1 THEORY (4 CREDITS): 60 HOURS

Objectives/Expected Learning

- To familiarize students with the basic concepts and techniques of principles and processing methods for preservation of food

UNIT- 1(15 HOURS)

- Status of Indian food industry–Exports scenario of fruits, vegetables, spices, meat and their processed products
- Classification of foods on the basis of shelf life, pH, origin
- Principles of food preservation
- Preservation by high temperature: Pasteurization, sterilization and canning, concept of Thermal death time, D-value and Z-value
- Calculation based on heat balance
- Preservation by low temperature: Refrigeration; refrigeration systems. Freezing process–slow and fast freezing, types of freezers and their advantages and disadvantages. Storage and thawing of frozen food

UNIT- 2 (15 HOURS)

- Preservation by reducing water activity of foods: Evaporation, concentration, drying and dehydration
- Membrane processing–Types of membranes, advantages, equipments, applications and effect on foods
- Calculation based on mass balance
- Extrusion–Importance of extrusion, types of extruders and extruded products
- Intermediate moisture (IM) foods, principles, characteristics, advantages of IM foods, problems in developing new IM foods
- Hurdle Technology and its importance in food industry

UNIT- 3 (15 HOURS)

- Microwave processing–Difference between microwave and infrared energy, dielectric constant, relaxation time, equipment and applications
- Minimally processed foods–Preservation and packaging of minimally processed foods
- Irradiation–Mechanism, dosimetry, equipment, effect of irradiation on micro-organisms and food. Safety and wholesomeness of irradiated foods
- Fermentation–Mechanism involved in food preservation and factors affecting the food fermentation
- Preservation by synthetic chemicals–Benzoate, sorbate, propionate, sulphur dioxide, anti-oxidants and natural agents.

PRACTICALS (1 CREDITS: 30 HOURS)

- Demonstration of different types of driers
- Demonstration of canning line
- Demonstration of extrusion line
- Demonstration of heat exchangers and freezers
- Demonstration of cold storage/refrigerated storage
- Industrial/plant visit

References:

1. Fellows, P. (2022). Food Processing Technology. Woodhead Publishing
2. Potter, N.N. (2013). Food Science. Springer Science & Business Media.
3. Stewart (2012). Introduction to Food Science and Technology, Elsevier
4. M. Shafiur Rahman (2020). Handbook of Food Preservation. CRC Press 2020
5. Gustavo V. Barbosa-Canovas, Maria S. Tapia, M. Pilar Cano (2004). Novel Food Processing Technologies, CRC Press.

BACHELORS WITH GEOGRAPHY AS MAJOR

4th Semester

GGY422J1: Geography: Geomorphology Credits: Theory=3, Practical=1

Credit-I

1. Nature and Scope of Geomorphology
2. Development of Geomorphology: European and American Schools
3. Principles of Geomorphology: Uniformitarianism and Neo-catastrophism
4. **Concept of Time and Space**
5. Concept of Dynamic Equilibrium

Credit-II

1. Models in Geomorphology: Natural, Physical and General System
2. **Geological Time Scale**
3. Theories of Isostasy: Pratt and Airy
4. Mass Movement: Controlling Factors and Types
4. **Vulcanicity and Earthquake**

Credit-III

1. Evolution of Landforms
2. Landforms: Types and Factors Controlling Landforms Development
3. Theories and Process of Slope Development
4. **Cycle of Erosion:** W.M. Davis and W. Penck
5. Geomorphic Agents and Landforms: Fluvial, Aeolian, Glacial, Karst and Coastal

Practical

Credit-IV

1. Extraction and Interpretation of Geomorphic Information from Topographical Maps
2. Preparation of Contour Map from Toposheet
3. Wentworth Method of Slope Analysis and Hypsometric Curve
4. **Drainage Morphometry: Delineation of Watershed, Stream Ordering, Mean Stream Length and Drainage Density**
5. Field Trip within Kashmir Valley

BACHELORS WITH GEOLOGY AS MAJOR

4th SEMESTER

CREDITS: THEORY: 3, PRACTICAL: 1

GLY422J1: GEOLOGY _ PALEONTOLOGY AND STRATIGRAPHY

Objectives and Expected learning outcomes

The study of Paleontology and Stratigraphy encompasses the aspects of the age of the earth, the chronological arrangement of rocks, and the appearance and evolution of life through geologic time. The concepts of stratigraphy, correlation, and paleontology would enable the students to understand the changes that occurred in the history of the earth and relate them to their field observations and also, to understand the framework of the stratigraphy of India. The students will be exposed to the principles of stratigraphy including order of superposition.

UNIT -1 (15 HOURS)

Paleontology: Origin and evolution of life through ages; Geological time scale; Preliminary idea about faunal succession. Fossils, their characters, conditions necessary for fossilization; types of preservation and occurrence. Application of Paleontology. Evolution of Man, Horse & Elephant.

UNIT -2 (15 HOURS)

Morphological characters, geological, geographical and stratigraphic distribution of the following: (1) Brachiopoda (2) Bivalvia (3) Gastropoda (4) Cephalopoda (5) Graptoloida (6) Anthozoa (7) Echinoidea (8) Trilobita. Elementary concept of vertebrate Paleontology with special reference to Siwalik. Introduction to Paleobotany with special reference to Gondwana plant fossils. Microfossils and their application. Introduction to Palynology and its applications.

UNIT -3 (15 HOURS)

Stratigraphy: Introduction, nomenclature and Principles. Stratigraphic correlation. A brief introduction to Precambrian **rocks of India**: Dharwar, Aravalli, Cuddapah, Vindhyan and Himalaya with special emphasis on the classification, distribution, lithology and economic deposits. Stratigraphy of Phanerozoic rocks with reference to the lithology and fossil content. Paleozoic succession of Kashmir, Triassic of Spiti, Jurassic of Kutch, Cretaceous of Tiruchirapalli. Stratigraphy of Siwalik and Karewa of Kashmir.

PRACTICAL (1 CREDIT: 30 HOURS)

Study of morphological characters of the selected genera- Brachiopoda, Bivalvia, Gastropoda, Cephalopoda, Trilobita.

Study of soil profile of any specific area in the field (2 days).

Books Recommended

- Arnold, C. A., 1947: An introduction to Paleobotany. McGraw - Hill Book Co.
Bignot, G., 1985: Elements of Micropaleontology. Graham and Trotman.
Brasier, M. D., 1980: Microfossils. George Allen & Unwin.
Kumar, R., 1998: Fundamentals of Historical Geology and Stratigraphy. Wiley Eastern Limited.
Sengupta, S., 1997: Introduction to Sedimentology. Oxford-IBH.
Shork & Twenholf, 1987: Principles of invertebrate Paleontology. CBS Pub., N. Delhi.
Weller, J. M., 1960: Stratigraphy Principles & Practice. Harper & Row Pub.

BACHELORS WITH HISTORY AS MAJOR

SEMESTER 4th

HST422J1: History: History of Ancient Kashmir

Credits: Theory-03, Tutorial: 01

Course Overview:

This course intends to familiarize the learners with the history of Ancient Kashmir. It attempts to explore the archaeology and history of Kashmir from the stone ages up to the 12th century CE. The learner will be acquainted with the various stone-age cultures, kingdoms and empires of ancient Kashmir. Moreover, the relations Kashmir shared with its neighbouring areas is also an integral part of this course. In nutshell, this course intends to familiarise the learners with a basic understanding of the past of Kashmir.

