South Calcutta Girls' College

Course Outcomes of all the Courses

2021-2022

South Calcutta Girls' College

Department of Bengali : Course Outcome / Programme Outcome / Programme Specific Outcome

Course Outcome 20120-2021

Sem-I, Bengali Hons.

Course Code :

CC1 Co.1. : Concept of Charyapada and sri

Krishna Kirtana

Co.2. : Translation Literature, Vaishnava Padabali and Literature based on the life of Sri Chaitanya

Co.3. : Mangalkabya, Romantic Poetry by the Rosang Poets, Shakta Padabali

Course Code :

CC2 Co.1 : Concept of Alphabets, Vowel and

Consonant **Co.2** : Reformation of words

Co.3 : Bengali Dialects

Co.4 : Concept of Bengali Grammar

Sem-I, Bengali

General Course

Code : GE/CC1

Co.1 : History of Modern Bengali Prose and Eassays.

Co.2 : Historyof Modern Bengali Poetry and Drama

Co.3 : History of Modern Bengal Novel and Short Stories.

Course Code :

AECC Co.1 : Selected Bengali Eassays of

Modern age Writer **Co.2** : Selected Short

Stories of Rabindranath Tagore **Co.3** :

Selected Poems of Rabindranath Tagore

Co.4 : Terminology

Course Outcome

Sem-II, Bengali

Hons Course

Code : CC3

Co.1 : History of Modern Bengali Poetry, Drama and Farce.

Co.2 : History of Modern Bengali Short Stories, Novels and Journals.

Co.3 : History of Modern Bengali Prose and Eassays.

Course Code : CC4

Co.1 : Poems from Charyapada, Vaishnava Padabali, Shakta Padabali and Modern Bengali Poets.

Co.2 : Novel : Kamal Kundala by Bankimchandra Chattapadhaya and Selected Bengali Short Stories.

Co.3 : Selected Modern Drama and Eassays.

Bengali General

Course Code : GE/

CC-2

Co.1 : History of Ancient Bengali Language and Middle age Bengali Language.

Co.2 : Concept of Prosody.

Co.3 : Concept of Rhetoric.

Sem-3 , Bengali Hons
Course Code: CC5
History of Bengali Literature---- 20th Century

Co.1 : Poetry & Drama

Poetry---- Rabindranath Tagore,Kazi Nazrul Nazrul, Jibanananda Das, Buddhadeb Basu, Bishnu Dey, Sukanta Bhattacharya , Sunil Ganguly

Drama---- Rabindranath Tagore, D.L.Roy, Bijan Bhattacharya, Tulshi Lahiri, Utpal Dutta, Badal Sarkar

Co.2 : Novel & Short Stories

Rabindranath Tagore, SaratChandra, Premendra Mitra, Bibhutibhusan, Tarasankar, Manik Bandopadhaya, Subodh Ghosh

Co.3 Essay & News Magazine

Essay----- Rabindranath Tagore, Ramendrasundar Tribedi, Mujtaba Ali, Buddhadev Basu, Gopal Halder

News Magazine----Bharati, Sobujpatra, Kollol, Kalikolom, Pragati, Parichay, Kabita

Course Code : CC6
Linguistics

Co.1 : Old Indo Aryan Language To Modern Indo Aryan Language (Progress)

Co2 : Characteristics of Language of Charyapad and Sri KrishnaKirtan

Co3 : Characteristics of language of AnnadaMangal and Paribrajak

Course Code: CC7

Novel

Co.1 : Novel (Any one)
Jogajog---- Rabindranath Tagore
Dena Paona----Saratchandra Chattapadhaya

Co.2 : Novel (Any one)
Padmanadir Majhi---- Manik Bandapadhaya
Aranyer Adhikar----- Mahasweta Devi

Co.3 1. Five Short Stories of Rabindranath Tagore
2.Five Short Stories of Jagadis Gupta,Premendra Mitra, Subodh Ghosh,Tapabijay Ghosh, Suchitra Bhattacharya

Course Code: SEC-A-3-1

Printing & Publishing

Co.1 Manuscript
Co.2 Computer (MS Word, Page maker, Corel Draw, Indesign)
Co.3 Proof reading, Publishing

Course Code: SEC-A-3-2

Applied Bengali 1

Co.1 Story Writing & Script Writing
Co.2 Recitation & Chanda
Co.3 Relation Between Literature & Cinema

Sem-3, Bengali General

Course Code—GE/CC3

Co.1 Vaishnab Padabali
Co.2 Modern Poetry of Tagore, Samar Sen, Birendra Chattapadhaya, Nirendranath Chakrabarty &
Sunil Ganguly
Co.3 Raja O Rani – Tagore (Drama)

Course Code: SEC-A-3-1

Printing & Publishing

Co.1 Manuscript
Co.2 Computer (MS Word, Page maker, Corel Draw, Indesign
Co.3 Proof reading, Publishing

Course Code: SEC-A-3-2

Applied Bengali 1

Co.1 Story Writing & Script Writing
Co.2 Recitation & Chanda
Co.3 Relation Between Literature & Cinema

Sem -4,Bengali honours

Course code –CC8

Co.1 Vaishanab Padabali (14 poetries)
Co.2 Chandimangal Kabya (1st part) – mukunda chakrabarty
Co.3 Shakta Padabali (14 poetries)

Course Code-----CC9

Co.1 **C**handa
Co.2 Alankar
Co.3 Aesthetics

Course code-----CC10

Co.1 i) Kamalakanter Daptar—Bankimchandra Chattapadhya
ii)_ Modern Essays of different writers
Co.2 i) Sahitya—Rabindranath Tagore
ii) Moden Essays about criticism of different writers
Co.3 Chinnapatra---- Rabindranath Tagore

Course Code ----SEC-B-4-1

Co.1 News Paper Reporting , Letter Writing & Interview
Co.2 Advertising Writing , Translation from English to Bengali
Co.3 Basic technical lesson regarding Research Work

Course Code ----SEC-B-4-2
Applied Bengali 2

Co.1 Story & Essay Writing
Co.2 Bengali Spelling
Co.3 IPA & Roman Alphabet

Sem—4, Bengali General
Course Code – GE/CC4

Co.1 Pallisamaj----Saratchandra Chattapadhya
Co.2 Modern short stories
Co.3 Essays—Rabindranath Tagore

Course Code ----SEC-B-4-1
Applied Bengali & Basic Lesson of Research Work

Co.1 Newspaper Reporting ,Letter Writing & Interview Writing
Co.2 Advertising Writing , Translation from English to Bengali
Co.3 Basic technical lesson regarding Research Work

Course Code ----SEC-B-4-2
Applied Bengali 2

Co.1 Story & Essay Writing
Co.2 Bengali Spelling
Co.3 IPA & Roman Alphabet

Course Code –LCC2

CO.1 Linguistics
Co.2 Sahityer Rupobhed
Co.3 Meghnadbadh Kabya----Michel Madhusudhan Dutta

Sem----5 , Bengali Honours
Course Code----CC 11

Co.1 Poetry-Poem-Drama
Co.2 Novel & Short Stories
Co.3 Essay ,Criticism etc.

Course Code ---- CC 12

Co.1 Burho Slikher Ghare Rno ---- Michel Madhusudhan Dutta
Muktodhara---- Rabindranath Tagore
Co.2 Karagar---- Manmatha Roy
Tiner Taloer---- Utpal Dutt
Co.3 History of Stage Theatre

Course Code ---- DSE-A-5-1
Social & Cultural History of Bengal

Co.1 The Geographical & Anthropological History of Bengal & Bengali
The Social & Economical History of Bengal
The Political History of Bengal
The Religion of Bengal
The Influence of Sri Chaitanya
Culture of Bengal
Co.2 The Influence of Modern Colonialism in Bengal
Farmer Revolution , Indigo Revolution , Fakir Revolution
The Influence of Sabha Samiti (19th Century)
Co.3 Bangabhanga and Boycott – Swadeshi Movement
Dalit Movement

Partition , Refugee problem & Movement for Mother Language
Movement for Food & Naxalite Movement

Course Code ---- DSE-A-5-2
Literature of Bangladesh

CO.1 Novel & Short Stories
Co.2 Poetry & Drama
Co.3 Essay

Course Code ---- DSE-B-5-1
Bengali Literature for Children & Teenaged

Co.1 Khirer Putul ---- Abanindranath Tagore
Thakurmar Jhuli ---- Dakshina Ranjan Mitra Majumder
Co.2 Abol Tabol ---- Sukumar Ray
CharaSamagra ---- AnnadaSankar Roy
Co.3 Badsahi Aangti ---- Satyajit Ray
Sabuj Dwiper Raja ---- Sunil Ganguly

Course Code ---- DSE-B-5-2
Partition & Bengali Literature

Co.1 Novel
Co.2 Short Story
Co.3 Poem

Sem----5 , Bengali General
Course Code ---- DSE-A-5-1
Social & Cultural History of Bengal

Co.1 The Geographical & Anthropological History of Bengal & Bengali
The Social & Economical History of Bengal
The Political History of Bengal
The Religion of Bengal
The Influence of Sri Chaitanya
Culture of Bengal
Co.2 The Influence of Modern Colonialism in Bengal
Farmer Revolution , Indigo Revolution , Fakir Revolution
The Influence of Sabha Samiti (19th Century)
Co.3 Bangabhanga and Boycott – Swadeshi Movement
Dalit Movement
Partition , Refugee problem & Movement for Mother Language
Movement for Food & Naxalite Movement

Course Code ---- DSE-A-5-2
Bengali Detective Literature , Science Fiction & Miraculous Literature

Co.1 Sajarur Kanta ---- Saradindu Bandapadhyaya
Co.2 Sanku Samagra ---- Satyajit Ray
Co.3 Sab Bhuture ---- Lila Majumder

Sem----6 , Bengali Honours
Course Code ---- CC 13
Modern Bengali Poetry

Co.1 Birangana Kabya ---- Michel Madhusudhan Dutta
Co.2 Sonar Tori ---- Rabindranath Tagore
Sanchita ---- Kazi Najrul Islam
Co.3 Modern Bengali Poems

Course Code ---- CC 14
History of Sanskrit , English & Hindi Literature

Co.1 History of Sanskrit Literature
Co.2 History of English Literature
Co.3 History of Hindi Literature

Course Code ---- DSE-A-6-3
Bengali Detective Literature , Science Fiction & Miraculous Literature

Co.1 Sajarur Kanta ---- Saradindu Bandapadhyaya
Co.2 Sanku Samagra ---- Satyajit Ray

Co.3 Sab Bhuture ---- Lila Majumder

Course Code ----DSE-A-6-4
Comparative Literature

Co.1 Kalidasa & Rabindranath
Jaydeb & Bengali Literature
Co.2 Shakespeare & Bengali Literature
Eliot & Bengali Poem
Co.3 Tagore & Indian Literature
SaratChandra & Munshi PremChand

Course Code ---- DSE-B-6-3
Charit Sahitya , AtmaCharit & Bhraman Sahitya

Co.1 Chaitanya Bhagabat ---- Brindaban Das
Co.2 JibanSmriti ---- Rabindranath Tagore
Co.3 Deshe Bideshe ---- Sayiad Mujtaba Ali

Course Code ---- DSE-B-6-4
Folk Culture & Folk Literature

Co.1 Introduction of Folk Culture & Folk Literature
Type , Motif , Index
Brata of Bengal
Co.2 Folk Poem
Folk Dance
Puzzle
Co.3 Bengali Proverbs
Folk Song
Folktale

Sem----6 , **Bengali General**
Course Code ---- DSE-B-6-1
Partition & Bengali Literature

Co.1 Novel
Co.2 Short Story
Co.3 Poem

Course Code ---- DSE-B-6-2
Folk Culture & Folk Literature

Co.1 Introduction of Folk Culture & Folk Literature
Type , Motif , Index
Brata of Bengal
Co.2 Folk Poem
Folk Dance
Puzzle
Co.3 Bengali Proverbs
Folk Song
Folktale

Course Code ---- LCC(2)-6-2
Periodical Magazine ,Novel & Short Story

Co.1 Periodical Magazine
Co.2 Novel
Co.3 Short Story

Department of Botany
Course Outcome, Program Outcome and Program Specific Outcome, 2020-21

Course Outcome

Under CBCS
HONOURS

SEMESTER- I
CC1

THEORETICAL- PHYCOLOGY AND MICROBIOLOGY

PHYCOLOGY

CO1. General account: This course aims at acquainting students about the general organization of algal thallus as well as cytological details of the constituent cells. It also gives an idea regarding the different life cycle patterns prevalent among different groups of algae. Scope for developing awareness among the students about the remarkable contributions made by great phycologists has also been provisioned for.

CO2. Classification: Students are exposed to the different forms of classification proposed by renowned workers and are made aware about the basis behind them. Detailed information about the characteristic features of different major algal groups has also been provisioned for in this section. Students are also made aware regarding the ecological and economic implications of different groups of algae.

CO3. Life History: Scope for students to learn in details about the life-cycle pattern of selected member representatives of major algal groups has been provided for. Members have been carefully selected to give the readers a clear idea regarding the evolutionary pathway among algae.

MICROBIOLOGY

Virus:

CO1. Students are informed in details regarding the discovery, types, transmission and translocation of Plant viruses.

CO2. Provision for students to learn about physicochemical characteristics and Multiplication of well-known virus like TMV, T4 and Lambda phage has been made.

CO3. Students have the scope to learn about Viroids and Prions.

Bacteria:

CO1. Students get to learn about the discovery of Bacteria and its distinction from Archaea.

CO2. Students learn about the characteristics of some major groups of Bacteria.

CO3. They learn about the Bacterial growth curve and generation time in details.

CO4. Students get a detailed picture regarding the ultrastructure of a Bacterial cell and learn the basis of differentiation between Gram +ve & Gram – ve bacteria.

CO5. They have a thorough insight regarding Bacterial genome and plasmid, 2. Endospore - formation, structure and function, .Genetic Recombination (a) Transformation, Conjugation and Transduction.

PRACTICAL- PHYCOLOGY AND MICROBIOLOGY

ALGAE

CO1. Students get a first-hand experience of working-out major algal genera with reproductive structures accompanied by drawing under drawing prism with magnification.

CO2. Students get scope to study permanent slides and macroscopic specimens of algae belonging to different groups.

MICROBIOLOGY

CO1. Students have a first-hand experience of preparation of different bacterial media, slants and pouring of petri-plates.

CO2. They learn the techniques involved in sub-culturing of bacteria.