Learning Outcomes:

After successful completion of the course the learners are expected to:

- Understand the significance of various categories of sources for writing the history of ancient Kashmir
- Develop an understanding of the origin and growth of various cultures, civilizations, kingdoms and empires of ancient Kashmir.
- Know about the nature of relations between Kashmir and the neighbouring regions

Unit-I

- Sources: A Brief Survey
- Pre-Historic Kashmir: Paleolithic and Neolithic Cultures
- Indo-Greeks and Kushanas: Impact

UNIT-II

- Kashmir under Huns
- Karkotas, Utpalas and Loharas: **Political and Administrative Developments**
- Early Medieval Economy: Agriculture, Crafts and Trade

UNIT-III

- Kashmir as a Seat of Learning
- Position and Contribution of Women
- Religious Traditions: Naga, Buddhist and Trika Sivaism**

TUTORIALS (1 CREDITS)

Tutorial:

- Debates/Group discussions on select themes relevant to the course
- Guided Heritage Walk: Visit and Report Writing on any of the prominent Ancient sites/ Monuments.

Selected Readings:

- R. C. Agrawal, (1998). *Kashmir and its Monumental Glory*. New Delhi: Aryan Books International.
- P.N.K. Banzai, (1962 (rep. 1973). *A History of Kashmir*. (2nd ed.). New Delhi: Metropolitan Book Co.
- M.A. Wani&Aman Ashraf, (2017). *Prehistory of Kashmir*, Oriental Publishing House, Srinagar.
- M.A. Wani&Aman Ashraf, (2023). *The Making of Early Kashmir: Intellectual Networks and Identity Formation*, Routledge, India.
- A. A Bandey, (2009). *Prehistoric Kashmir*. New Delhi: Dilpreet Publishing House.
- S.C. Ray, 1970, *Early History and Culture of Kashmir*, Munshiram Manoharlal, New Delhi.
- Krishna Mohan, 1981, *Early Medieval History of Kashmir*, MeharchandLachmandas Pub. New Delhi.
- R. C Kak, (1933 (reprint 2002). *Ancient Monuments of Kashmir*. Srinagar: Gulshan Publishers.
- S. L. Shali, (1993). *Kashmir : History and Archaeology Through the Ages*. Delhi: Indus Publishing Company.
- M. A Stein, (1900 (reprint 1961). *Kalhana's Rajatarangini*. Delhi: Motilal Banarsidass.
- V.N. Drabu, *Kashmir Polity (600-1200 AD)*, Bahri Publications, New Delhi.

4th SEMESTER

BACHELORS WITH PUBLIC ADMINISTRATION AS MAJOR

PBA422J1: PUBLIC ADMINISTRATION _ COMPARATIVE PUBLIC ADMINISTRATION

CREDITS: THEORY: 3; TUTORIAL: 1

THEORY (03 CREDITS):

UNIT I

1. Comparative Public Administration: Nature and Scope
2. Fred Riggs: Ecological Approach
3. Max Weber: Bureaucratic Approach

UNIT II

1. Comparative Study of Administrative Systems in US and UK
2. **Legislative and Judicial Control over administration in US and UK**

UNIT III

1. Governance Models in India and United States: Comparative Analysis
2. Citizen Grievance Redressal Mechanism in US, UK and India

UNIT IV

1. **Governance Issues of Developing Countries: (a) Corruption (b) Red Tapism**
2. Interaction of Administration with Civil Society and Media: Comparative Analysis in US and India

TUTORIALS (1 CREDIT)

1. **Discussion on "Administrative Ethic"**
2. **Discussion on "Fused, Prismatic and Differentiated Structures"**
3. Discussion on "Why there is more corruption in India than in the United Kingdom and Sweden?"
4. Discussion on:
 - (a) Transparency International
 - (b) Agraria-Transitia-Industria System

BOOKS RECOMMENDED:

1. Arora, Ramesh, Comparative Public Administration, Associated Publishing, New Delhi
2. Rapheal, Nimrod, Readings in Comparative Public Administration, Allyn and Bacoli, Boston.
3. Riggs, Fred, Administration in developing Countries, Houghton Mifflin, Boston
4. Battacharya Mohit, 1987, Public Administration: Structure, Process and Behaviour, The World Press Pvt. Ltd., Calcutta.
5. Verman and Sharman, Comparative Public Administration, IIPA New Delhi.

BACHELORS WITH POLITICAL SCIENCE AS MAJOR

Semester 4th

PLS422J1: Political Science: Indian Political Thought

Credits: Theory=3, Tutorial=1

Course Objectives: the objectives of the course are:

- To acquaint learners with the dynamics of Indian political thinkers and their philosophy.
- To widen the horizons of students by understanding the political perspectives of Left Right and Centre.
- To provide an alternative discourse to western political thinkers.
- To inculcate the nationalistic values among the students by introducing them to the world of Indianans.

Course Outcomes: After completing the course, students should be able to:

- *Understand the historicity of Indian Political Thought*
- *Nuance the differences between western and Eastern contributions to the theory.*
- *Have a deeper understanding of various Indian philosophies associated with politics.*
- *Have clarity about richness in Indian Political thought.*
- *Have the knowledge about the philosophies that have shaped the Indian political landscape.*
- *Have deeper understanding about the post Indian independence political bigwigs which have impacted political scene.*

UNIT I: Ancient Indian Political Thought

- 1.1. Ancient Political Thought: Meaning, Nature and Features
- 1.2. Sources of Ancient Indian Political Thought
- 1.3. **Features of Arthashastra and Dharamshastra thought: Kautilya and Manu**

UNIT II: Modern Indian Political Thought: The Idealist Stream

- 2.1. **Salient features of Modern Indian Political Thought**
- 2.2. Indian Renaissance: Raja Ram Mohan Roy and Sir Syed Ahmad Khan
- 2.3. **Moderates and Extremists: Dadabhai Naoroji, MG Ranade, and BG Tilak**
- 2.4. **Emancipatory Thought: B. R Ambedkar**

PART III: Indian political thought in perspectives

- 3.1. Cultural Nationalism: V.D. Savarkar
- 3.2. Composite Nationalism: Maulana Azad
- 3.3. Alternative Discourses: Tagore and Iqbal
- 3.4. Gandhi: Critique to modernity, Swaraj and Non-Violence

BACHELORS WITH PSYCHOLOGY AS MAJOR

4th SEMESTER

PSY422J1: Psychology: Behavioural Neuroscience

CREDITS: THEORY – 3, TUTORIAL: 1

Course Learning Outcomes:

1. Identify the structure and function of the major parts of the nervous system.
2. Describe the process of action potentials, neurotransmission, hemispheric influences and other related processes.
3. Describe the neuroendocrine system, hormonal influences and neurological disorders.