CO3. They have a hands-on training of staining and observing bacterial cell including Gram staining.

FIELD WORK

CO1. Scope has been provided for gaining first-hand experience in observation of plant diversity and collection and preservation of algae from field.

CC 2

THEORETICAL- MYCOLOGY AND PHYTO-PATHOLOGY

MYCOLOGY

CO1. General Account: Student gain general but detailed knowledge regarding the structural organization, sexuality, evolution of sex and life cycle patterns of fungi.

CO2. Classification: Students learn about a latest form of classification of fungi and knows about the salient characteristic features of major fungal groups.

CO3. Life history: Students get the opportunity to learn about the life-cycle patterns of some selected genera of fungi representing major groups.

CO4. Mycorrhiza: Students get to know about mycorrhiza, their types and roles in ecology and economy.

CO5. Lichen: Students learn about the types, reproduction and economic and ecological importance of lichens.

PHYTO-PATHOLOGY

CO1. Terms and Definitions: Students learn about the definitions and terminologies used in the study of plant diseases.

CO2. Host – Parasite Interaction: Students learn in details about the bio-chemical as well as mechanical procedures that play important role in host-parasite interaction during infection i.e. Pre-penetration, Penetration and Post-penetration.

CO3. They learn about the different methods used in Plant Disease Management.

CO4. Students gain detailed knowledge regarding symptoms , causal organism, disease cycle and control measures of carefully selected plant-diseases that have a deep-impact in the agricultural economy of our country.

PRACTICAL- MYCOLOGY AND PHYTO-PATHOLOGY

MYCOLOGY

CO1. Students have scope for gaining hands on experience on work out of selected fungal genera along with methodology for measurement of reproductive structures.

CO2. They will study some carefully selected genera from permanent slides.

CO3. Students will have access to fruit body of some fungi and lichens for gaining experience in morphological study.

PHYTO- PATHOLOGY

CO1. Student have provision for gaining hands-on training in preparation of fungal media, sterilization process, isolation of pathogen from diseased leaf, inoculation of fruit and subculturing.

CO2. They will gin training in procedures for identification of fungal diseases of plants that are of considerable economic importance.

FIELD WORK

CO1. Students will have the privilege of participating in field study involving study and collection of macro fungi.

Contact hours: 8hrs/week Practical: 8hrs/week

SEMESTER- II

CC 3

THEORETICAL- PLANT ANATOMY

ANATOMY

CO1. Cell wall: Students will gain detailed knowledge regarding ultrastructure of plant cell, tissue and organs, concept of Apoplast and Symplast, growth and thickening of cell wall etc.

CO2. They will have elaborate concept regarding stomata types, stellar types, stellar evolution, leaf-trace and leaf-gap.

CO3. Students will gain detailed idea about primary structure of leaf, stem and root of both monocot and dicot.

CO4. They will be acquainted with normal and anomalous secondary growth occurring in some carefully selected plant genus.

CO5. In-depth idea regarding mechanical tissues and the Principles governing their distribution in plants will be imparted to the students.

CO6. Students will be exposed to concepts regarding Developmental Anatomy involving organisation of shoot and root apex, plastochrone etc.

CO7. Ecological Anatomy: Students will gain in depth knowledge regarding the adaptive anatomical features of hydrophytes and xerophytes.

CO8. Students will be made aware about the scope and application of plant anatomy in the areas of systematics, forensics and pharmacognosy.

PRACTICAL- PLANT ANATOMY

PLANT ANATOMY

CO1. Students will have first-hand experience in microscopic studies on types of stomata, sclereids, raphides (Colocasia), cystolith (Ficus leaf) starch grains, aleurone grains, laticiferous ducts, oil glands.
CO2. They will study anatomical details of root, stem and leaf (both dicot and monocot) through permanent slides/ temporary stained mounts.
CO3. Students will have scope for in-depth study of anomalous secondary structure in stem and root of selected genera.
CO4. They will undertake study of adaptive anatomical features of hydrophytes and xerophytes.

CC 4

THEORETICAL- ARCHAEGONIATE

BRYOPHYTES

CO1. General Account : Students are exposed to detailed concept regarding general characteristics, adaptations and classification of Bryophytes.
CO2. Students will have in-depth idea about the life history of carefully selected genera.
CO3. Phylogeny: Students will gain detailed knowledge regarding unifying features of archaegoniates, transition to land habit, origin of Alternation of Generations, evolution of Sporophytes and origin of Bryophytes.
CO4. Importance: The learners will know about the in import role that bryophytes play in plant succession, pollution monitoring and learn about their economic and ecologic importance.

PTERIDOPHYTES

CO1. General Account: Students receive a detailed idea regarding colonisation and rise of early land plants, classification of vascular plants particularly Pteridophytes along with diagnostic characters and examples.
CO2. Life History: Students will get a detailed description of the life history of carefully selected bryophyte genera.
CO3. Learners will have in-depth concept about the Telome concept and its significance in the origin of different groups of Pteridophytes. They will also know about heterospory and origin of seed habit in Pteridophytes.
CO4. Students will learn about the economic importance of Pteridophytes as food, medicine and bio-fertilizer.

GYMNOSPERMS

CO1. Classification: Students will gain detailed idea regarding the classification of Gymnosperms along with diagnostic characters and examples.
CO2. Progymnosperms : They will learn in details about progymnosperms and their phylogenetic importance.
CO3. Life History : Students will have detailed knowledge about the life-cycle of carefully selected gymnosperm genera.
CO4. Students will learn the economic Importance of gymnosperms in details.

PRACTICAL- ARCHAEGONIATE

BRYOPHYTES

CO1. Students will have a first-hand experience regarding the morphological study of the plant body of selected bryophyte genera.
CO2. Students will have access to study reproductive structures of some bryophyte genera from permanent slides.

PTERIDOPHYTES

CO1. Students will have a first-hand experience regarding the morphological study of the plant body of selected pteridophyte genera.
CO2. They will have the opportunity to work out and learn in details about the reproductive structures of selected pteridophyte genera.
CO3. Students will have access to study reproductive structures of some pteridophyte genera from permanent slides.

GYMNOSPERMS

CO1. Students will have a first-hand experience regarding the morphological study of the plant body of selected gymnosperm genera.
CO2. Students will have access to study reproductive structures of some gymnosperm genera from permanent slides.

FIELD STUDY

Students will have the opportunity to familiarize themselves with the natural habitats of these groups of plants and develop concept about it.

Contact hours: 8hrs/week Practical: 8hrs/week

SEMESTER- III

CC 5

THEORETICAL- PALAEOBOTANY AND PALYNOLOGY

CO1. Students will gain detailed knowledge regarding Geological time scale with dominant plant groups through ages.
CO2. Plant Fossil: They will have elaborate concept regarding Body fossil (Micro- and Megafossils), Trace fossil, Chemical fossil, Index fossil; Different modes of preservation (Schopf, 1975); Conditions favouring fossilization; Nomenclature and Reconstruction; Principle of fossil dating and Importance of fossil study.
CO3. Fossil Pteridophytes: Students will gain detailed idea about Structural features, Geological distribution and Evolutionary significance of *Rhynia*, *Lepidodendron* (Reconstructed), *Calamites* (Reconstructed).
CO4. Fossil Gymnosperm: Students will gain detailed idea about structural features and Geological distribution of reconstructed genera: *Lyginopteris, Williamsonia, Cordaites*.
CO5. Indian Gondwana System: In-depth idea regarding Three fold division with major megafossil assemblages will be imparted to the students.
CO6. Palynology: Students will be exposed to concepts regarding Spore and Pollen; Pollen aperture types; NPC classification (Erdtman); Pollen wall-
Sporopollenin, Stratification and Ornamentation (sculpturing).

CO7. Applied Palynology: Students will gain in depth knowledge regarding the Basic concepts of Palaeopalynology, Aeropalynology, Forensic palynology and Melissopalynology.

PRACTICAL- PALAEOBOTANY AND PALYNOLOGY

CO1. Students will have experience in Morphological study: *Ptilophyllum* and *Glossopteris* leaf fossils.

CO2. They will study from permanent slides: T.S. of stem of *Rhynia*, *Lepidodendron*, *Calamites*, *Lyginopteris*, *Cordaites*.

CO3. Students will have scope for in-depth study of Pollen types (colpate, porate and colporate) from permanent slides. Slides will be prepared from specimens: Colpate (*Leonurus sibiricus/ Brassica* sp.), Porate (*Hibiscus rosa-sinensis*), Colporate (*Cassia sophera/ C. tora*).

CO4. Classroom Preparation: They will undertake prepation of Laboratory Note Book of each section must be signed by the respective teacher with date during practical classes.

CC 6

THEORETICAL- REPRODUCTIVE BIOLOGY OF ANGIOSPERMS

Morphology of angiosperms

CO1. Students will learn about Inflorescence types with examples.

CO2. Students will have in-depth idea about Flower, induction of flowering, flower development- genetic and molecular aspects.

CO3. They will know about Fruits and seeds - types with examples.

Embryology

CO1. Pre-fertilisation changes: Students will have an indepth understanding about Microsporogenesis and Microgametogenesis, Megasporogenesis and Megagametogenesis (monosporic, bisporic and tetrasporic).

Fertilization

CO1. Students receive a detailed idea regarding Pollen germination, Pollen tube- growth, entry into ovule and discharge, Double fertilization.

Post Fertilization Changes

CO1. Classification: Students will gain detailed idea regarding Embryogenesis in Capsella, Development of Endosperm (3 types).

Apomixis and Polyembryony

CO1. Students receive a detailed idea regarding Apomixis- Apospory and Apogamy, Polyembryony- different types.

PRACTICAL- ARCHAEGONIATE REPRODUCTIVE BIOLOGY OF ANGIOSPERMS

CO1. Students will have a first-hand experience regarding the Inflorescence types- study from fresh/ preserved specimens.

CO2. Students will have access to study Flowers- study of different types from fresh/ preserved specimens.

CO3. Students will have access to study Fruits- study from different types from fresh/preserved specimens.
CO4. Students will have a first-hand experience regarding Study of ovules (permanent slides/ specimens/photographs)- types (anatropous,
orthotropous, amphitropous and campylotropous).

FIELD STUDY

CO1. Students will have the opportunity to familiarize themselves with the reproductive parts and modes of reproduction in different plants and develop concept about it.
CO2. They will undertake a project supported along with photographs taken during field study to be submitted giving
comprehensive idea about different types of inflorescence, flowers and fruits.

Contact hours: 8hrs/week Practical: 8hrs/week

CC7

THEORETICAL- PLANT SYSTEMATICS

Taxonomy of Angiosperms

CO1. Introduction: Students have a indepth concept about components of Systematic, Nomenclature, Identification, Classification; Taxonomy and its
phases - Pioneer, Consolidation, Biosystematic and Encyclopaedic; alpha- and omega- taxonomy.
CO2. Nomenclature: They gain knowledge regarding Type method, Publication, Rank of taxa, Rules of priority, Retention and rejection of names, Author Citation, Effective and valid publication, Elementary knowledge of ICN- Principles.
CO3. Systems of classification: Students have a broad outline of Bentham & Hooker (1862-1883), Cronquist (1988), Takhatajan (1991) - system of
classification with merits and demerits. Brief reference of angiosperm phylogeny group (APG III) classification; Systematics in Practice: Herbaria and Botanical Gardens – their role in teaching and research;
important Herbaria and Botanical Gardens of India and world (3 each); Dichotomous keys – indented and bracketed.
CO4. Phenetics and Cladistics: Students gain brief idea on Phenetics, Numerical taxonomy- methods and significance; Cladistics- construction
of dendrogram and primary analysis; Monophyletic, polyphyletic and paraphyletic groups; Plesiomorphy and apomorphy.
CO5. Data sources in Taxonomy: Students learn about supportive evidences from Phytochemistry, Cytology, Palynology and Molecular
biology data (Protein and Nucleic acid homology).
CO6. Students gain detailed concept regarding diagnostic features, Systematic position (Bentham & Hooker and Cronquist), Economically
important plants (parts used and uses) of the following families:

Monocotyledons: Alismataceae, Gramineae (Poaceae), Cyperaceae, Palmae (Arecaceae), Liliaceae, Musaceae, Zingiberaceae, Cannaceae, Orchidaceae.
Dicotyledons: Nymphaeaceae, Magnoliaceae, Leguminosae (subfamilies), Polygonaceae, Euphorbiaceae, Malvaceae, Umbelliferae (Apiaceae), Labiatae (Lamiaceae), Solanaceae, Scrophulariaceae, Acanthaceae, Rubiaceae, Cucurbitaceae, Compositae (Asteraceae).

PRACTICAL- PLANT SYSTEMATICS

Angiosperms

CO1. Students gain hands on training in plant work out, description, preparation of floral formula and floral diagram, identification up to genus
with the help of suitable literature of wild plants and systematic position according to Bentham & Hooker's system of classification from the following families: Malvaceae, Fabaceae (Papilionaceae),
Solanaceae, Scrophulariaceae, Acanthaceae, Labiatae (Lamiaceae), Rubiaceae.
CO2. The gain skill in Spot identification (Binomial, Family) of common wild plants from families included in the theoretical syllabus (list to be provided).

Field Work

CO1. Students will have the opportunity to participate in at least three excursions including one excursion to Acharya Jagadish Chandra Bose Indian Botanic Garden (Shibpur, Howrah) and Central National Herbarium (CNH).

FIELD RECORDS

CO1. Students will learn the procedures of writing Field Note Book with field notes on the plants of the area of excursion and workout on Angiosperms; Spot Identification; keeping of Lab records and Field Records (Field note book, herbarium specimens, voucher specimen book etc.).

SEC-A: SKILL ENHANCEMENT COURSE

THEORETICAL- APPLIED PHYCOLOGY, MYCOLOGY AND MICROBIOLOGY

Applied Phycology

CO1. Students will learn about Algae as food and source of phycocolloid (Agar-agar, Algin, Carrageenan), 2. Diatomite, 3. Algal toxin, 4. Algal Biotechnology – potential of microalgae for SCP, β-carotene, Biodiesel, bioplastics from algae.

Applied Mycology

CO1. They will learn the use of Fungi as food, 2. Cheese and Ethanol- Industrial production (brief outline), 3. Fungal sources and uses of Enzyme (Cellulase), Amino acid (Tryptophan), Vitamin (Riboflavin), Antibiotic (Griseofulvin), Pharmaceuticals (Cyclosporin-A). 4. Aflatoxin.

Applied Microbiology

CO1. Students will gain knowledge regarding Industrial Production of Vinegar and Streptomycin (brief outline).
CO2. They will learn the Microbial sources and uses of Enzyme (Amylase, Protease), Amino acid (Glutamic acid, Lysine), Polysaccharides (Dextran).

CO3. They will be acquainted about the use of microbes as Biofertilizer and Biopesticides, 3.4. Use of microbes in mineral processing.

THEORETICAL- BIOFERTILIZERS

CO1. Students will learn the general account about the microbes used as biofertilizers- *Rhizobium*- isolation, identification, mass multiplication, carrier based inoculants, actinorrhizal symbiosis.

CO2. They will learn in details about *Azospirillum*: isolation and mass multiplication- carrier based inoculants, associative effect of different microorganisms.

CO3. They will learn in details about *Azotobacter*: classification, characteristics- crop response to *Azotobacter* inoculants, maintenance and mass multiplication.

CO4. They will learn in details about Cyanobacteria (Blue green algae), *Azolla* and *Anabaena azollae* association, nitrogen fixation. Factors affecting growth, blue green algae and *Azolla* in rice cultivation.

CO5. Students will learn in details about Mycorrhizal association, types of mycorrhizal association, phosphorus nutrition, growth and yield- colonisation of VAM – isolation and inoculum production of VAM and its influence on growth and yield of crop plants.

CO6. Organic farming- green manuring and organic fertilizers, recycling of biodegradable municipal, agricultural and industrial wastes- biocompost making methods, types and methods of vermicomposting- field application.

SEMESTER IV

CC-8

THEORETICAL-PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION

Plant Geography

CO1. Phytogeographical regions: Students get to learn about the Phytogeographical regions of India (Chatterjee 1960); Dominant flora of Eastern Himalaya, Western Himalaya and Sunderban.

CO2. Endemism: They gain detailed concept regarding Endemic types and Factors; Age & Area hypothesis and Epibiotic theory; Endemism in Indian flora.

Ecology

CO1. Preliminary idea: Students will have preliminary idea about Habitat and Niche, Ecotone and edge–effect, Microclimate, Ecads, ecotype and ecoclines, Carrying capacity.

CO2. Community ecology: They will develop idea about Community- Characteristics and diversity, Ecological succession –Primary and secondary, Seral stages (with reference to Hydrosere), autogenic and allogenic succession.

CO3. They will learn about Plant indicators (metallophytes); Phytoremediation.

CO4. Conservation of Biodiversity: Students will develop elaborate concepts regarding Level of Biodiversity: genetic, species & ecosystem diversity, Biodiversity hot spots- criteria, Indian hotspots, In- situ and ex-situ conservation, Seed-banks, Cryopreservation.

Evolution

CO1. Introduction: Students will learn about the Theories of evolution: Natural selection, Group selection, Neutral theory of molecular evolution, Phyletic gradualism, Punctuated equilibrium and Stasis

CO2. Brief idea on: They will have elaborate idea about stabilizing, directional, disruptive and sexual selection; Speciation: Sympatric and allopatric speciation; Coevolution, Adaptive radiation, Reproductive isolation.

CO3. Students will come to know about simplified phylogeny of bacteria, algae, fungi, bryophyte, pteridophyte and gymnosperm, Phylogenetic tree.

PRACTICAL- PLANT GEOGRAPHY, ECOLOGY AND EVOLUTION

Plant Geography

CO1. Students will have the scope of gaining first-hand knowledge about vegetation study through Field visit- at least one long excursion at different phytogeographical region of India.

CO2. They will undertake study of local flora and submission of a project report highlighting phytogeographical characteristics of the region.

Ecology

CO1. Students will learn the procedure of study of community structure by quadrat method and determination of (i) Minimal size of the quadrat, (ii) Frequency, density and abundance of components (to be done during excursion/ field visit).

CO2. Students will have the scope to study comparative anatomical studies of leaves form polluted and less polluted areas.

CO3. They will learn about measurement of dissolved O2 by azide modification of Winkler's method.

CO4. They will learn to compare free CO2 from different sources.

CO5. Students will maintain Field Records (Field note book of phytogeographical study and ecological study)

CC- 9

THEORETICAL- ECONOMIC BOTANY

CO1. Origin of cultivated crops: Students will learn the concepts of centre of origin, their importance with reference to Vavilov's work. Examples of major plant introductions; crop domestication and loss of genetic diversity; evolution of new crops/ varieties, importance of germplasm diversity.

CO2. Cereals: They will know the origin, morphology, processing and uses of Rice and wheat.

CO3. Legumes: They will come to know the origin, morphology and uses of gram and mung bean. Importance to man and environment.

CO4. Sugar and starches: Students will gain knowledge regarding the morphology and processing of sugarcane, products and by-products of sugarcane industry. Potato- morphology, propagation and uses.

CO5. Spices: They will be able to list important spices, their family and part used.

CO6. Beverages: Students will learn about the morphology, processing and uses of Tea.

CO7. Oil and fats: Students will learn about the general description, classification, extraction, their uses and health implications of mustard, soybean, coconut (Botanical name, family and uses). Essential oils- general account, extraction methods, comparison with fatty oils and their uses.
CO8. Drug-yielding plants: They will have in-depth knowledge regarding the therapeutic and habit forming drugs with special reference to Cinchona, Digitalis, Papavar, Cannabis and Tobacco (morphology, processing, uses and health hazards).
CO9. Timber: They will have a general account with special reference to Sal and Teak.
CO10. Fibers: Students will learn the morphology, extraction and uses Cotton and Jute.

PRACTICAL- ECONOMIC BOTANY

Economic Botany

CO1. Cereals: Students will have general idea about Wheat (habit sketch, L.S./T.S. of grain, starch grains, micro-chemical tests); rice (habit sketch, study of paddy and grain, starch grains, micro-chemical tests)
CO2. Legume: They will have detailed knowledge about Soybean, ground nut (habit, fruit, seed structure, micro-chemical tests)
CO3. Source of sugars and starches: Students will have general idea about Sugarcane (habit sketch; cane juice- micro-chemical tests); potato (habit sketch, tuber morphology, T.S. of tuber to show localization of starch grains, W.M. of starch grains, micro-chemical tests.
CO4. Students will have detailed idea about Tea- tea leaves, tests for tannin
CO5. Students will have detailed idea about Mustard- plant specimen, seeds, tests for fat in crushed seeds
CO6. They will be able to make habit sketch of Digitalis, Papaver and Cannabis.
CO7. They will be able to make Sal, Teak- section of young stem.
CO8. They will be able to make Jute- specimen, transverse section of stem, tests for lignin on T.S. of stem and study of fibre following maceration technique.

CC-10

THEORETICAL- GENETICS

CO1. Introduction: Students will develop concept about Mendelian genetics and its extension.
CO2. They will learn in details about Linkage, Crossing over and Gene Mapping: Complete and incomplete linkage (example), linked gene does not assort independently (example), linkage group, Crossing over, crossing over produces recombination (example), detection of crossing over (McClintock's experiment), and Molecular mechanism of crossing over (Holliday model), 2.4. Gene mapping with three point test cross, detection of middle gene in three point test cross, calculation of recombination frequencies, 2.5. Co-efficient of coincidence.
CO3. They will have the opportunity of a field visit desirable to give an idea about cultivation of any crop (viz. rice, jute, mustard, tea, potato)

CO4. They will keep field record of the visit, properly authenticated by escorting teacher. interference, mapping function, Problems on gene mapping, Molecular mapping – ISH, FISH (brief idea).
CO5. Students will learn in details regarding Epistasis and Polygenic inheritance in plants.
CO6. Aneuploidy and Polyploidy: They will know about the types, examples, meiotic behaviour and importance of: Aneuploidy, Polyploidy, Speciation and evolution through polyploidy.
CO7. Chromosomal aberration: They will know about the types and meiotic behaviour of: Deletion, Duplication, Translocation, and Inversion.
CO8. Mutation : Students will have in-depth concept regarding Point mutation-Transition, Transversion and Frame shift mutation, Molecular mechanisms (tautomerisation, alkylation, deamination, base analogue incorporation, dimerisation), DNA repair (brief idea).
CO9. Students will learn in details about the structural organisation of Gene: One Gene–one polypeptide concept, Split gene, Overlapping gene, Repetitive DNA tandem and interspersed, Transposon (Ac-Ds system), Homoeotic gene in plants (ABCE Quartet model of flowering).

PRACTICAL- GENETICS

Genetics

CO1. Introduction to chromosome preparation: Students will have hands on training in pre-treatment, Fixation, Staining, Squash and Smear preparation, Preparation of permanent slides.
CO2. They will learn determination of mitotic index and frequency of different mitotic stages in pre-fixed root tips of Allium cepa.
CO3. Study of mitotic chromosome: They will learn the skills of metaphase chromosome preparation, free hand drawing under high power objective, drawing with drawing prism under oil immersion lens, determination of 2n number, and comment on chromosome morphology of the following specimens from root tips: *Allium cepa, Aloe vera, Lens esculenta.*
CO4. They will study chromosomal aberrations developed due to exposure to any two pollutants/ pesticides etc.
CO5. Study of meiotic chromosome: The will undertake smear preparation of meiotic cells, identification of different stages and free hand drawing of the following specimens from flower buds: *Allium cepa* and *Setcreasea* sp.
CO6. Identification from permanent slides : Students will gain skill in Meiosis – (i) normal stages (ii) abnormal stages – laggard, anaphase bridge, ring chromosome (*Rhoeo discolor*); Mitosis – (i) normal stages, (ii) abnormal stages early separation, late separation, multipolarity, sticky bridge, laggard, fragmentation, (ii) pollen
mitosis.

SEC-B- SKILL ENHANCEMENT COURSE
THEORETICAL-PLANT BREEDING

CO1. Students will have an idea about introduction and objectives, breeding systems- modes of reproduction in crop plants, important achievements and undesirable consequence of plant breeding.

CO2. They will lkearn in details about methods of crop improvement: Introduction- centres of origin and domestication of crop plants, plant genetics resources; acclimatization, selection methods- for self-pollination, cross pollinated and vegetatively propagated plants, hybridization- for self, cross and vegetatively propagated plants, procedure, advantages and limitations.

CO3. They will learn the techniques of maintenance of germplasm, m ass selections and Pure line selection, Back cross method.

CO4. Students will be exposed to the idea of Heterosis and hybrid seed production, Male sterility and its use in plant breeding.

CO5. They will learn about Inbreeding and inbreeding depression, effect of outcrossing- a very brief idea.

CO6. Students will learn in details about Molecular Breeding (use of DNA markers in plant breeding).

CO7. They will know about the role of mutations, polyploidy, distant hybridization and role of biotechnology in crop improvements.

THEORETICAL-MUSHROOM CULTURE TECHNOLOGY

CO1. Students will have an introduction, nutritional and medicinal value of edible mushrooms; poisonous mushrooms, types of edible mushrooms available in India- *Volvariella volvacea, Pleurotus citrinopileatus*, *Agaricus bisporus*.

CO2. Students will gain indepth knowledge about the cultivation technology: infrastructure: substrates (locally available), polythene bags, vessels, inoculation hook, inoculation loop, low cost stoves, sieves, culture racks, mushroom unit (thatched house), water sprayer, tray, small polythene bag. Pure culture: medium, sterilization, preparation of spawn, multiplication. Mushroom bed preparation- paddy straw, sugarcane trash, maize straw, banana leaves,. Factors affecting the mushroom bed preparation- low-cost technology, composting technology in mushroom production.

CO3. They will know about storage and nutrition: short term storage (Refrigeration- upto 24 hours), long term storage (canning, pickels, papads), drying, storage in salt solutions. Nutrition- proteins- amino acids, mineral elements nutrition- carbohydrates, crude fibre content- vitamins.

CO4. Students will gain knowledge about food preparation: type of foods prepared from mushroom. Research centres- National level and regional level. Cost benefit ratio- marketing in India and abroad. Export value.

SEMESTER V

CC-11

THEORETICAL- CELL AND MOLECULAR BIOLOGY

CO1. Students will know in details about the origin and evolution of cells, nucleic acid (from PNA to DNA). They will develop concept of RNA world, Ribozymes, First cell, origin of eukaryotic cell (endosymbiotic theory), small RNA- riboswitch, RNA interference, si RNA, mi RNA and organellar DNA (cp- and mt- DNA).
CO2. They will learn in details about nucleus and chromosome like nuclear envelope, nuclear lamina and nuclear pore complex, nucleolus-ultrastructure and ribosome biogenesis, chromatin ultrastructure and DNA packaging in eukaryotic chromosome, centromere: types, structure and function.
CO3. They will develop concept about cell cycle and its regulation like kinetochore and spindle apparatus-structural organization and functions, Microtubules- structure, organization and function, mechanism of cell cycle control in Yeast (checkpoints and role of MPF), Apoptosis etc.
MOLECULAR BIOLOGY
CO4. Students will gain in depth knowledge about DNA Replication, Transcription and Translation (Prokaryotes & Eukaryotes), Central Dogma, semiconservative DNA replication – mechanism, enzymes involved in DNA replication- DNA polymerase, DNA gyrase, Helicase, Ligase, primase and other accessory proteins, eukaryotic replication with special reference to replication licensing factor, assembly of new nucleosome, replication at the end chromosome telomere, telomerase concept, fidelity of DNA replication- prokaryote: nucleotide selection, proof reading, mismatch repair; eukaryote: through selection of error prone DNA polymerase, transcription, RNA processing, Aminoacylation of tRNA and Translation.
CO5. Students will develop an understanding regarding Gene Regulation: concept of Lac-operon, positive and negative control etc.
CO6. They will gain knowledge about Genetic Code, properties-evidences & exceptions, decipherence of codon (Binding technique).
CO7. They will know the steps involved in Recombinant DNA Technology, Restriction endonuclease, - types and roles, Vector (plasmid pBR 322), Marker gene, Steps of cloning technique, PCR and its application, Genomic DNA and cDNA library.
CO8. Students will know about development and causes of Cancer (in general and brief), tumor suppressor gene and oncogene.

PRACTICAL- CELL BIOLOGY
CO1. Students will learn to study plant cell structure with the help of epidermal peal mount of Onion/Rhoeo/Crinum.
CO2. They will learn the skill regarding measurement of cell size by the technique of micrometry.
CO3. They will muster the skill involving counting cells per unit volume with the help of haemocytometer (Yeast/pollengrains).
CO4. They will learn Cytochemical staining of DNA- Pyronine-methyl green staining.
CO5. They will learn the procedure behind estimation of DNA content through DPA staining.
CO6. They will learn the procedure behind estimation of RNA through orcinol method.