Theory (3 Credits)

Unit 1 Foundations of behavioral neuroscience-I (15 Hours)

- Origins of Behavioral Neuroscience
- Structure and Functions of Nerve cells, Neurotransmitters, Neuron membrane and potential, Neural transduction.
- Structure and Functions of the Nervous System.
- Neuroplasticity of Brain (neural degeneration, neural regeneration, and neural reorganization)
- Hemispheric specialization

Unit 2 Sensory systems (15 Hours)

- Vision and visual perception
- Audition, the Body Senses, and the Chemical Senses. McGurk Effect.
- Sleep and Biological Rhythms

Unit 3 Hormones, homeostasis and brain-body interactions (15 Hours):

- Neuroendocrine system: Structure, and functions of major glands: Thyroid, Adrenal, Gonads, Pituitary, Pancreas and Pineal.
- Hormones and behavior: Emotions and stress, Eating and drinking, sex comparisons
- Neurological Disorders: Neurocognitive Disorders and Neurodevelopmental Disorders

Tutorial: 1 Credit

BACHELORS WITH SOCIOLOGY AS MAJOR**4th SEMESTER****SOC422J1 SOCIOLOGY _ INDIAN SOCIETY - STRUCTURE AND CHANGE****TOTAL CREDITS:4 THEORY:3; TUTORIAL:1)**

COURSE DESCRIPTION: This is a core course of 4 Credits (with one credit for each unit and last one unit as tutorial). The course is meant to introduce the learners to Indian society. Besides acquainting them with the various features, concepts and processes related to Indian Society processes, it also aims at developing an understanding of unity and diversity in Indian Society.

OBJECTIVES: This paper aims at making the students aware of the evolution, characteristics and various processes in the Indian Society. Its main objective is to give the students an idea about the various sociological debates and processes relevant to Indian Society.

LEARNING OUTCOMES: After reading this paper the students will be able to understand and comprehend the Indian Society in all its dimensions particularly features like Caste, Class and debates relating to modernization, Sanskritization and Islamization.

Unit 1: Introducing Indian Society

- Evolution of Indian Society
- Composition of Indian Society: Regional, linguistic and Religious diversity
- Unity in Diversity

Unit 2: Caste System

- Caste System: Nature and Features
- Varna and Jati
- Theories of Caste System
- Reservation Policy and Dalit Assertion

Unit 3: Processes of Social Change in Modern India

- Sanskritization
- Islamization
- Modernization
- Westernization

TUTORIALS**TUTORIAL 1: Understanding Kashmir Society**

- Composite Culture of Kashmir
- Regional, Religious and Linguistic Diversity
- Social Stratification in Kashmir Society
- Modernization and Social Change

Essential Readings:

- Berreman, G.D. 1979. Caste and Other Inequalities: Essays in Inequality. Meerut: Folklore Institute.
- Beteille, Andre. 1974. Social Inequality, New Delhi: OUP
- Dhanagare, D.N. 1993: Themes and Perspectives in Indian Sociology (Jaipur_Rawat).
- Dube, S.C. 1995: Indian Village (London: Routledge)
- Dumont, Louis 1970: Homo Hierarchicus: The Caste System and its Implications (New Delhi: Vikas)
- Gadgil, Madhav and Guha, Ramchandra. 1996. Ecology and Equity: The use and Abuse of Nature in Contemporary India, New Delhi.: OUP
- Guha, Ranjit. 1991. Subaltern Studies. New York: OUP
- Karve, Irawati, 1961: Hindu Society: An Interpretation (Poona: Deccan College)
- Kothari, Rajani (Ed.). 1973. Caste in Indian Politics,
- Lannoy, Richard 1971: The Speaking Tree, A Study of Indian Culture and Society, London, Oxford University Press
- Lewis, Oscar. 1966. "Culture of Poverty". Scientific American Vol. II & V, No 4
- Madan, T.N. 1991. Religion in India. New Delhi.: OUP
- Mandelbaum, D.G., 1970: Society in India (Bombay: Popular Prakashan)
- Singh, Y. 1973: Modernization of Indian Tradition, Delhi, Thomson Press.
- Singh, Yogendra, 1973: Modernization of Indian Tradition (Delhi: Thomson Press)

BACHELORS WITH SOCIAL WORK AS MAJOR
4th SEMESTER

SWK422J1: Social Work: Social Case Work: Working with individuals

Credits: theory=3, Tutorial=1

Course Objectives

- Understand social casework as a method of social work.
- Develop abilities to critically analyze problems of individuals and families and factors affecting them.
- Enhance understanding of the basic concepts, skills, tools, techniques and process of case work.
- Be equipped to work as case worker in the development sector.

UNIT-1: Understanding Clients

(15 Hours)

- Life-span perspective of individual development
- Human needs and problems faced by individuals and families.
- Social functioning and Social environment.
- Resilience, Coping and Defence mechanisms.

UNIT-2: Introduction to Casework

(15 Hours)

- Meaning, concept and objectives of Case work.
- Social Case Work as a method of Social Work
- Major Principles of Social Casework
- Components of Social Casework: person, problem, place and process.

UNIT-3: Process and Techniques of Casework

(15 Hours)

- Process: Intake, Study, and Assessment.
- Process: Intervention, Termination and Evaluation
- Techniques: Rapport Building, Relationship and listening.
- Techniques: Observation, Communication, Recording.

TUTORIALS

15 Hours

Tutorials with duration of 15 Hours shall be based on the assignments given to course. Field tour and report, book review, discussion on select readings, screening of documentaries and other feasible activities that the tutor deems relevant for the course.

Suggested Readings:

- Beistek, F.P. (1957). *The Casework Relationship*. Chicago: Loyola University Press.
 - Pearlman, H.H. (1957) *Social Casework: A Problem-Solving Process*. Chicago: The University of Chicago Press.
 - Timms, N. (1964) *Social Casework: Principles and Practice*. London: Routledge and Kegan Paul.
-

**BACHELORS WITH MAJOR IN WATER MANAGEMENT (COURSE TYPE – 1)
4th SEMESTER**

WMG422J1 WATER MANAGEMENT _ WATER POLLUTION

CREDITS: THEORY: 3, PRACTICAL: 1

COURSE OUTCOME: *Students are expected to have an understanding on water pollution types and its impacts thereof. This course may lead to have theoretical and practical understanding about the issues related to water environment.*

THEORY (3 CREDITS)

UNIT I: SURFACE AND GROUND WATER POLLUTION

Lentic and Lotic system characteristics, River and stream pollution: causes and impacts, Lake and wetland pollution: Causes and impacts, Eutrophication: causes and consequences, Ground water pollution: causes and impacts, Water borne diseases and Public health

UNIT II: MARINE POLLUTION

Marine pollution: Causes and impacts, Marine litter: Types and sources, Oil pollution: Sources and impact on aquatic life and ecosystems, Ocean acidification, Impacts of marine pollution on public health

UNIT III: THERMAL AND RADIOACTIVE POLLUTION

Thermal pollution: causes and impact on water characteristics and aquatic biodiversity, Radioactive pollution: Sources and types of radiations, Impact of thermal pollution on water characteristics and aquatic biodiversity, Radiation hazard and Public health

PRACTICAL (1 CREDIT):

1. Estimation of BOD of water
2. Estimation of COD of water
3. Estimation of ammonical nitrogen of water
4. Estimation of Nitrite and Nitrate Nitrogen of water

SUGGESTED READINGS:

1. Water Pollution and Management, C K Varshney
2. Fundamentals of Water and Wastewater, Krishna Gopal
3. Groundwater Hydrology, David Keith Todd
4. Water and Wastewater Technology, Mark J Hammer
5. Groundwater Science, Fitts, C.R.
6. Groundwater and Surface Water Pollution, Liu, D.H.F. and Liptak, B.G.
7. Wetlands: Monitoring, Modelling and Management, Okruszko, T., Maltby, E., Szaltytowicz, J., Swiatek, D. and Kotowski, W.
8. Basic Environmental Technology, Nathenson, Jerry. A.