CO7. They will learn the procedure behind study of nucleolus through hematoxylin/ orcin staining and determination of nucleolar frequency.
CO8. They will gain proficiency in preparation of models/ charts: rolling circle, theta replication, semi-discontinuous replication, prokaryotic RNA polymerase and eukaryotic RNA polymerase II, assembly of spliceosome mechinary, splicing mechanism in group I and group II introns, ribozyme and alternative splicing.

SEMESTER V
CC-12
THEORETICAL- BIOCHEMISTRY
CO1. Students will develop Biochemical Foundations: Covalent and non-covalent bonds; hydrogen bond; Van der Waal's forces; Structure and properties of water; pH and buffer (inorganic and organic); Handerson-Hasselbalch equation; Isoelectric point.
CO2. Students will develop concept about Molecules of life: Nucleic Acids – structure of nucleosides and nucleotides ; oligo- and poly nucleotides , B & Z form of DNA, RNA- different forms; nucleotide derivatives (ATP, NADP), Proteins – structure and classification of amino acids; primary, secondary, tertiary and quaternary structure of proteins; Carbohydrates - structure of mono-, di- and polysaccharide; stereoisomers, enantiomers and epimers; Lipids - structure of simple lipid and compound lipid (phospholipids and glycolipids), fatty acids- saturated and unsaturated.
CO3. They will develop a strong foundation about Energy flow and enzymology: Bioenergetics- Thermodynamic principles; free energy; energy rich bonds- phosphoryl group transfer and ATP; redox potentials and Biological redox reactions, Enzymes – classification and nomenclature (IUBMB); Co-factors and co-enzymes; isozymes, Mechanism of enzyme action; enzyme inhibition; Enzyme kinetics (Michaelis- Menten equation) and simple problems.
CO4. They will develop knowledge about Cell membrane: Membrane chemistry, Membrane transport (uniport, symport, antiport), mechanism of ion uptake.
CO5. Students will gain concept on **Phosphorylation:** ATP Synthesis- Chemiosmotic model, Oxidative and Photophosphorylation- Mechanism and differences.

PRACTICAL- BIOCHEMISTRY
CO1. Students will have workout on different topics of Plant Biochemistry (Quantitative & Qualitative)
Qualitative:

1. Detection of organic acids: citric, tartaric, oxalic and malic from laboratory samples.
2. Detection of carbohydrate and protein from plant samples.
3. Detection of the nature of carbohydrate – glucose, fructose , sucrose and starch from laboratory samples.
4. Detection of Ca, Mg, Fe, S from plant ash sample.

Quantitative:

1. Preparation of solutions and buffers.
2. Estimation of amino-nitrogen by formol titration method (glycine) .
3. Estimation of glucose by Benedicts quantitative reagent.
4. Estimation of titratable acidity from lemon.
5. Estimation of catalase activity in plant samples and effect of substrate, enzyme concentration and pH on enzyme activity.
6. Estimation of urease activity in plant samples.
7. Colorimetric estimation of protein by Folin phenol reagent.

DSE A1- DISCIPLINE SPECIFIC ELECTIVE COURSES
THEORETICAL- BIOSTATISTICS

CO1. Biostatistics: Definition, statistical methods, basic principles, variables- measurements, functions, limitations and uses of statistics. Biometry: Data, Sample, Population, Random sampling, Frequency distribution- definition only. Central tendency– Arithmetic Mean, Mode and Median; Measurement of dispersion– Coefficient of variation, Standard Deviation, Standard error of Mean, Test of significance: chi- square test for goodness of fit, Probability- multiplicative and additive rules of probability: application and importance, Measurement of gene frequency: Hardy-Weinberg equilibrium- conditions applied for its implications (simple problems to calculate genotypic and allelic frequencies).

PRACTICAL- BIOSTATISTICS

CO1. Students will attain proficiency in the following statistical analysis:

1. Univariate analysis of statistical data: Statistical tables, mean, mode, median, standard deviation and standard error (using seedling population / leaflet size).
2. Calculation of correlation coefficient values and finding out the probability.
3. Determination of goodness of fit in Mendellian and modified mono-and dihybrid ratios (3:1, 1:1, 9:3:3:1, 1:1:1:1, 9:7, 13:3, 15:1) by Chi-square analysis and comment on the nature of inheritance.
4. Calculation of ‘F’ value and finding out the probability value for the F value
5. Basic idea of computer programme for statistical analysis of correlation coefficient,‘t’ test, standard error, standard deviation.

DSE A2-
THEORETICAL- INDUSTRIAL AND ENVIRONMENTAL MICROBIOLOGY

CO1. Students will learn about the scope of microbes in industry and environment.
CO2. They will learn in details about Bioreactors/ Fermenters and fermentation process: solid-state and liquid-state (stationary and submerged) fermentations; batch and continuous fermentations. Components of a typical bioreactors, types of bioreactors- laboratory, pilot scale and production fermenters. Constantly stirred fermenter, tower fermenter, fixed bed and fluidized bed bioreactors and air- lift Fermenter.
CO3. They will know in details about microbial production of industrial products: microorganisms involved, media, fermentation conditions, down stream processing and uses; filtration, centrifugation, cell disruption, solvent extraction, precipitation and ultrafiltration, liophilisation, spray drying, hands on microbial fermentations for the production and estimation of enzymes amylase or lipase activity, organic acids (citric or glutamic acid), alcohol (ethanol) and antibiotic (Penicillin).
CO4. Students will know about microbial enzymes of industrial interest and enzyme immobilization: microorganisms for industrial applications. Methods of immobilization, advantages and applications of immobilization, large scale application of immobilized enzymes (glucose isomerase and penicillin acylase).
CO5. Students will learn about microbes and quality of environment: distribution of microbes in air, isolation of microorganisms from soil, air and water.
CO6. Students will know about microbial flora of water: water pollution, role of microbes in sewage and domestic waste water treatment systems. Determination of BOD, COD of water samples. Microorganisms as indicators of water quality, check coliform and fecal coliform in water samples.
CO7. They will gain knowledge about microbes in agriculture and remediation of contaminated soils: biological fixation, mycorrhizae, bioremediation of contaminated soils, isolation of root nodulating bacteria, arbuscular mycorrhizal colonization in plant roots.

PRACTICAL- INDUSTRIAL AND ENVIRONMENTAL MICROBIOLOGY

CO1. Students will develop hands on skill on the following procedures:

1. Principals and functioning of instruments in microbiology laboratory
2. Hands on sterilization techniques and preparation of culture media.
3. Preparation of slant, stab and pouring petriplate. .
4. A visit to any educational institute/ industry to see an industrial fermenter, and other down- stream processing operations.

DSE B5
THEORETICAL- PLANT BIOTECHNOLOGY
CO1. Students will have indepth idea about plant tissue culture –Introduction: Basic concept and milestones, Cellular totipotency, Tissue culture media, Aseptic manipulation, Cyto-differentiation and dedifferentiation.
CO2. They will have detailed idea about callus culture: Callus induction, maintenance and

application, Suspension culture- introductory idea.
CO3. Students will know about plant regeneration: Organogenesis (direct and indirect), Somatic embryogenesis, Significance of organogenesis and somatic embryogenesis, Artificial seed.
CO4. They will know about Haploid Culture: Anther and Pollen culture methods, Applications.
CO5. They will also learn about Protoplast Culture: Protoplast isolation and culture, Protoplast fusion (somatic hybridization), Significance.
CO6. Students will gain concept about Plant Genetic Engineering: Brief concept of different gene transfer methods, special emphasis on *Agrobacterium* mediated gene transfer, Role of Reporter gene, Achievements in crop biotechnology, environment and industry (suitable example)- pest resistant plants (BT cotton), herbicide resistance, disease and stress tolerance, transgenic crop with improved quality (flavr tomato, golden rice), role of transgenic in population degradation (super-bug), leaching of minerals, production of industrial enzymes, oil, edible vaccine.

PRACTICAL- PLANT BIOTECHNOLOGY

CO1. Students will have a hands on experience on:

1. Familiarization of basic equipments in plant tissue culture
2. Study through photographs/ charts/ models of anther culture, somatic embyogenesis, endosperm and embryo culture, micropropagation.
3. Preparation of basal media. Sterilization techniques.
4. Demonstration of any tissue culture technique during visit in a plant tissue culture lab.

DSE B6
THEORETICAL- HORTICULTURAL PRACTICES AND POST- HARVEST TECHNOLOGY
CO1. Students will know the following things about Horticulture –scope, importance and branches. Role in rural economy and employment generation; importance in food and nutritional security; urban horticulture and ecoturism.
CO2. They will gain knowledge about ornamental plants: types, classifications (annuals, perennials, climbers and trees), identification and salient features of some ornamental plants (rose, marigold, gladiolus, carnations, orchids, poppies, gerberas, tuberose, sages, cacti and succulants). Ornamental flowering trees (Indian laburnum, gulmohor, jacaranda, Lagerostoemia, fishtail and Erica palms, simul, coral tree).
CO3. Students will know about fruit and vegetable crops: production, origin and distribution; description of plants and their economic products; management and marketing of vegetables and fruit crops; identification of some fruits and some vegetables varieties (citrus, banana, mango, chillis and cucurbits).
CO4. Students will attain knowledge about horticultural techniques: application manures, fertilizers, nutrients and PGRs; weed controls, biofertilizers, biopesticides, irrigation methods.

Hydroponics, propagation methods; vegetative (grafting, cutting, layering, budding), sexual (seed production), scope and limitations.
CO5. They will learn about landscaping and garden designing: planning and lay out (parks and gardens).
CO6. They will know in details about Floriculture: cut flowers, bonsai, commerce (market demand and supply), importance of flower shows and exhibitions.
CO7. Students will have a vivid idea about Post harvest technology: Importance of post harvest technology in horticultural crops, evaluation of quality, traits; harvesting and handling of fruits, vegetables, cut flower; principles, methods of preservation and processing, methods of minimizing losses during storage and transportation; food irradiation- advantages and disadvantages; food safety.
CO8. They will learn about disease control and management: field and post harvest diseases, identification of deficiency symptoms, remedial measures and nutritional management practices; crop sanitation; IPM strategies (genetic, biological and chemical methods for pest control); quarantine practices; identification of common diseases and pest of ornamental fruits and vegetable crops.
CO9. They will know about horticultural crops- conservation and management: documentation and conservation of germplasm. Role of micropropagation and tissue culture techniques; varieties and cultivars of various horticultural crops; IPR issues, national international and professional societies and sources of information on horticulture.

PRACTICAL- HORTICULTURAL PRACTICES AND POST- HARVEST TECHNOLOGY

CO1. Students will undertake a field visits to gardens, standing crop sites, nurseries, vegetable gardens, horticultural fields at IARI/AHSI or other suitable locations and if possible to cold storage.

SEMESTER VI

CC-13
THEORETICAL- PLANT PHYSIOLOGY Plant-water relations:

CO1. Students will develop concept about water potential, components of water potential in plant system, Soil-plant- Atmosphere continuum concept, Cavitation in xylem and embolism, Stomatal physiology- mechanism of opening and closing, Role of carbon di-oxide, potassium ion, abscisic acid and blue light in stomatal movement, Antitranspirants.

CO2. They will know in details about mineral nutrition: essential and beneficial elements, macro- and micronutrients, methods of study and use of nutrient solutions, criteria for essentiality, mineral deficiency symptoms, roles of essential elements, chelating agents.

CO3. Students will learn about Organic Translocation: Phloem sap, P-protein, Phloem loading and unloading, Mass-flow (pressure flow) hypothesis and its critical evaluation.

CO4. Students will know in details about Plant Growth Regulators: Physiological roles of Auxin, Gibberellin, Cytokinin, Abscisic acid, Ethylene, Chemical nature – IAA, GA3, Kinetin, Biosynthesis and bioassay of IAA, Mode of action of IAA, Brassinosteroids and Polyamines as PGRs (brief idea).

CO5. Students will develop concept of photomorphogenesis, Photoperiodism and plant types, Perception of photoperiodic stimulus, Critical day length, concept of light monitoring, Phytochrome, cryptochrome and phototropins- chemical nature and role in photomorphogenesis, Role of GA in flowering, Vernalisation – role of low temperature in flowering, Concept of biological clock and biorhythm.

CO6. They will know about seed dormancy**:** types, Causes and Methods of breaking seed dormancy, Biochemistry of seed germination.

CO7. They will develop concept about physiology of Senescence and Ageing.

PRACTICAL- PLANT PHYSIOLOGY

CO1. Students will have a hands on experience on

1. Determination of loss of water per stoma per hour.

2. Relationship between transpiration and evaporation.

3.Measurement of osmotic pressure of storage tissue by weighing method.

4. Measurement of osmotic pressure of *Rhoeo* leaf by plasmolytic method.

5. Effect of temperature on absorption of water by storage tissue and determination of Q_{10}.

6. Rate of imbibition of water by starchy, proteinaceous and fatty seeds and effect of seed coat.

7. To study the phenomenon of seed germination (effect of light).

8. To study the induction of amylase activity in germinating grains.

9. To study the effect of different concentrations of IAA on *Avena* coleopotile elongation (IAA bioassay)

CC-14

THEORETICAL-PLANT METABOLISM

CO1. Students will develop concept of metabolism: Introduction, Anabolic and catabolic metabolic pathways, regulation of metabolism, role of regulatory enzymes (allosteric, covalent modulation and isozymes)

CO2. They will learn in details about Photosynthesis: Chemical structure of chlorophyll a and b, absorption and action spectra, biological significance of carotenoid pigments, Red drop and Emerson effect, Components of photosystems (light harvesting complex), photochemical reaction centres, Cyclic and noncyclic

electron transport, Water splitting mechanism, Calvin cycle – Biochemical reactions & stoichiometry, HSK Pathway– three variants of the pathway, Photosynthetic efficiency of C_3 and C_4 plants and crop**productivity, Photorespiration – mechanism and significance, Crassulacean Acid Metabolism– mechanism and ecological significance.**

CO3. They will learn in details about Respiration: EMP pathway, regulation and its anabolic role, Conversion of Pyruvic acid to Acetyl CoA, TCA-cycle and its amphibolic role, Oxidative pentose phosphate pathway and its significance, Mitochondrial electron transport system, uncouplers, Oxidation of cytosolic $NADH+H^+$, Stoichiometry of glucose oxidation (aerobic).