5th SEMESTER
DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE)
BCH520D: BIO-CHEMISTRY: BIO-PHYSICAL AND BIO-CHEMICAL TECHNIQUES
CREDITS: THEORY-4, PRACTICAL: 2
MAXIMUM MARKS: 60, MINIMUM: 24

THEORY (4 CREDITS: 60 HOURS)

Objectives/Expected Learning Outcomes: This course introduces the students to basic techniques with an expectation to train/induct them for biological research in academia and industry.

Unit I: Spectroscopic techniques (15 HOURS)

Beer-Lambert Law, Light absorption and its transmittance, and application of extinction coefficient, applications of visible and UV spectroscopic techniques **spectrofluometry**, Quantitation of DNA, RNA and Proteins by **UV spectrophotometry**.

Unit II: Chromatography (15 HOURS)

General principles and applications of:

1. Molecular sieve chromatography
2. Ion exchange chromatography
3. Affinity chromatography
4. **HPLC chromatography**

Unit III: Electrophoretic and Immunological techniques (15 HOURS)

Basic principles of agarose electrophoresis, PAGE and SDS-PAGE, Isoelectrofocussing, Immune diffusion, Rocket immune electrophoresis, Radioimmunoassay, ELISA.

Unit IV: Biotechnology and Animal cell culture (15 HOURS)

Steps of gene cloning using Bacterial plasmid, Competent cells and Bacterial transformation, Restriction enzymes, PCR, DNA and Protein markers, Gene Knock-in and Knock-out.

Animal cell culture: Composition of culture media, Primary cell culture, Immortal and transformed cell lines.

PRACTICAL (2 CREDITS: 60 HOURS)

MAX.MARKS 30, MIN.12 MARKS

1. Separation of chlorophyll pigments by Silica gel chromatography.
2. PAGE
3. Separation of proteins by SDS-PAGE.
4. Agarose gel electrophoresis

BOOKS RECOMMENDED

1. Biophysical Chemistry by Uphadya, Uphadya and Nath
2. Principles and Techniques of Biochemistry and Molecular Biology by Keith Wilson and John Walker
3. Laboratory Manual of Biochemistry & Biotechnology by Syed Eazaz Hussain Rizvi.

5TH SEMESTER
DISCIPLINE SPECIFIC ELECTIVES (DSEs)
OPTION - I

BOT516DA: BOTANY - CELL AND MOLECULAR BIOLOGY

(Credit: Theory-4, Practical-2)

Unit 1: Cell as a unit of Life, Cell wall and Plasma membranes (16 Hours)

The cell theory; **prokaryotic and eukaryotic cells; properties of cell; eukaryotic cell components.**
Bio-membranes; structure and function, fluid mosaic concept, fluidity of bio-membranes; membrane proteins and their functions; carbohydrates in the plasma membrane; Faces of the membranes. **Cell wall-structure and functions.**

Unit 2: Cell Organelles (20 hours)

Non-membranous organelles: Structure and functions of ribosomes, centrioles and basal bodies
Single membrane bound organelles: endoplasmic reticulum, golgi bodies and lysosomes, peroxisomes and glyoxisomes.

Double membrane bound organelles: Mitochondria; structure and functions, semi-autonomous nature; endosymbiont hypothesis; mitochondrial DNA.

Chloroplast; structure and functions; semiautonomous nature, chloroplast DNA.

Nucleus: Nuclear Envelope- structure of interphase nucleus; chromatin material, euchromatin and heterochromatin, nucleolus.

Unit 3: Cell Cycle & Genetic Material (12hours)

Overview of Cell cycle, mitosis and meiosis.

DNA- Watson and Crick's model, Griffith's and Avery's transformation experiments.
Hershey-Chase bacteriophage experiment.

DNA- structure, types, replication (Prokaryotes and eukaryotes).

Unit 4: Gene Expression & Gene Regulation (12 hours)

Types of RNA (mRNA, tRNA, rRNA), RNA polymerase- various types; Transcription and translation in prokaryotes, genetic code.

Gene regulation in Prokaryotes: Lac operon and Tryptophan operon

Practical

1. To study prokaryotic cells (bacteria), viruses, eukaryotic cells with the help of light and electron micrographs.
2. Study of the photomicrographs of cell organelles
3. To study the structure of plant cell through temporary mounts.
4. Study of mitosis and meiosis (temporary mounts and permanent slides).
5. Study the effect of temperature, organic solvent on semi permeable membrane.
6. Study of plasmolysis and deplasmolysis in onion peelings.
7. Study the structure of nuclear pore complex by photograph.
8. Study of special chromosomes (polytene & lampbrush) either by slides or photographs.
9. Preparation of the karyotype and ideogram from given photograph of somatic metaphase chromosome.

Suggested Readings

BACHELOR OF SCIENCE

5th SEMESTER

DISCIPLINE SPECIFIC ELECTIVES (DSE:)

BT520DA: BIO-TECHNOLOGY: BIOTECHNIQUES

CREDITS: THEORY - 4, PRACTICAL - 2(4+2)

OPTION-I

THEORY (4 CREDITS: 60 HOURS)

MAXIMUM MARKS: 60, MINIMUM MARKS: 24

Objective: This course is designed to give students exposure to various techniques and instruments used in biotechnology.

Unit - 1 (15 Hours)

Microscopy: Principle, working and applications of light microscopy - bright-field, dark-field, phase-contrast, fluorescence & confocal microscopy, electron microscopy - TEM and SEM;

Staining - principle and procedure of simple staining, negative staining & differential staining; **Spectroscopy:** principle, working and applications of ultraviolet / visible light spectroscopy (UV/Vis spectroscopy);

Unit - 2 (15 Hours)

Centrifugation- Basic principles and applications of preparative and analytical centrifugation (differential centrifugation & density-gradient centrifugation), ultracentrifugation and its applications; **Chromatography - Principle, working and applications of thin-layer chromatography,** ion-exchange chromatography, gel filtration and affinity chromatography.

Unit - 3 (15 Hours)

Electrophoresis: General principle and types; Principle, procedure and applications of native polyacrylamide gel electrophoresis, sodium dodecyl sulphate-polyacrylamide gel electrophoresis, isoelectric focusing, two-dimensional gel electrophoresis and agarose gel electrophoresis; **Blotting techniques:** Southern, northern & western blotting; **PCR - principle, types and application.**

Unit - 4 (15 Hours)

Immunological techniques: Principle, procedure and application of immunodiffusion, immuno-electrophoresis, enzyme linked immunosorbent assay (ELISA) and radioimmunoassay (RIA); **Radioisotope techniques: Concept of radioisotopes, types and properties of radioactive decay, units of radioactivity, characteristics of radioisotopes commonly used in biology, measurement of radioactivity.**

PRACTICALS (2 CREDITS: 60 HOURS) MAXIMUM MARKS: 30, MINIMUM MARKS: 12

1. **Paper chromatography.**
2. **SDS-PAGE.**
3. Agarose gel electrophoresis.
4. Demonstration of Western blotting.
5. Demonstration of ELISA/RIA.
6. Demonstration of PCR.

BOOKS RECOMMENDED

1. *Principles and Techniques of Biochemistry and Molecular Biology:* Wilson, K. and Walker, J. - Cambridge University Press.
2. *Physical Biochemistry - Applications to Biochemistry and Molecular Biology:* Freifelder, D. - W. H. Freeman and Company.
3. *Molecular Cloning - A Laboratory Manual:* Sambrook, J. and Russell, D. W. - Cold Spring Harbor Laboratory Press.

Expected Learning Outcomes:

1. *Understanding of biophysical and molecular biology techniques and their applications.*

BA / BSc 5th SEMESTER
DISCIPLINE SPECIFIC ELECTIVES (DSEs)
OPTION-I

GG516D1: GEOGRAPHY OF TOURISM

CREDITS: THEORY: 4, PRACTICAL: 2

Marks: 60

THEORY (4 CREDITS)

Credit-I

- 1) Definition and Scope of Tourism Geography
- 2) Components of Tourism
- 3) Geographical Attributes of Tourism
- 4) Butlers Theory of Tourism Development

Credit-II

- 1) Types and Forms of Tourism
- 2) Concept of **Carrying Capacity**
- 3) **Sustainable Tourism**
- 4) **Environmental Impacts of Tourism**

Credit-III

- 1) Characteristics of Indian Tourism
- 2) National Tourism Policy
- 3) Regional Dimension of Tourist Attraction
- 4) Problems and Prospects of Indian Tourism

Credit-IV

- 1) Significance and Potential of Tourism in J&K
- 2) Tourist Flow and Distribution Pattern
- 3) **Pilgrimage Tourism** & Adventure Tourism in Jammu and Kashmir
- 4) Problems and Prospects of Tourism in J&K

PRACTICAL (2 CREDITS)

TOURISM GEOGRAPHY

Maximum Marks = 30

Credit-V

- | | |
|--|----------------|
| 1. Determination of Tourist Potential Sites through Toposheets | (8 Exercises) |
| 2. Mapping of Tourist Nodes | (8 Exercises) |
| 3. Tourist Information System (Site Information and Route Information) | (8 Exercises) |

Credit-VI

- | | |
|---|---------------|
| 1. Generation of Tourist Data | (8 Exercises) |
| 2. Field Based Tourist Perception Studies | (8 Exercises) |
| 3. Analysis of Tourism Impacts and Report Writing | (8 Exercises) |

Suggested Readings:

1. S. N. Singh, Geography, of Tourism and Recreation, New Delhi, 1954.
2. S. C. Chandra, Geography of Tourism. Rawat Publications, New Delhi 2002.
3. P.C. Sinha, Eco-tourism and Mass tourism. Allahabad 2005.
4. M. Simith and Nichola Macleod, Key Concepts in Tourist studies. 2010
5. B.S. Badan, Tourism in India, Mumbai, 1998.
6. A.C Singh & P.S. Rana, "Tourism Geography, Patna, 2006.

BACHLOR OF SCIENCE (GEOLOGY)
5th SEMESTER

DISCIPLINE SPECIFIC ELECTIVE

GL521DA: STRUCTURAL GEOLOGY/PLATE TECTONICS

CREDITS: THEORY-4, PRACTICAL-2

THEORY (4 CREDITS: 60 HOURS)

MAXIMUM MARKS: 60, MINIMUM MARKS: 24

Objective/Expected learning outcomes:

The course deals with geological structures resulting from the action of these forces on rocks. The student will gain knowledge of the geometry of the rock structures, understand the mechanism of the evolution of rock structures and its application in the field. The students learn the skills of identifying different structure and measurements using Brunton compass. This is fundamental to geological mapping. This course also helps to know how to use structures and help students appreciate the dynamic nature of the Earth lithosphere. Learn how to read geologic maps and solvesimple map problems using strike and preparations of cross sections.

UNIT -1 (15 HOURS)

Basic concepts of field geology: **Maps—definition, topographic and geological maps.** Dip and strike of stratified rocks. True dip, apparent dip, plunge and pitch of linear structures. Outcrop patterns. True thickness and vertical thickness. Width of the outcrop, relation between true thickness and the width of outcrop. Criteria for distinction between normal and overturned sequences: ripple marks, cross bedding, graded bedding, mud cracks, rain-imprints, Pillow lava, vesicular tops of lava beds, Relationship of cleavage with bedding, Paleontological methods.

UNIT -2 (15 HOURS)

Folds: Definition and classification (geometrical); fold parameters/components. Unconformities: Definition, types of unconformities. Criteria for recognition of unconformities. Concordant pluton: sills, laccoliths, lopoliths, and phacoliths. Discordant pluton: dykes, volcanic vents, ring dykes. Joints- Morphology and classification (Geometrical). Foliation: Definition and classification; Schistosity, gneissosity, slaty cleavage. Lineation: Definition and classification, slickenside, mineral lineation Cleavage/ bedding intersections, pucker lineation, pitch and swell, boudinage, quartz roding and mullion.

UNIT -3 (15 HOURS)

Faults: Definition, terminology and classification (geometrical). Criteria for recognition of faults: discontinuity of structures, repetition and omission of strata, features characteristic of fault plane: slickenside, gouge, fault breccias, mylonites, silicification and mineralization, differences in sedimentary facies. Physiographic criteria: scraps, triangular facets. Offset streams. Mechanical principles: **Stress, definition of force and stress. Normal and shear stress.** Basic concept of stress ellipse. Strain definition and computation of changes in line length. Basic concept of strain ellipse.

UNIT -4 (15 Hours)

Important concepts about Earth dynamics: outline description of Contraction, Expansion, Plate tectonic models. **Plate tectonics** - basic concepts and definitions, types of plate margins, important characters of plate margins. **Mechanism of plate movement.** Mantle plumes vis-à-vis island chains. Plate tectonics in relation to the distribution of seismic, volcanic and island arc belts. Plate tectonic models for the origin of mountain belts: **Ocean-ocean, ocean-continent, Continent-Continent types of convergent boundaries.** Northward movement of the Indian Plate and the origin and evolution of the Himalayas and its thrust belts. Seismicity of the Indian subcontinent

**BACHLOR OF SCIENCE (GEOLOGY) 5th
SEMESTER**

DISCIPLINE SPECIFIC ELECTIVE

GL521DB: ENGINEERING AND ENVIRONMENTAL GEOLOGY

CREDITS: THEORY-4, PRACTICAL-2

THEORY (4 CEDITIS: 60 HOURS)

MAXIMUM MARKS: 60, MINIMUM MARKS: 24

Objective/Expected learning outcomes:

The students will learn the skills of identifying and mapping of different geological structures and alignment of engineering projects and their environmental effects. This course will also help students to comprehend the dynamic nature of the Earth lithosphere. Besides, reading geologic maps and solve simple map problems using strike and preparations of cross sections useful in the engineering projects are also the focus of the course. Moreover, the students will also learn the different environmental aspects of engineering projects.