CO4. Students will develop indepth concept regarding Nitrogen Metabolism: Assimilation of nitrate by plants, Biochemistry of dinitrogen fixation in Rhizobium, General principle of amino acid biosynthesis (including GS and GOGAT enzyme system).

CO5. They will learn about Lipid metabolism: synthesis and breakdown of triglycerides, ß-oxidation, glyoxalate cycle, gluconeogenesis and its role in mobilization of the lipids during seed germinbations, α- oxidation.

CO6. They will learn the mechanism of signal transduction: receptor-ligand interactions, second messenger concept, calcium-calmodilin, G protein, MAP-kinase cascade.

PRACTICAL- PLANT METABOLISM

CO1. Students will learn the techniques related to the following work-outs:

1. A basic idea of chromatography: Principle, paper chromatography and column chromatography; demonstration of column chromatography.
2. Separation of plastidial pigments by solvent and paper chromatography.
3. Estimation of total chlorophyll content from different chronologically aged leaves (young, mature and senescence) by Arnon method.
4. Effect of HCO_3 concentration on oxygen evolution during photosynthesis in an aquatic plant and to find out the optimum and toxic concentration (either by volume measurement or bubble counting).
5. Measurement of oxygen uptake by respiring tissue (per g/hr.) 6.. Determination of the RQ of germinating seeds.
7. Test of seed viability by TTC method.

DSE A3-
THEORETICAL- MEDICINAL AND ETHNOBOTANY

CO1. Students will gain knowledge in Medicinal botany: History, scope and

importance of medicinal plant, a brief idea about indigenous medicinal sciences- ayurveda, siddha and unani. Polyherbal formulations.

CO2. They will know about Pharmacognosy- General account : Pharmacognosy and its importance in modern medicine, Crude drugs, Classification of drugs- chemical and pharmacological, Drug evaluation– organoleptic, microscopic, chemical, physical and biological, Major pharmacological groups of plant drugs and their uses.

CO3. They will know in details about Secondary metabolites: Definition of secondary metabolites and difference with primary metabolites , Interrelationship of basic metabolic pathways with secondary metabolite biosynthesis (outlines only), Major types–terpenoids, phenolics, flavonoids, alkaloids and their protective action against pathogenic microbes and herbivores.

CO4. They will know about Pharmacologically active constituents: Source plants (one example) parts used and uses of: Steroids (Solasodin, Diosgenin, Digitoxin), Tannin (Catechin), Resins (Gingerol, Curcuminoids), Alkaloids (Quinine, Atropine. Pilocarpine, Strychnine, Reserpine, Vinblastine), Phenols (Sennocide and Capsaicin).

CO5. Students will develop knowledge in Ethnobotany and folk medicine: Definition, methods of study, application, Indian scenario, national interacts, Palaeo-ethnobotany, folk medicines in ethnobotany, ethnomedicine, ethnoecology, ethnic communities of India, application of natural products to certain diseases- Jaudice, cardiac, infertility, diabetics, blood pressure and skin diseases.

PRACTICAL- MEDICINAL AND ETHNOBOTANY

CO1. Students will perform work out and chemical tests on the following topics:

1. Chemical tests for (a) Tannin (*Camellia sinensis* / *Terminalia chebula*), (b) Alkaloid (*Catharanthus roseus*) .
2. Powder microscopy – *Zingiber* and *Holarrhena* .
3. Histochemical tests of (a) Curcumin (*Curcuma longa*), (b) Starch in non-lignified vessel (*Zingiber*), (c)

Alkaloid

(stem of *Catharanthus* and bark of *Holarrhena*).

DSE A4

THEORETICAL- STRESS BIOLOGY

CO1. Students will learn about Plant stress- definition. Acclimation and adaptation.

CO2. They will know about the Environmental factors- water stress, salinity stress and temperature stress- plant response. Pathogenesis- related (PR) proteins, systemic acquired resistance; mediation of insect and disease resistance by jasmonates.

CO3. They will gain knowledge about Stress sensing mechanism in plants: calcium modulation, phospholipid signaling.

CO4. They will gain knowledge regarding developmental and physiological mechanisms that protect plants against environmental stress: adaptation of plants, changes in root-shoot ratios, aerenchyma development; osmotic adjustment, compatible solute production.

CO5. They will learn about reactive oxygen species- production and scavenging mechanism.

PRACTICAL- STRESS BIOLOGY

CO1. Students will have the opportunity to gain first hand knowledge about:

1. Quantitative estimation of peroxidase activity in the seedlings in the absence and presence of salt stress.
2. Superoxide dismutase activity in the absence and presence of stress.
3. Catalase activity in the presence and absence of stress.
4. Comparative study of plants/seedlings subjected to different degree of stress/ pollutants.
5. To study the effect of stress (salt/ water/ heavy metal) on seed germination and seedling growth (any commonly available specimen)

DSE B7

THEORETICAL- RESEARCH METHODOLOGY

CO1. Students will develop basic concepts of research: research- definition and types of research (Descriptive vs. analytical, applied vs. fundamental, quantitative vs. qualitative, conceptual vs. emperical), research methods vs. methodology; literature-review and its consolidation; library research; field research; laboratory research.

CO2. They will become aware about the general laboratory techniques: common calculations in botany laboratories; understanding the details on the label of reagent bottles; molarity and normality of common amino acids and bases; preparation of solutions. Dilution, percentage, molar, molal and normal solutions. Techniques of handling micropipettes; knowledge about common toxic chemicals and safety measures in their handling.

CO3. They will develop skill about data collection and documentation of observations. Maintaining of laboratory records, tabulation and generation of graphs. Imaging of tissue specimens and application of scale bars. The art of field photography.

CO4. They will have an overview of biological problems: plant science research key areas, model organisms in research.

CO5. They will learn the methods to study plant cells/ tissue structure: whole mounts, peal mounts, squash preparations, clearing, maceration and sectioning, tissue preparation- fixation, dehydration etc., paraffin and plastic infiltration, preparation of thin and ultra-thin sections.

CO6. Students will develop valuable know-how regarding plant micro-techniques: staining procedures, classification and chemistry of stains, staining equipments. Cytogenetic techniques with squashed plant materials.

CO7. They will develop proficiency in the art of scientific writing and its presentation: numbers, units, abbreviations and nomenclature used in scientific writing. Writing references. Power point presentation. Poster presentation. Scientific writing ethics. Introduction to copy write- academic misconduct/ plagiarism.

PRACTICAL- RESEARCH METHODOLOGY

CO1. Students will gain first hand skill about the following practical works:

1. Experiments based on calculations
2. Plant microtechnique experiments
3. The art of imaging of samples through photomicrography and field photography
4. Poster/ power point presentation on defined topics
5. Technical writing on topics assigned.

DSE B

THEORETICAL- Natural resource management

CO1. Students will learn about Natural resources: Definition and types.
CO2. They will know in details about Sustainable utilization: Concept, approaches (economic, ecological and socio-cultural).
CO3. Students will learn about land utilization (agricultural, pastoral, horticultural, silvicultural); Soil degradation and management.
CO 4. Students will learn about water: Fresh water (rivers, lakes, groundwater, aquifers, watershed); Marine; Estuarine; Wetlands; Threats and management strategies.
CO5. They will learn in details about Biological Resources: Biodiversity-definition and types; Significance; Threats; Management strategies; Bioprospecting; IPR; CBD; National Biodiversity Action Plan).
CO6. They will know about Forests: Definition, Cover and its significance (with special reference to India); Major and minor Forest products; Depletion; Management.

CO7. They will develop strong concept about Energy: Renewable and non-renewable sources of energy.

CO8. They will develop concept about Contemporary practices in resource management CO8. EIA, GIS, Participatory Resource Appraisal, Ecological Footprint with emphasis on carbon footprint, Resource Accounting; Waste management.

CO9. They will know about various National and international efforts in resource management and conservation.

PRACTICAL- Natural resource management
CO1. Students will develop essential skills in the following procedures:
1. Estimation of solid waste generated by a domestic system (biodegradable and non-biodegradable) and its impact on land degradation.
2. Estimation of foliar dust deposition.
3. Determination of total solid in water (TDS)
4. Determination of chemical properties of soil by rapid spot test (carbonate, iron, nitrate)
5. Estimation of organic carbon percentage present in soil sample.
6. Collection of data on forest cover of specific area.

GENERAL

SEMESTER I

CC 1

THEORETICAL- PLANT DIVERSITY I (PHYCOLOGY, MYCOLOGY, PHYTOPATHOLOGY, BRYOPHYTES AND ANATOMY)

CO1. Students will be Introduced to different plant groups.

CO2. Phycology: This course aims at acquainting students about the diagnostic characters and examples of selected groups of algae, they also learn about the classification and life-cycle of some algae in details. The students also develop concept about role of algae in the environment, agriculture, biotechnology and industry.

CO3. Mycology: This course aims at acquainting students about the diagnostic characters and examples of selected groups of fungi, they also learn about the classification and life-cycle of some fungi in details. The students also develop concept about role of fungi, mycorrhiza and lichens in the environment, agriculture, biotechnology and industry.

CO4. Phytopathology: Students get to learn about different terminologies and concepts prevalent in plant-disease study. They learn in details about the **s**ymptoms, causal organism, disease cycle and control measures of selected plant diseases.

CO5. Bryophytes: Students gain indepth concept about unifying features of archaegoniates and transition to land habit, amphibian nature of bryophytes, diagnostic characters and examples of major groups of bryophytes. They also learn in details about the life histories of selected genera of bryophytes. The also gain concept regarding the ecologic and economic importance of the group.

CO6. Anatomy: Students get to know in etails regarding the anatomical details of stomata, root, stem and leaf of monocots and dicots. They also have the scope to learn about different stelar types, their evolution and mode of secondary growth (both normal and anomalous) in selected plant genera.

PRACTICAL- PLANT DIVERSITY I (PHYCOLOGY, MYCOLOGY, PHYTOPATHOLOGY, BRYOPHYTES AND ANATOMY)

CO1. Work out: Students have hands-on experience in microscopic preparation, drawing and labeling of selected algal and fungal genera.

CO2. Anatomical studies: They have the exposure to undertake anatomical study with stem, root and leaf of selected plant genera.

CO3. They learn to identify different cryptogamic and plant disease specimens using observable characteristics.

CO4. Students are provided with scope to participate in local excursion where they can develop an in situ concept about plant diversity, habitat of algae and fungi etc.

Contact hours: 14hrs/week Practical: 10hrs/week

SEMESTER II

CC 2

THEORETICAL- PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS, PALAEOBOTANY, MORPHOLOGY AND TAXONOMY)

Pteridophytes

CO1. Students gain detailed knowledge regarding major pteridophyte groups.
CO2. They also get to know in details regarding the life-history of selected pteridophyte genera.
CO3. They learn about the economic importance of pteridophytes.

Gymnosperms

CO1. Students gain detailed knowledge regarding major gymnosperm groups.
CO2. They also get to know in details regarding the life-history of selected gymnosperm genera.
CO3. They learn about the economic importance of gymnosperms.

Paleobotany & Palynology

CO1. Students have scope to learn in details regarding fossil, fossilization process, factors of fossilization and importance of fossil study.
CO2. They have a clear concept regarding the Geological time scale.
CO3. They gather useful concepts regarding palynology and its applications.

Angiosperm Morphology

CO1. Students learn in details regarding different types of inflorescence, flowers, fruits and seeds with examples.

Taxonomy of Angiosperms

CO1. Student get scope to develop in-depth concept regarding Artificial, Natural and Phylogenetic systems of c1assificaiton with example.
CO2. They get to learn about the diagnostic features of very carefully selected angiosperm families.

PRACTICAL- PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS, PALAEOBOTANY, MORPHOLOGY AND TAXONOMY)

CO1. Students get the opportunity to dissect, draw and label, describe angiospermic plants from selected families. They also learn about floral parts, floral formula and floral diagram in details.
CO2. They get the scope to develop skill in identification of the plants.
CO3. Students learn to identify citing reasons pteridophyte, gymnosperm and various morphological and anatomical specimens (both macro- and
CO4. They learn to spot identify a number of selected Angiospermic plants belonging to different families.
CO5. Students have the opportunity to participate in field excursion to gain first-hand knowledge about the plants and plant-groups they hae studied in their class-room.

CO6. They learn the skills required to maintain field records and herbarium sheets of common Angiospermic weeds.

Contact hours: 5hrs/week Practical: 4hrs/week

SEMESTER III
CC-3
THEORETICAL- CELL BIOLOGY, GENETICS AND MICROBIOLOGY

CO1. Cell Biology and Genetics: Students will learn in details about the ultrastructure of nuclear envelope, nucleolus and their functions, Molecular organisation of metaphase chromosome (Nucleosome concept).
CO2. Chromosomal aberrations: They will know about deletion, duplication, inversion & translocation, Aneuploidy & Polyploidy-types, importance and role in evolution.
CO3. Central Dogma: Students will gain concept about Transcription and Translation.
CO4. Genetic Code- they will learn the properties.
CO5. Students will have elaborate idea about Linkage group and Genetic map (three-point test cross).
CO6. Mutation – They will have detailed understanding of Point mutation (tautomerisation; transition, transversion and frame shift), Mutagen-physical and chemical.
CO7. They will have a brief concept of Split gene, Transposons.
Microbes
CO1. Viruses- Students will know about the discovery, general structure, replication (general account), DNA virus (T-phage); Lytic and lysogenic cycle, RNA virus (TMV); Economic importance.
CO2. Bacteria- They will know about the discovery, general characteristics and cell structure; reproduction- vegetative, asexual and recombination (conjugation, transformation and transduction); Economic importance.

PRACTICAL- CELL BIOLOGY, GENETICS AND MICROBIOLOGY

CO1. Cell Biology: Staining (Aceto-orcein) and squash preparation of onion root tip: study of mitotic stages. Determination of mitotic index (from onion root tip).
CO2. Microbiology: They will gain skill in the workout gram staining (curd/any natural source).
CO3. Identification with reasons: They will have the opportunity to observe Cytological slides of different mitotic and meiotic stages. Different forms of bacteria (Coccus, Bacillus, Spiral).

CO4. Laboratory Records: Students will learn how to maintain laboratory note books (regularly signed) and slides**.**

SEMESTER IV

CC-4

THEORETICAL- PLANT PHYSIOLOGY AND METABOLISM

CO1. Proteins: Students will gain detailed concept on primary, secondary and tertiary structure, Nucleic acid- DNA structure, RNA types, Enzyme- Classifications with examples (IUBMB), Mechanism of action.

CO2. Transport in plants: They will learn the mechanism behind Ascent of sap and Xylem cavitation, Phloem transport and source-sink relation.

CO3. Transpiration: They will learn the mechanism of stomatal movement, significance.

CO4. Photosynthesis: Students will learn in details about the Pigments, Action spectra and Enhancement effect, Electron transport system and Photophosphorylation, C3 and C4 photosynthesis, CAM- Reaction and Significance.

CO5. Respiration: They will learn in details about Glycolysis & Krebs cycle—Reactions and Significance, ETS and oxidative phosphorylation.

CO6. Nitrogen metabolism: They will know about biological dinitrogen fixation, Amino acid synthesis (reductive amination and transamination).

CO7. Plant Growth regulators: They will learn in details about Physiological roles of Auxin, Gibberellin, Cytokinin, Ethylene, ABA.

CO8. Photoperiodism: Students will come to know about plant types, Role of phytochrome and GA in flowering) and Vernalization.

CO9. Students will have a brief idea about Senescence.

PRACTICAL- PLANT PHYSIOLOGY AND METABOLISM

Plant Physiology:

CO1. Students will have hands on experience regarding **e**xperiment on Plasmolysis.

CO2. Students will have hands on experience regarding **m**easurement of leaf area (graphical method) and determination of transpiration rate per unit area by weighing method.

CO3. Students will have hands on experience regarding **i**mbibition of water by dry seeds - proteinaceous and fatty seeds.

CO4. Students will undertake experimental setups on evolution of O_2 during photosynthesis (using graduated tube).

CO5. Students will undertake experimental setups on evolution of CO_2 during aerobic respiration and measurement of volume.

SEMESTER V

DSE A (Group A)

THEORETICAL- PHYTOCHEMISTRY AND MEDICINAL BOTANY

CO1. Students will attain knowledge about medicinal botany- History, scope and importance of medicinal plants, a broef idea about indigenous medicinal sciences- Ayurbeda, Siddha and Unani. Polyherbal formulations.

CO2. Students will learn about Phramacognosy- Scope and its importance, Primary metabolites, Secondary metabolites- alkaloids, terpenoids, phenolics and their functions.

CO3. They will gain knowledge regarding Organoleptic evaluation of crude drugs.

CO4. They will know about Pharmcologically active constituents: Source plants (one example), parts used and uses of: 4.1 Steroids (Diosgenin, Digitoxin), Tannin (Catechin), Resins (Gingerol, Curcumnoids), Alkaloids (Strychnine, Reserpine, Vinblastine), Phenols (Capsaicin).

CO5. Students will gain knowledge about Ethnobotany and folk medicine: Brief idea, Applications of ethnobotany, Application of natural product to certain diseases- Jaundice, Cardiac and Diabetics.

PRACTICAL- PHYTOCHEMISTRY AND MEDICINAL BOTANY

CO1. Students will have hands on experience on the following procedures:

1. Preparations of solution and buffers
2. Acquaintance with laboratory instruments- Autoclave, Incubator, Clinical centrifuge, Analytical balance, pH meter, Colorimeter, Water bath, Distillation plant, Laminar air flow.
3. Qualitative test for proteins and carbohydrates, reducing and non reducing sugar (glucose, fructose and sucrose)
4. Tests (chemical) for tannin and alkaloid
5. Identification of medicinal plants (list to be provided)
6. Field study (local) and listing of medicinal plants. Records to be substantiated with photographs and description.

DSE A2

THEORETICAL- NATURAL RESOURCE MANAGEMENTS

CO1. Students will know about Natural resources- definition and types.

CO2. They will learn about sustainable utilization- concept, approaches (economic, ecological and socio-cultural).

CO3. They will have concept about land utilization. Soil degradation and management.

CO4. They will be able to conceptualize about water, fresh water, marine, estuarine. Wetlands- threats and management.

CO5. They will develop in-depth understanding about Biological resources, biodiversity- definition and types. Significance, threats and management strategies.
CO6. They will develop knowledge about Forests- definition, cover and its significance (with special reference to India). Major and minor forest products.
CO7. They will know about Energy- renewable and non-renewable source of energy.
CO8. They will know about EIA and waste management.

PRACTICAL- NATURAL RESOURCE MANAGEMENTS
CO1. Students will have first-hand experience through practical work regarding the following topics:
1. Estimation of solid waste generated by a domestic system (biodegradable and non- biodegradable) and its impact on land degradation.
2. Measurement of dominant woody species by DBH (diameter at breast height)
3. Study of community structure by Quadrat method and determination of minimal size of quadrat, frequency density and abundance of components to be done during field visit.
4. Measurement of dissolved O2 by azide modification of Winkler's method.
5. Determination of chemical properties of soil by rapid spot test (carbonate, iron, nitrate)

SEC A
PLANT BREEDING AND BIOMETRY
CO1. Plant breeding: Students will have idea on **i**ntroduction and objective, Techniques of hybridisation.
CO2. Mass and Pure line selection: They will come to know about the Procedure, Advantages and limitations.
CO3. Students will learn about Heterosis and hybrid seed production.
CO4. They will come to know about the **r**ole of mutation, polyploidy, distant hybridization and role of biotechnology in crop improvement.
CO5. Biometry: Students will develop concept on Measures of central tendency (Mean, Median and Mode), Standard error and standard deviation, Test of significance: Chi-square test for goodness of fit.

BIOFERTILIZERS
CO1. Biofertilizers: Students will learn the **g**eneral account about microbes used as biofertilisers; Rhizobiumidentification, mass multiplication. Actinorrhizal symbiosis.

CO2. They will gain knowledge regarding *Azospirillum*- identification, mass multiplication, associative effect of different microorganisms. *Azotobacter* and crop response to *Azotobacter* inoculums.
CO3. They will learn in details about *Cyanobacteria, Azolla, Anabaena* and *Azolla* association, blue green algae and *Azolla* in rice cultivation.
CO4. They will gain idea about Mycorrhizal association: Types of Mycorrhizal association- Brief idea, Its influence on growth and yield of crop plants.
CO5. Organic farming: Students will gain knowledge about **g**reen manuring and organic fertilizers, Biocompost and vermicompost- making methods and field applications. Recycling of biodegradable municipal, industrial and agricultural wastes.

SEMESTER VI
DSE B
THEORETICAL- ECONOMIC BOTANY
CO1. Students will know about the origin of cultivated plants: Concepts of centres of origin and their importance with reference to Vavilov's work.
CO2. They will learn in details about Rice- origin, morphology and uses.
CO3. They will also learn in details about Legumes: General account with special reference to Vigna.
CO4. Students will know in details about Beverages: Tea- morphology, processing and uses.
CO5. They will undertake study of the following economically important plants (Scientific names, families, parts used and importance): Cereals- Rice, wheat, Pulses- Mong, gram, Spices- Ginger, cumin, Beverages- Tea, coffee, Medicinal plants- Cinchona, neem, Ipecac, Vasaka, Oil yielding plants- Mustard, groundnut, coconut, Vegetables- Potato, raddish, bottle groud, cabbage, Fibre yielding plants- Cotton, jute, Timber yielding plants- Teak, Sal; Fruits- Mango, apple, Sugar yielding plant- Sugarcane.

PRACTICAL- ECONOMIC BOTANY
CO1. Students will perform practical work on the following:

1. Study of economically important plants (rice/jute/ tea) through herbarium specimens and field study.
2. Study of cultivation practices in field and submission of report.
3. Study of local economically important plants and submission of report with photographs.

DSE B4
THEORETICAL- HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY

CO1. Students will learn about Horticulture- role in rural economy and employment generation. Urban horticulture- its scope and importance.
CO2. They will know about Ornamental plants- identification and salient features of some ornamental plants (rose, marigold, gladiolus, gerberas, tube rose, carnations, cacti and succulents). Ornamental flowering trees (Gulmohor, Lagerstromia, Shimul, Coral tree and jacaranda).
CO3. They will know the methods of identification of some fruits and vegetable plants- Citrus, Banana, Papaya, Mango, Jackfruit, Chillies and cucurbits. Fruit processing- scope and benefits.
CO4. Students will develop knowledge about horticultural techniques- propagation methods, application of manure, fertilizers, nutrients and PGR. Weed control. Biofertilizers and biopesticides.
CO5. They will have an in-depth concept of Post harvest technology- importance of post harvest technology in horticultural practices. Harvesting and handling of fruits, vegetables and cut flower. Methods of preservation and processing.
CO6. They will imbite knowledge about Disease control and management- field and post harvest diseases of common crops. Crop sanitation, quarantine practices. Identification of common diseases and pest of fruits and vegetable crops.

PRACTICAL- HORTICULTURAL PRACTICES AND POST HARVEST TECHNOLOGY
CO1. Students will participate in Field trips to gardens, standing crop sites, nurseries, vegetable gardens, horticultural fields and cold storages in order to gather first-hand knowledge about the topic.

SEC B3
THEORETICAL- PLANT BIOTECHNOLOGY
CO1. Students will know about Plant tissue culture- Introduction and basic concepts, Cellular potency, Callus culture and plant regeneration.
CO2. They will develop concept regarding Micropropagation- Somatic embryogenesis and artificial seed.
CO3. They will learn about Protoplast culture and its application.
CO4 They will have detailed idea about Recombinant DNA technology- Recombinant DNA, Restriction enzymes, Plasmids as vectors.
CO5. They will be able to conceptualize the procedures of Gene cloning (basic steps).
CO6. They will know about the achievements in crop biotechnology- 6.1 Pest resistant plant (Bt cotton), 6.2 Transgenic crops with improved quality (flavr tomato and golden rice).

SEC B4

THEORETICAL- MUSHROOM CULTURE TECHNOLOGY

CO1. Students will know in ndetails about Mushroom- nutritional and medicinal value of mushrooms. Poisonous mushrooms.

CO2. They will learn in details about the cultivation techniques/ technology of edible mushrooms in India: *Volvarealla volvacea, Pleuretus citrinopyrineatus, Agaricus bisporus.*

CO3. They will know about the storage- short term and long term, storage, drying.

CO4. They will have details knowledge about food preparation- types of foods prepared from mushroom. Cost and benefit ratio.

CO5. Students will gain information about research centres- national and regional.

Under 1+1+1 System
PART II
HONOURS

PAPER III
THEORETICAL- Pteridophytes, Gymnosperms, Ecology and Plant Geography, Anatomy
PTERIDOPHYTES
1.General account of Pteridophytes.
CO1. Understanding the general characters, structure, reproduction, life cycle pattern.
1.1.Colonisation and rise of early land plants.
CO1. Understanding the origin of sporophyte land plants, and their colonization.
1.2.Classification of Vascular Plants by Gifford and Foster (1989) up to division (Rhyinophyta to Filicophyta) with diagnostic characters and examples.
CO1. Understanding the arrangements of vascular plants in taxonomic groups according Gifford and Foster from Rhyinophyta to Filicophyta with their diagnostic characters with examples.
2. Life history.
CO1. Undestanding about occurrence ,distribution and life cycle pattern about different genera of pteridophytes.
Sporophyte structure, Reproduction and Gametophyte structure in 2.1Psilotum.2.2 Selaginella 2.3 Equisetum 2.4 Dryopteris.
CO1. Understanding the structure of both phases sporophytic and gametophytic and reproduction in genus Psilotum,.Selaginella,Equisetum and Dryopteris.
3. Fossil Pteridophytes.
CO1. Undestanding about the origin, classification, structure of fossil pteridophytes.
Structural features, Geological distribution and Evolutionary significance of 3.1 Rhynia.3.2 Lepidodendron.3.3 Calamites.
CO1. Understanding the morphological, anatomical features their distribution and evolutionary significance of Rhynia, Lepidodendron, and Calamites.
4. Telome concept and its significance in the origin of different groups of Pteridophytes.
CO1. Understanding the theory that the megaphylls of ferns and seed plants evolved by the modification of the terminal branches of stems and their significance in different genera of pteridophytes.
5. Hetrospory and Origin of seed habit.
CO1. Understanding the production of two or more type of spores in a single plant and Origin of seeds and seed habit in vascular plants from hetrospory.
6. Economic importance as food, medicine and Agriculture.
CO1. Undestanding economic use of pteridophytes as food medicine and in agriculture.

GYMNOSPERMS.

1 .Classification of vascular plants by Gifford and Foster (1989) up to division (progymnospermophyta to Gnetophyta) with diagnostic characters and examples.

CO1. Understanding the classification from earlier woody plants to advanced group of gymnosperms by Gifford and Foster, with their general characters like habit, occurrence, structure with examples.

2. Progymnosperms.

CO1. Understanding about earlier woody plants.

2.1. Diagnostics Characters of the group 2.2.Vegetative and Reproductive features of Archeopteris.2.3. Phylogenetic importance.

CO1. Understanding the important characters of progymnosperms morphological, anatomical and reproductive characters of Archeopteris.And their evolutionary importance.

3. Life History.

CO1. Understanding the occurrence, distribution, life cycle pattern in gymnosperms.

Distribution in India, vegetative and reproductive structure, Development of gametophyte and Embryogeny in 3.1 Cycas.3.2 Pinus.3.3 Gnetum.

CO1. Understaning the distribution of genus Cycas, Pinus and Pnetum in India their vegetative and reproductive structure of sporophyte and gametophytes development.

4. Fossil Gymnosperms.

CO1. Understanding general account of fossil gymnosperms.

Structural features and Geological distribution of reconstructed genera: 4.1 Lyginopteris.4.2 Williamsonia.4.3 Cordaites.

CO1. Understanding the distribution of Lyginopteris, Williamsonia, and Cordaites according to geological time scale, and their structure.

5. Economic Importance with reference to wood, Resins, Essential oils and Drugs.

CO1. Understanding the economic importance of gymnosperms relating wood used as furnitures, essential oils and drugs.

ECOLOGY

1. Preliminary idea on:

CO1. Understanding the primary ideas on ecosystem.

1.1Habit and Niche, Ecotone and edge effect, 1.3 Microclimate, 1.4Ecads ecotypes and ecoclines, 1.5 Carrying capacity.

CO1. Undestanding ecological habit the specific area where organism inhabits, transitional areaof vegetation between two different plant communities, climate of very small area which differ from the surrounding, distinct form or race plant species occupying particular habitat.

2. Community ecology:

CO1. Understanding about different communities of ecosystem.