UNIT -1 (15 Hours)

Basics of Engineering Geology: Engineering properties and classification of rocks. Factors affecting engineering properties of rocks. Importance of geological studies to Engineers and significance of geological Investigations for civil engineering projects. Rock stability tests. Engineering properties of soils.

UNIT -2 (15 Hours)

Geology for Site selection and construction of roads, buildings, dams, bridges, Tunnels, and reservoirs. Mass movements. Earthquakes, Soil liquefaction, creep and seismic zones of India.

UNIT -3 (15 Hours)

Environmental Geology. Soils: soil formation, types of soils, soil degradation. Environmental changes due to influence of humans. Explain the causes of soil, air and water pollution.

UNIT -4 (15 Hours)

Surface processes and erosion. Deforestation and land degradation. Geology of Mineral Resources, Mineral Resources and the Environment. Minerals and Human Use, Waste disposal, Waste Management and Geology.

Suggested Readings:

- Arms, k., 1990: environmental science. Saunders college pub. Bell, f. G.,
engineering properties of soils and rocks.
Bell, f. G., 1999: geological hazards: their assessment, avoidance & mitigation. E&fn s. London Bell, f.
G., 1999: geological hazards. Routledge, london.
Bryant, e., 1985: natural hazards. Cambridge university press. Goodman,
r. E., engineering geology.
Keller, e. A., 1978: environmental geology. Bell and howell, usa.
Krynine, d. H. And judd, w.r., 1998: principles of engineering geology. Cbs pub. Lanen,
f., environmental geology.
Lawrence, l. Environmental geology.
Lundgren, l., 1986: environmental geology. Prentice hall Michael,
a., basic of environmental science.
Parasnis, d. S., 1975: principles of applied geophysics. Chapman hall.
Pipkin, b. W. & trent, d. D., 1997: geology and the environment. West wardsworth. Singh, a.,
modern geo-technical engineering.
Smith, k., 1992: environmental hazards. Rutledge, london.
Valdiya, k. S., 1987: environmental geology -indian context. Tata mcgraw hill. Venkat,
r. D., engineering geology for civil engineers.
Waltham, a. C., 1997: foundations of engineering geology. Blackie academic & professional. Subramaniam, v.,
2001: textbook in environmental science-narosa international.

**BACHELOR OF ARTS 5th SEMESTER
DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE)**

OPTION - I

HS520DA: HISTORY: INDIA SINCE INDEPENDENCE

Credits: Theory-4, Tutorial: 02

Hours: 60+30=90

Theory: (4 Credits: 60 hours; Maximum Marks: 60; Minimum Marks: 24)

Objectives/ Expected Learning Outcomes:

This course has been designed to acquaint students with some of the most important political and economic developments in India since 1947. The endeavor is to make the students understand that most of the economic and administrative problems of the post independent India were the legacies of colonialism. The course also aims to underline the legacies of Indian National Movement with the purpose to showcase that the progressive steps taken by the post 1947 state were guided by the values inculcated by the Indian National Movement during the course of its tussle with the colonial state. The course also discusses how the Nationalist Government in Jammu and Kashmir emancipated the lives of people through the radical restructuring of land relations. The course also aims at making the students to understand the intricacies of constitutional arrangement between Centre and the State of Jammu and Kashmir.

Unit-I (India after Independence-I)

- I. Legacies of Colonialism
- II. Legacies of Nationalism
- III. Indian Constitution- Salient Features

Unit -II (India after Independence-II)

- I. Linguistic Re-organization of States
- II. Land Reforms
 - a. Tenancy Reforms
 - b. Abolition of Landlordism
 - c. Bhoodan Movement

Unit -III (Kashmir after 1947-I)

- I. Formation of Nationalist Government
- II. Article 370 and Delhi Agreement
- III. Land Reforms with special reference to Big Landed Estates Abolition Act- 1950.

Unit- IV (Kashmir after 1947-II)

- I. Praja Parishad Agitation
- II. Plebiscite Movement
- III. Accord of 1975

TUTORIALS (2 CREDITS; 30 MARKS)

Tutorial-I: Critical evaluation of any one of the following:

- a. Delhi Agreement of 1952.
- b. Big Landed Estates Abolition Act
- c. Article 370
- d. Accord of 1975

Tutorial-II: Life history interview of any two senior citizens of your locality along with report.

SUGGESTED READINGS:

- Bipin Chandra, Mridula Mukherjee, Aditya Mukherjee: India since Independence
- Paul Brass: Politics of India Since Independence
- Chitralekha Zutshi: Languages and Belongings
- M. Y. Saarf: Kashmiri's Struggle for Freedom

SUPPLEMENTARY READINGS:

- Ramachandra Guha: India after Gandhi
- Rudolph and Rudolph: In Pursuit of Laxmi
- Mridu Rai: Hindu Rulers, Muslim Subjects

BACHELOR OF ARTS (GENERAL PROGRAMME) 5th SEMESTER
DISCIPLINE SPECIFIC ELECTIVE (DSE)

OPTION -I

IS520DA: ISLAMIC STUDIES: ISLAMIC CULTURE AND SOCIETY IN KASHMIR

CREDITS: THEORY: 4, TUTORIAL: 2

Objectives / Expected Learning Outcomes:

The objective of the course is to acquaint the students with the advent and spread of Islam in Kashmir and the social, educational, art and literary developments under Muslim rulers. It will also introduce the life and contribution of the prominent Muslim sufis and Ulama who served Kashmir society.

THEORY (4 CREDITS) 60 HOURS

MAX. MARKS: 60,

MIN. MARKS: 24

Unit I: Kashmir History: 7th - 14th Century (Overview)

- 1) . Advent of Islam in Kashmir
- 2) . Social Conditions during 12th-14th Centuries
- 3) . Religious Conditions during 12th-14th Centuries

Unit II: Kashmir under the Sultans

- 1) . Establishment of Muslim Sultanate (1339-1470)
- 2) . Development of Arts during the Sultanate Period (1339-1586)
- 3) . Education and Literature during the Sultanate Period (1339-1586)

Unit III: Sufis and Rishis

- 1) . Sayyid Bulbul Shah (RA): Life and Contribution
- 2) . Sayyid Ali Hamadani (RA): Life and Role
- 3) . Shaykh Nur al-Din (RA): Life and Teachings

Unit IV: Sufis and the Influence of Central Asia and Iran

- 1) . Shaykh Hamzah Makhdum (RA): Life and Role
- 2) . Shaykh Yaqub Sarfi (RA): Life and Works
- 3) . Influence of Central Asia and Iran on Kashmir Society (1339-1586)

TUTORIALS (2 CREDITS): 30 HOURS

MAX. MARKS: 30

MIN. MARKS: 12

- 1) An Introduction to the below mentioned Socio-Religious Organization: a) Anjuman-i-Nusratul Islam, J&K
 - a) Anjuman-i-Tablighul Islam, J&K
 - b) Jamiat-i-Ahl-i-Hadith, J&K
 - c) Jamat-i-Islami, J&K
- 2) Educational Tour to the Places of Religio-Historical Significance