2.1. community-characteristics and diversity.

CO1. Understanding the diversification of different communities with characters.

2.2. Ecological Succession- Primary and secondary, seral stages, autogenic and allogenic succession

CO1. Understanding the process of change in species structure of ecological community, seral stages, and succession driven by biotic and abiotic components.

3.3.1. Plant indicators; 3.2 .Phytoremediation.

CO1. Understanding the indicator species respond closely to metal concentration and bioremediation of various plants to remove, transfer, and destroy the contaminants in soil and groundwater.

4. Conservation of Biodiversity.

CO1. Understanding the conservation of biodiversity.

4.1. Level of Biodiversity: genetic species and ecosystem diversity.

CO1. Understanding the three levels of biodiversity genetic, species and ecological.

4.2. Biodiversity hotspots-criteria, Indian hotspots

CO1. Understanding the criteria to qualify as a biodiversity hotspots and Indian hotspots.

4.3. In-situ and Ex-situ conservation, 4.4 Seed-banks, 4.5.Cryopreservation, 4.6 Geographic Information system and remote sensing (brief idea)

CO1. Understanding the conservation of plants species in their natural and outside the natural habitats store the seed to preserve genetic diversity and use of very low temperature to preserve the structure of living cell intact.

PLANT GEOGRAPHY

5: Phytogeographical regions:

CO1. Understanding the area of uniform climatic conditions and having distinct types of vegetation.

5.1. Phytogeographical regions of India (chatterjee 1960);5.2 Dominant flora of Eastern and Western Himalaya and Sunderban.

CO1. Understanding the different phytogeographical regions of India according to Chatterjee and knowing about dominant plants of Eastern western and Sunderban areas.

6. Endemism:

CO1. Understanding the ecological state of a species being unique to a particular habitat.

6.1. Endemism types and Factors; 6.2.Age and Area hypothesis Epibiotic theory; 6.3.Endemism in Indian flora.

CO1. Understanding different types of Endemism factors area hypothesis, different theory of Epibioticc and endemism in Indian plants.

ANATOMY

1. Cell wall

1.1. Ultrastructure and chemical constituents.

CO1. : Understanding fine detail structure of cell wall and its composition.

1.2Plasmodesmata ultra structure.
CO1. understanding about fine structure of cytoplasmic canal that passes through plant cell walls.
1.3.Concept of apoplast and symplast.
CO: Understanding the movement of water and solute through protoplasmic and nonprotoplasmic parts.
1.4. Growth and thickening of cell wall.
CO1. Understanding the modification of cell according to function they perform and parts like xylem phloem undergo heavy thickening of their walls.
2. STOMATA.
21. Types and 2.2 Ontogeny.
CO1. Understanding the different types and origination and development of stomata.
3. Ontogeny of 3.1 Trachea and 3.2 Sieve tube.
CO1. Understanding the origination and development of Xylem vessels and living part of phloem.
4. Stele. 4.1 Leaf trace and Leaf gap.4.2 stellar types and its evolution.
CO1. Understanding the extension of vascular tissue from stem into the leaf and space from which leaf grows and types of stele and its origin and evolution.
5. Secondary growth:
CO1. Understanding the increase in thickness of the plant parts due to the activity of vascular cambium and cork cambium.
5.1 .Normal (intrastelar and extrastelar).
CO1. Understanding the secondary growth in stelar region by vascular cambium and in cortex due to cork cambium.
5.2. Anomalous (stem of Bignonia, Boerhavia, Tecoma, Dracaena and root of Tinospora).
CO1. Understanding the abornormality of cambium tissue in different Genera.
6. Mechanical tissue and principles governing their distribution in Plants.
CO1. Understanding the principles regarding the construction of mechanical tissue and their distribution.
7. Developmental Anatomy:
CO1. Understanding the structural changes of an plant from initial stage to its maturity.
7.1. Organisation of shoot apex (Tunica-corpus) and root apex (Korper-Kappe).
CO1. Understanding the developmental and organisation of shoot and root apex based on the theories concerned on plane of cell division.
7.2. Plastochron.
CO1. Understanding the time interval between initiations of leaf growth between two consecutive nodes in a growing shoot apex.
8. Ecological Anatomy:
CO1 Understanding the anatomical adaptation by group of plants species under the stress condition.
Adaptive anatomical featuresof 8.1.Hydrophytes 8.2. Xerophytes.

CO1. Understanding the anatomical characters of plants living in dry condition and in water for the adaptation.

PAPER IVA

THEORETICAL- Morphology of Angiosperms, Taxonomy of Angiosperms

MORPHOLOGY OF ANGIOSPERMS

1. Inflorescence types with examples.

CO1. Understanding about the different types of arrangement of flower on floral axis.

2. Flower: Corolla- forms, aestivation; Stamen- types; Placentation-types; Ovule - structure and forms.

CO1. Describing and understanding different parts of flower including different whorls, types of placentation and ovule.

3. Fruit - types with examples.

CO1. Describing different types of fruits along with its classification according to different aspects.

TAXONOMY OF ANGIOSPERMS

1. Introduction :

1.1. Components of Systematics: Nomenclature, Identification, Classification; 1.2. Taxonomy and its phases -Pioneer, Consolidation , Biosystematic and Encyclopaedic ; alpha- and omega- taxomony .

CO1. Understanding about the conception of biosystematics in detail including basic knowledge of taxonomy.

2. Nomenclature :

Elementary knowledge of ICBN: Principles; Rank of taxa, Retention and rejection of names; Type method; Principleof priority; Effective and valid publication; Author Citation.

CO1. Knowing about the rules and regulation of botanical code along with nomenclatural type method.

3. Systems of classification :

Broad outline of Bentham & Hooker (1862-1883), Cronquist's (1988) system of classification with merits and demerits

CO1. Discussing the classification system of plants according to different authors and their merits and demerits.

4. Systematics in Practice :

4.1. Herbaria and Botanical Gardens – their role; important Indian Herbaria and Botanical Gardens; 4.2. Dichotomouskeys – indented and bracketed.

CO1. Study the methods of plant exploration, collection, preparation of herbarium and its identification by using different keys. Also know about the Herbaria and Botanical Garden.

5. Phenetics and Cladistics :

Brief idea on Phenetics, Numerical taxonomy; Cladistics; Monophyletic, polyphyletic and paraphyletic groups;Plesiomorphy and apomorphy.

CO1. Establishing the relationship among ancestral plants with its descendent by using different methods particularly Phenetics and Cladistics.

6. Data sources in Taxonomy:

Supportive evidences from : 6.1. Phytochemistry, 6.2. Cytology, 6.3. Anatomy.

CO1. Study of different data sources of taxonomy and its different supporting evidences.

7. Diagnostic features, Systematic position (Bentham & Hooker and Cronquist), Economically important plants (parts used and uses) of selected families.

CO1. Discussing Salient features of different Dicotyledons and Monocotyledons plant families and their importance.

PAPER IVB

PRACTICAL

1. Workout on Pteridophytes

CO1. Critically analyzing and understanding the important cellular structure of different pteridophytes and tracing the evolutionary lineage of this particular plant group and also correlating with other group of plants.

2. Workout on Angiosperms

CO1. Learning the process of plant dissection, illustration, description and diagnosis and also identifying the plant with the help of different floras including the procedure of handling the different types of keys.

3. Spot Identification

CO1. Examining critically the different plant parts particularly cellular structure and identify them through microscope or by naked eyes.

4. Identification with reasons (Pteridophyte - 1, Gymnosperms - 2, Palaeobotany/Palynology–1,)

CO1. Investigating critically the different microscopic or macroscopic plant parts or plant body and identify them using proper reason.

Contact hours: 5hrs/week Practical: 6hrs/week

PART-II
GENERAL

Paper-II

Theoretical-Module III: Anatomy, Cell Biology and Genetics.

Module IV:Biochemistry and Plant Physiology, Economic Botany, Ecology.

1. Anatomy:

CO1. Classification of different types of stomata and understanding the detail cellular structure of different types of stele, roots, stems and leaves of monocots and dicots plant along with is anomalous secondary growth.

2. Cell Biology and Genetics:

CO1. Understanding the different cytological structure particularly nuclear envelope, nucleolus, chromosome and DNA. Understanding the mechanism of DNA replication, transcription and Translation and also the process of chromosomal abaration along with different types of cytological event related to Chromosome, DNA and gene.

3. Biochemistry and Plant Physiology:

CO1. Understanding the different macromolecular structure of different biochemical process of plant cell including structure of protein, enzyme. Also understanding the different physiological processes of plant and its effects. Besides knowing the structure and functions of different plant hormones.

4. Economic Botany:

CO1. Study of different economically important plants including their scientific names, families, partsused and importance.

5. Ecology:

CO1. Understanding about the ecological system including its different factors. Also knowing about the biodiversity and its conservation and Phytoremediation.

Paper-III

Practical

Module V

1. Cryptogams:

CO1. Understanding the vegetative and reproductive structure bythe process of microscopic slide preparation, drawing and labeling, description and identification of them.

2. Angiosperms:

CO1. Learning the process of plant dissection, illustration, description and diagnosis and also identifying the plants.

3. Identificaiton with reasons:

CO1. Examining critically the different plant parts particularly cellular structure and identify them through microscope or by naked eyes.

4. Spot identification

CO1. Examining critically and identifying the different plants and its family by their diagnostic characters.

Module VI

1. Plant Physiology:

CO1. Examining the different physiological processes of plants.

2. Anatomy:

CO1. Critically analyzing and understanding the important cellular structure of different plant parts and identifying them by their diagnostic characters.

3. Cell Biology:

CO1. Knowing the process of preparation of squash and study of mitotic stages and determination of mitotic index.

4. Identificaiton with reasons:

CO1. Examining the different mitotic and meiotic stages by using its critical characters.

Contact hours: 5hrs/week Practical: 6hrs/week

PART III

HONOURS

PAPER V (THEORETICAL)

BIOCHEMISTRY

CO1. Biochemical Foundations:

Students will get an idea about various types of bonds, pH,Buffer solution, structure and properties of water.

CO2. Molecules of life

Study about nucleic acids, B and ZDNA, RNA, Nucleotides and nucleosides, biochemistry of proteins, carbohydrates and lipids.

CO3. Energy flow and enzymology :

To understand Bioenergetics-Thermodynamic principles, Biological redox reactions, Enzymes – classification and nomenclature enzyme action and Enzyme kinetics

CO 4. Cell membrane and Biosignalling :.

Study about Membrane chemistry, transport , Signal transduction pathway and second messenger concept - G-protein and Ca2+ as messenger.

CO 5. Phosphorylation :

Gives an overview of ATP synthesis (Chemiosmotic theory)and differences between oxidative and photophosphorylation

PHARMACOGNOSY

CO1. Gives a. general account of Pharmacognosy and its importance in modern medicine, Crude drugs, Classification of drugs, Drug evaluation

CO2. Secondary metabolites :

Definition of secondary metabolites, basic metabolic pathways with secondary metabolite biosynthesis Major types– with examples.

CO 3. Pharmacologically active constituents :

To study about Source plants, parts used and uses of some secondary metabolites.

PLANT PHYSIOLOGY

CO1. Plant-water relations:

To examine the Concept of water potential, Soil-plant-Atmosphere continuum concept, Transpiration and stomatal physiology.

CO2. Organic translocation

To focus about phloem transport and various hypothesis about Organic Translocation and its critical evaluation.

CO3. Photosynthesis :

The students will understand about the photosynthetic pigments ,importance, components, process and stages of photosynthesis with details of various pathways C3, C4,and CAM and their differences with stoichiometry and their ecological significance and photorespiration .

CO4. Respiration:

To evaluate the respiration process, various phases, regulatory steps ,site of respiration, types of respiration mitochondrial ETS and stoichiometry of glucose oxidation(aerobic)..

CO5. Nitrogen Metabolism :

Students will be given an idea of Assimilation of nitrate by plants, Biochemistry of dinitrogen fixation in Rhizobium, and General principle of amino acid biosynthesis (including GS and GOGAT enzyme system).

CO6. Plant Growth Regulators :

To assess and describe about Physiological roles of (Growth regulators) Auxin, Gibberellin, Cytokinin, Abscisic acid, Ethylene ,Chemical nature –IAA, GA3,Kinetin, Biosynthesis and bioassay of IAA, Mode of action of IAA, Brassinosteroids and Polyamines as PGRs (brief idea).

CO7. Photomorphogenesis :

To know about the concept of photomorphogenesis Photoperiodism Phytochrome, Role of GA in flowering, Vernalisation Concept of biological clock and biorhythm .

CO8. Seed dormancy :

Students will study the Types; Causes and Methods of breaking seed dormancyBiochemistry of seed germination.

CO9. Physiology of Senescence and Ageing.

This topic will help the students understand briefly about plant senescence and ageing process.

CO10. Stress Physiology

The students will be made aware of Plant responses to Water stress, Temperature stress and Salt stress.

PAPER VI

1. CELL BIOLOGY

CO1. Origin and Evolution of Cells :

Students will get idea about origin of cells, and origin of (cp-and mt-DNA).

CO2. Nucleus and Chromosome :

An elaborative structure for students regarding detailed idea about nuclear structure and ribosomebiogenesis and chromosomal and DNA structure.

CO3. Cell cycle and its regulation :

A detailed idea about cell cycle mechanism in yeast and its checkpoints and its related mechanism of apoptosis

PLANT BREEDING & BIOMETRY

CO1. Plant Breeding:

An idea for students about Molecular Breeding (use of DNA markers in plant breeding), Mass selection and Pure line selection and Heterosis and hybrid seed production

CO2. Biometry:

An idea for students about biostatistical measures, biostatistical analysis methods, Test of significance: 't'- test; chi square test for goodness of fit, Probability and Measurement of gene frequency (Hardy-Weinberg equilibrium).

PLANT BIOTECHNOLOGY

CO1. Plant tissue culture –

An Introduction to Plant tissue culture method and the requirements for tissue culture

CO2. Callus culture:

A detailed idea for students about the process for callus culture and its maintenance.

CO3. Micro propagation:

The students will get an idea about Organogenesis (direct and indirect), Somatic embryogenesis, Artificial seed, and its significance.

CO4. Haploid Culture:

A detailed process for students about Anther and Pollen culture methods, and its significance .

CO5. Protoplast Culture:

A clear picture about the method of Protoplast isolation, culture, Protoplast fusion (somatic hybridization) and its Significance.