BOOKS RECOMMENDED:

- 1) Kalhana. *Rajatarangini*, (English Translation by M. A. Stein, 2 Vols).
- 2) Ray, S. C., *Early History and Culture of Kashmir*.
- 3) Dar, G. M., *Social and Religious Conditions of Kashmir on the Eve of Foundation of Muslim Sultanate*.
- 4) Sofi, G. M. D., *Islamic Culture in Kashmir*, Delhi.
- 5) Sofi, G. M. D., *Kashir*, Delhi.
- 6) Hasan, Mohibul, *Kashmir Under the Sultans*, Srinagar.
- 7) Rafiqi, A. Q. *Sufism in Kashmir*, Srinagar.
- 8) Khan, Muhammad Ishaq, *Kashmir's Transition to Islam*, Srinagar.
- 9) Bamzai, P. N. K., *History of Kashmir* (3 Vols), Srinagar.
- 10) Shah, Pir Hasan, *Tarikh-i-Hasan*, Srinagar.
- 11) Wani, Muhammad Ashraf, *Islam in Kashmir*, Gulshan Books, Srinagar.
- 12) Relevant Articles in *Encyclopedia of Islam*.
- 13) Relevant Articles in *Encyclopedia of Modern Muslim World*.
- 14) Relevant Articles in *Insight Islamicus* (Vol. 1-18), ISSN: 0975-6590, Shah-i-Hamadan Institute of Islamic Studies, University of Kashmir (Indexed in *Index Islamicus*, London).

BACHELOR OF ARTS
5th SEMESTER
DISCIPLINE SPECIFIC CORE (DSE)
OPTION -I

PS520D1: POLITICAL SCIENCE: WESTERN POLITICAL THOUGHT

Theory (4 CREDITS: 60 MARKS)

Minimum Marks: 24

Objectives: This course should enable students to comprehend the Western tradition of Political Thought which has hugely influenced the growth of political processes, institutions and ideas around the world.

Unit I: Historical Context of Western Thought

- 1.1 Political Development of Western Society- From Confessional to Secular State
- 1.2 Western Political Thought: Evolution and Significance
- 1.3 Major Themes of Western Political Thought
- 1.4 Meaning of Classical Tradition in Western Political Thought

Unit II: Citizenship and Virtue

- 2.1 Relation between Politics and Virtue in Greek Political Thought
- 2.2 Plato: The Idea of a Philosopher King
- 2.3 Aristotle: Citizenship and Rule of Law
- 2.4 St. Augustine: Politics as Earthly City

Unit III: State and Rights

- 3.1 Niccolo Machiavelli: Politics as Statecraft
- 3.2 Thomas Hobbes: State as the Condition of Freedom
- 3.3 John Locke: Rights and Constitutional Government
- 3.4 Jeremy Bentham: Government as a Utility

Unit IV: Freedom and Democracy

- 4.1 J. S. Mill: Concept of Liberty
- 4.2 J. J. Rousseau: Popular Democracy
- 4.3 Karl Marx: Communist Society
- 4.4 Mikhail Bakunin: Anarchy and Freedom

Tutorials (2-Credits: 30 Hrs.)

[Assignments, Presentations, Viva-voce]

Maximum Marks: 30

Unit I: Debate-I

- 1.1 Is Western the Modern?
- 1.2 Reformation, Enlightenment and Reason in the West

Unit II: Debate-II

- 2.1 Aristotle on Slavery: A Critical Analysis
- 2.2 Alexis d Tocqueville: Tyranny of Majority:

1st SEMESTER
DISCIPLINE SPECIFIC COURSE (CORE-I)

PSY120C: PSYCHOLOGY: FOUNDATIONS OF PSYCHOLOGY

CREDITS: THEORY = 4; PRACTICUM = 2

Objectives: To understand the basic psychological processes and their applications in everyday life.

THEORY: 4 CREDITS

Unit 1: Introduction: Psychology as a science, origin and development of psychology, perspectives (cognitive, behavioural, psychoanalytic, humanistic & Socio-cultural), methods (Experimental & Quasi-Experimental).

Unit 2: Cognitive processes: Perception, nature of perception, laws of perceptual organization, learning: conditioning, observational learning; memory-processes, information processing model, techniques for improving memory.

Unit 3: Motivation and Emotion: Motives: biogenic and Psychogenic, Emotions: aspects of emotions, key emotions (Paul Ekman's model), Intelligence: nature & Theories (Spearman, Gardner and Sternberg).

Unit 4: Personality: nature and theories (Allport, Freud, Roger and McCrae & Costa).

PRACTICUM: 2 CREDITS (Any two from below 4 practicals)

1. Learning
2. memory
3. personality
4. intelligence

READINGS:

1. Wani, N. A. (2019). Introduction to Psychology. Wisdom Press New Delhi.
2. Chadha, N.K. & Seth, S. (2014). The Psychological Realm: An Introduction. Pinnacle Learning, New Delhi.
3. Ciccarelli, S. K & Meyer, G E (2008). Psychology (South Asian Edition). New Delhi: Pearson
4. Feldman, S. R. (2009). Essentials of understanding psychology (7th Ed.) New Delhi: Tata Mc Graw Hill.
5. Glassman, W. E. (2000). Approaches to Psychology (3rd Ed.) Buckingham: Open University Press.

BA 5th SEMESTER
DISCIPLINE SPECIFIC ELECTIVE (DSE)
OPTION - I

SOC520DA: SOCIOLOGY: FAMILY, MARRIAGE AND KINSHIP

CREDITS: THEORY: 4, TUTORIAL: 2
MAXIMUM MARKS: THEORY: 60, TUTORIAL: 30
MINIMUM MARKS: THEORY: 24, TUTORIAL: 12

Course Objectives:

The course is intended to familiarize the students with the basic institutions of Marriage, Family and kinship in society. The course is fundamentally designed to help the students understand the importance and dynamics of the aforementioned basic institutions.

The course seeks to enable the learners to:

- *To conceptualize the basic institutions of Marriage, Family and Kinship.*
- *To understand the relevance of these institutions in society.*
- *To understand the underlying dynamics (structural/functional changes) of these institutions in society.*

Learning Outcomes

After completing the course, the students are expected to possess a fundamental knowledge about the structure and functioning of the basic institutions of the Marriage, Family and Kinship. The students are also expected to be well acquainted with the all-round changes that have taken place in the structure and functioning of these institutions over a period of time.

Unit 1: Basic Concepts

- a. Descent and Lineage
- b. Phratry, Moiety and Kindred
- c. Clan and Tribe

Unit 2: Family

- a. Meaning and Significance
- b. Types of Family
- c. Changes in the institution of Family

Unit 3: Marriage

- a. Meaning and Significance
- b. Types of Marriage
- c. Changes in the institution of Marriage

Unit 4: Kinship

- a. Types of Kins
- b. Kinship Usages
- c. Kinship Terminology: Classificatory and Descriptive

TUTORIALS: PROJECT WORK/PRESENTATION/DEBATES/TERM PAPER (2 CREDITS)

TUTORIAL 1:

- a. Changing patterns of Family in Kashmir Society
- b. Classificatory System of Kinship
- c. Empty Nest Syndrome

TUTORIAL 2:

- a. Rising rate of Divorce
- b. Kinship Usages in Kashmir Society
- c. Late Marriage in Kashmir

REFERENCES:

- Ahuja, Ram. 2011, Society in India: Concepts, Theories, and Recent Trends. Jaipur: Ruwat Publications
- Bushan Vidhya and Sachdev, D. R. 2012. Fundamental of sociology. New Delhi: Pearson
- Fox, Robin. 1967. Kinship and Marriage: An Anthropological Perspective. Harmondsworth: Penguin.
- Harlambos, M. 1998, Sociology: Themes and perspectives. New Delhi: Oxford University Press.
- Shah A. M. 1998 The Family in India: Critical Essay New Delhi: Orient Longman.

Note: List of readings provided is not absolute and additions may be made to it.

**BA 5th SEMISTER
SOCIAL WORK
DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE)**

OPTION-I

SW520D1A: SOCIAL WORK _ SOCIAL WORK RESEARCH

Total Credits: 4 (Theory) + 2 (Tutorials)

Objectives/Expected Learning Outcomes:

1. Capable to understand the application of scientific methods of social research.
2. Able to demonstrate skills in applying qualitative research techniques.
3. Familiarize students with the nature of social science research and its application in the study of social phenomena.
4. Help students learn the research process and develop abilities to prepare research design.
5. Learn the process of Data collection, organization, presentation, analysis and report writing.

Course Contents:

(Theory)

Unit 1: Basics of Research (15 Hours)

- Research: Concept
- Approaches of Research: Qualitative, Quantitative and Mixed
- Social Work Research: Concept and Scope.

Unit 2: Procedures of Research (15 Hours)

- Literature Review,
- Hypothesis
- Research Design
- Sampling and Types

Unit 3: Sources and Tools of Data (15 Hours)

- Sources of Data: Primary, secondary
- Questionnaire, schedule,
- Interview Guide
- Observation

Unit 4: Fieldwork in Social Work (15 Hours)

- Concept and Significance
- Basics of Fieldwork
- Fieldwork settings
- Reporting and Documentation

TUTORIALS {2 CREDITS: 30 HOURS}

Tutorials with duration of 30 Hours shall be based on the assignments given to learners relevant to the course. Book review, Discussion on select readings, screening of documentaries and other feasible activities that the tutor deems relevant for the course.

READINGS:

1. Bernard, H. Russell, (1995). Research methods in anthropology: Qualitative and quantitative approaches. Walnut Creek: Altamira Press.
2. Gaur, A.S. & Gaur, S.S. (2006): Statistical Methods for practice and research- a guide to data analysis using SPSS. Response Books, New Delhi.
3. C. R. Kothari (2009). Research methodology: methods & techniques (2nd ed.) New Delhi: New Age International Publishers.
4. Mukherji, P.N. (1999). Methodologies in social science. New Delhi: Sage Publications.
5. Ahuja, Ram (2008). Research methods, Jaipur: Rawat Publications.
6. Kumar, R. (2006). Research methodology (2nd ed.). New Delhi: Pearson Education

5th SEMESTER
DISCIPLINE SPECIFIC ELECTIVE (DSE)
OPTION-I

WM520DA: WATER MANAGEMENT: WATER RESOURCE MANAGEMENT

CREDITS - THEORY-4, PRACTICAL-2
MAXIMUM MARKS: 60 MINIMUM MARKS: 24

Objectives/Expected Learning Outcomes: The student is expected to learn different tools, techniques and policies for management of water resources which are crucial for the sustenance of life on earth.

UNIT-I: INTEGRATED WATER RESOURCE MANAGEMENT **15 HOURS**

1. History of water management
2. Integrated water resource management: concepts and theoretical perspectives
3. Principles and tools for practicing IWRM
4. Issues and challenges in IWRM.
5. Corporate social responsibility in water resource management

UNIT-II: WATER HARVESTING AND WATERSHED MANAGEMENT **15 HOURS**

1. Concept and framework of watershed approach
2. Soil and water conservation-conservation technology
3. Water harvesting-importance and techniques
4. Integrated watershed development
5. A case study of water harvesting

UNIT-III: FRESHWATER ECOSYSTEM MANAGEMENT **15 HOURS**

1. Artificial recharges of ground water
2. River basin management
3. Management of lakes and wetlands
4. Flood control and management
5. Case study: Dal Lake, Ganga Action Plan

UNIT-IV: WATER LEGISLATIONS **15 HOURS**

1. Evolution of water law and policy in India
2. National water policy (2012)
3. J&K water resources (Regulation and Management) Act, 2010
4. Water (Prevention and control of pollution) Act 1974
5. Water Cess Act 1977

PRACTICAL (2 CREDITS - 60 HOURS) MAXIMUM MARKS: 30 MINIMUM MARKS: 12

1. Study of vegetation in a watershed area
2. Study of plant diversity in a watershed area
3. Study of the soil profile in a watershed area
4. Measurement of lake area and lake volume
5. Case studies on techniques of rainwater harvesting
6. Estimation of runoff from a given area

DISCIPLINE SPECIFIC ELECTIVE COURSES

5th SEMESTER

DISCIPLINE SPECIFIC ELECTIVE (DSE)

OPTION -I

ZOO516DA: ANIMAL BIOTECHNOLOGY

CREDITS: THEORY: 4, PRACTICAL: 2

THEORY:

Unit 1

Introduction

- 1.1 Concept and scope of biotechnology
- 1.2 Cloning vectors: Plasmids, Cosmids, Phagemids, Lambda Bacteriophage, and Expression vectors (characteristics)
- 1.3 Restriction enzymes: Nomenclature, detailed study of Type II.
- 1.4 Transformation techniques: Calcium chloride method and electroporation.

Unit 2

Gene manipulation

- 2.1 Construction of genomic and cDNA libraries and screening by colony and plaque hybridization
- 2.2 Southern, Northern and Western blotting
- 2.3 DNA sequencing: Sanger method
- 2.4 Polymerase Chain Reaction, DNA Finger Printing and DNA micro array

Unit 3

Genetically Modified Organisms

- 3.1 Production of cloned and transgenic animals: Nuclear Transplantation, Retroviral Method, DNA microinjection
- 3.2 Transgenic animals (mice, cattle, sheep, goat, birds, fishes)
- 3.3 Applications of transgenic animals
- 3.4 Production of pharmaceuticals, production of donor organs, knockout mice.

Unit 4

Culture Techniques and Applications

- 4.1 Preparation of growth media
- 4.2 Microbial culture techniques and management
- 4.3 Molecular diagnosis of genetic diseases
- 4.4 Recombinant DNA in medicine (recombinant insulin and human growth hormone), gene therapy

ANIMAL BIOTECHNOLOGY

PRACTICAL

(Credits 2)

1. Restriction digestion of plasmid DNA.
2. To study following techniques through photographs
 - a) Southern Blotting
 - b) Northern Blotting
 - c) Western Blotting
 - d) DNA Sequencing (Sanger's Method)
 - e) PCR
 - f) DNA fingerprinting
3. Project report on animal cell culture