CO6. Plant Genetic Engineering:

A detailed idea about achievements of plant genetic engineering and outcome of technology that is production of transgenic crops.

GENETICS & MOLECULAR BIOLOGY

CO1. Linkage, Crossing over and Gene Mapping :

Detailed idea for students about of Detection of crossing over (McClintock's experiment), Molecular mechanism of crossing over (Holliday model) and the process of Gene mapping.

CO2. Epistasis and Polygenic inheritance in plants.

The students will get an idea about Aneuploidy and Polyploidy and its application on agriculture

CO4. Chromosomal aberration:

Students will be benefitted about the types and the application of meiotic behavior of Deletion, Duplication, Translocation and Inversion.

CO5. Mutation :

The students will get an idea about mutation and molecular mechanism of mutation types and DNA repair and its mechanism.

CO6. Structural organization of Gene :
A detailed idea for the students about structure and organization different types of gene for example Overlapping gene,Repetitive DNA-tandem and interspersed,Transposon (Ac-Ds system)and Homoeotic gene in plants (ABCmodel in Arabidopsis).
CO7. DNA Replication, Transcription and Translation (Prokaryotes & Eukaryotes):
An idea for students about the basic process of a living cell , the central dogma, its detailed process, enzymes involved and RNA processing.
CO8. Gene Regulation :
Students will get idea about concept of Lac-operon, and its Positive and negative control.
CO9. Genetic Code :
A structure about Properties-evidences & exceptions of genetic code
CO10. Recombinant DNA Technology
Detailed idea for students about DNA technology its applications .The enzymes involved in the process of DNA technology, marker genes, and formation of Genomic DNA and C- dna library are quiet beneficial for the students.
CO11. Bioinformatics: Brief concept on 11.1 Genomics, 11.2 Proteomics.

Paper VII
Practical

PLANT BIOCHEMISTRY
CO1. Students will get hands- on practical experience in Qualitative estimation of organic acids, carbohydrate and protein estimation from plant products, detect the nature of carbohydrate from laboratory samples and detect mineral nutrients from plant ash.
CO2. Students will also have practical experience in Quantitative estimation of amino nitrogen, glucose, TAN, enzyme activity(catalase and urease),and colorimetric estimation of protein.
PLANT PHYSIOLOGY
CO1. Students will be exposed and be able to carry out various plant physiological experiments themselves and learn about methodology of plant physiological experiments on Imbibition, measurement of osmotic pressure, transpiration and evaporation, stomatal frequency, photosynthesis ,separation of plastidial pigments, respiration and about parameters like Q10.
ANATOMY
CO1. Students will gain an insight on anatomical features of plant cells, stomatal morphology through microscopic studies.
CO2. Students will learn about the anatomical features with special emphasis on Anamolous secondary growth of stem and root sections.
CO3. Study and note the adaptive anatomical features of Hydrophytes and Xerophytes.

PHARMACOGNOSY

CO1. Perform and learn about chemical tests on Tanin and Alkaloids.

CO2. Students will have hands-on experience on practical metholodology on powder microscopy using Zingiber and Holarrhena.

CO3. Perform and learn about Histochemical tests on Curcumin, Starch , and Alkaloid.

PAPER VIII

CELL BIOLOGY AND GENETICS

CO1. Detailed idea for students about the process of evaluation of mitotic index, idea about the stages of mitosis and meiosis, Study of mitotic chromosome : Metaphase chromosome preparation from from root tips: Allium cepa , Aloe vera , Lens esculenta. Identification from permanent slides gives detailed and clear idea about how and why the chromosomal abnormalities happen and how they look like.

BIOMETRY

CO1. It gives students an idea about the process of determination of goodness of fit in normal and modified mono-and dihybrid ratios by Chi-square analysis and on the nature of inheritance.

Contact hours: 11hrs/week Practical: 10hrs/week

PART-III
GENERAL
THEORETICAL

Paper-IVA

Module VII

Biofertilizer:

CO1. Detailed information about the sources , production and application of biofertilizer

Mushroom:

CO1. Students are benefitted with the idea about how the common edible mushrooms are cultivated and used as food.

Plant disease control:

CO1. Students get an idea about the common plant disease and their control measures both chemical and biological along with its quarantine methods

Plant Breeding:

CO1. An idea for students about Mass and Pure line selection, Heterosis and hybrid seed production .

Biometry:

CO1. Biometrical methods are studied by the students along with Measures of Central Tendency and Goodness of fit (Chisquaretest).

Plant tissue culture:

CO1. Detailed idea about study of artificial method of plant tissue culture along with micro propagation, Somatic embryogenesis, artificial seed and protoplast culture with its applications.

Pharmacognosy:

CO1. An elaborative idea about scope and importance of Secondary metabolites- alkaloids, terpenoids, phenolics and their functions, along with their organoleptic evaluation of crude drugs.

Paper IVB

Practical

Module VIII

CO1. Students will be acquainted with laboratory instruments and their working principle with practical knowledge of handling these instruments.

CO2. Students will learn about sterilization techniques by autoclaving.

CO3. Students will learn about preparation of PDA medium.

CO4. Students will have hands-on experience on Bacterial staining techniques with suitable staining methods from curd.

CO5. Students will be acquainted with common medicinal parts and their uses.

CO6. Determine the method of Goodness of Fit of normal Monohybrid ratios by Chi Square analysis.

CO7. Students will be taken to visit Medicinal Plant Garden and learn to prepare a field report.

Contact hours: 4hrs/week Practical: 6hrs/week

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DEPARTMENT OF ECONOMICS

COURSE OUTCOME/PROGRAMMEOUTCOME/ PROGRAMME SPECIFIC OUTCOME (2020-21)

ECOA Semester 1 and Semester 2

ECOA SEM 1

Course Outcome

Introductory Microeconomics

CO 1- Exploring the subject matter of Economics

CO 2-Demand and Supply: How Markets Work;

CO3- Market and Adjustments

CO4- Market Sensitivity and Elasticity
CO5- Government Intervention
CO6- Utilitarian Approach

Contact hours: 5hrs/week
Tutorial:1hr/week

Mathematical Methods in Economics-I

CO 1-Preliminaries

CO 2-Functions of one real variable

CO3- Single variable optimization

CO4- Integration of functions
CO5- Matrix Algebra
CO6- Game Theory

Contact hours: 5hrs/week
Tutorial:1hr/week

ECOA SEM 2

Introductory Macroeconomics

CO 1-National Income Accounting

CO 2-Income Determination in the Short Run (Part-I) :The Simple Keynesian Model in a

Closed Economy

CO3- The Classical system

CO4- Macroeconomic Foundations -I

Contact hours: 5hrs/week
Tutorial:1hr/week

Mathematical Methods in Economics-II

CO 1-Function of several variables

CO 2-Multi-variable optimization

CO3- Difference Equations

CO4- Differential Equations

Contact hours: 5hrs/week
Tutorial:1hr/week

ECOA Semester3 and Semester4

ECOA SEM 4

COURSE OUTCOME

Intermediate Microeconomics II

CO 1- Imperfect Market Structure

CO 2-Input market under Imperfect Competition

CO3- General Equilibrium Efficiency and Welfare

Contact hours: 5hrs/week
Tutorial:1hr/week

Intermediate Macroeconomics II

CO 1-Basic Tenants of New Classical and New Keynesian Theories

CO 2-Macroeconomic Foundation II

CO3- Economic Growth

Contact hours: 5hrs/week
Tutorial:1hr/week

Introductory Econometrics

CO 1-Nature and Scope of Econometrics
CO 2-Classical Linear Regression Model(Simple Linear Regression and Multiple Linear Regression) part 1
CO3-Classical Linear Regression Model(Simple Linear Regression and Multiple Linear Regression) part 2
CO4- Statistical inference in linear regression model
CO5- Violation of Classical Assumptions
CO6- Specification Analysis

Contact hours: 5hrs/week
Tutorial:1hr/week

Skill Enhancement Course II-Research Methodology

CO1-Methodological Issues 1
CO2-Methodological Issues 2

Contact hours: 2hrs/week

ECOA SEMESTER V AND VI

ECOA Semester V

International Economics

CO 1: Basic Models of Trade
CO 2: Resources, Comparative Advantage, and Income Distribution
CO 3: The Standard Trade Model
CO 4: Trade Policy
CO 5: Accounting, Income Determination and Exchange Rates

Contact hours: 5 hours/ week
Tutorial: 1 hour/ week

Indian Economy

CO 1: Economic Development since Independence
CO 2: Population and Human Development
CO 3: Growth and Distribution
CO 4: Economic Reforms in India
CO 5: Term paper

Contact hours: 5 hours/ week
Tutorial: 1 hour/ week

Applied Econometrics [AE]

CO1-Steps in empirical research
CO2-Regression Diagnostics and Specification
CO3- Application of Regression Analysis
Contact hour :
Theory:- 3 hrs/week
Practical-3 hrs/week

Financial Economics [FE]

CO1- Investment Theory and Portfolio Analysis
CO2- Options and Derivatives
CO3-Corporate Finance
Contact hour- 5 hrs/week
Tutorial- 1hour/week

ECOA Semester VI

A. Public Economics

CO 1 – Government in a market economy
CO 2 – Choice and Public Economics
CO 3 – The Revenue and Expenditure of the Government
CO 4 – Public Finance

Contact hours: 5hrs/week
Tutorial: 1 hr./week

B. Development Economics

CO 1 – Meaning of Economic Development

CO 2 – Poverty and Inequality
CO 3 – Dual Economy Models
CO 4 – Population Growth and Economic Development
CO 5 – Development Strategies
C0 6 – Political Institutions and the State

Contact hours: 5 hrs./week
Tutorial: 1 hr./week

C. Money and Financial Markets

CO 1 – Introduction to Money and Money and Banking
CO 2 – Financial Institutions, Markets, Instruments and Financial Innovations
CO 3 – Financial Markets and Interest Rates Behavior
CO 4 – Banking System
CO 5 – Central Banking and Monetary Policy

Contact hours: 5 hrs./week
Tutorial: 1 hr./week

D. Issues in Development Economics

CO 1 – Demography and Development
CO 2 – Land, Labor and Credit Markets
CO 3 – Individuals, Communities and Collective Outcomes

CO 4 – Environment and Sustainable Development
CO 5 – Globalization

Contact hours: 5 hrs./week
Tutorial: 1 hr./week

South Calcutta Girls College

Department of Education
Course Outcomes 2020-2021
Education Honours Programme

Semester -I

CC1.

1. **Introduction to Education**
   a. Comprehension the meaning of Education:
   b. Overview the narrow and broader concept of education
   c. Overview factors of Education:
   d. Overview agencies of Education:
   e. Understanding home, school, state, mass-media-television, radio, cinema and newspaper as the agencies of education
   f. Understanding the concept, significance, play, work of child centricism in education.
   g. Understandings play way in Education, kindergarten, Montessori and Project method.

CC2

1. **History of Indian Education**:
   a. Understanding the salient features of education during ancient and medieval period.
   b. Understanding Indian Education during British period (1800-1853).
   c. Understanding Indian Education during British period (1854-1946).
   d. Overview Indian Education after independence.

Semester-II

CC3

1. **Psychological foundation of Education**
   a. Comprehension the meaning of psychology and its relation with Education.
   b. Understanding stages and types of human development and their educational significance.
   c. Mastery the concept and theories of learning.
   d. Mastery the concept and theories of intelligence.

CC4

1. **Philosophical Foundation of Philosophy**
    a. Understanding concept, importance and relation of philosophy with education.
    b. Overview Indian schools of Philosophy.
    c. Overview western schools of philosophy.
    d. Overview philosophy for development of humanity.

Semester –III

CC5

1. **Sociological Foundation of Education**
    a. Comprehension the concept, nature, scope and relation of sociology with Education.
    b. Overview types of social groups.
    c. Understanding concept of social changes and interaction process of education.
    d. Understanding concept of social communication.

CC6

1. **Educational Organization, Management and Planning**
    a. Understanding concept of organization and management
    b. Understanding Educational organization.
    c. Understanding Educational management.
    d. Understanding Educational Planning.

CC7

1. **Guidance and Counselling**
    a. Understanding meaning, functions and need of Guidance.
    b. Understanding concept of individual and group guidance with its advantages and disadvantages.
    c. Understanding Educational Guidance, Vocational Guidance and Personal Guidance.
    d. Understanding meaning, techniques and types of counselling.
    e. Understanding basic data necessary for guidance

Semester-IIII

CC8

1. **Technology in Education**
    a. Understanding the meaning, need and scope of educational technology.
    b. Overview the computer in education and communication.
    c. Overview instructional techniques in education.
    d. Overview ICT and e-learning in education.

Semester-IV

CC9

1. **Curriculum studies**
    a. Understanding meaning, nature, scope and functions of curriculum.
    b. Understanding content selection.
    c. Overview curriculum development
    d. Understanding evaluation and reform of curriculum.

CC10

1. **Inclusive Education**

a. Comprehension the meaning of inclusion and inclusive society.
b. Overview the concept of differently abled.
c. Understanding the concept of socially disabled like ST, SC and OBC groups.
d. Understanding educational reforms for inclusive society.

Semester-V

CC11

1. **Evaluation and Measurement in Education**
    a. Understanding the measurement and evaluation in Education.
    b. Overview Evaluation process.
    c. Overview tools and techniques of Evaluation.
    d. Overview criteria of good tools and its constructions.

CC12

1. **Statistics in Education**

a. Understanding concept of statistics and descriptive statistics
b. Overview Normal Distribution and Derived score.
c. Overview measure of relationship.

Semester-VI

CC13

1. **Psychology of Adjustment**
    a. Understanding adjustment, maladjustment and problem behaviour.
    b. Understanding multi-axial classification of mental disorders.
    c. Understanding coping strategies for stressful situation
    d. Understanding administration, scoring and interpretation of KNPI, KIEI and understanding effect of learning material on memorization.

CC14

1. **Basic concept of Educational Research**
    a. Understanding concept of educational research.

b. Understanding basic elements of educational research.
c. Understanding data collection procedure.

Skill Enhancement courses(A)

1. **Communication skill**

a. Understanding introduction to communication.
b. Overview listening skills.
c. Overview speaking skills.
d. Understanding reading and writing skills.

2. **Skill for Democratic citizenship**

a. Understanding rights and duties in Indian constitution.
b. Understanding the concept protection of child and domestic harmony.

Skill Enhancement courses(B)

1. **Teaching skill**
    a. Understanding the concept of teaching and its types.
    b. Understanding the basic concept of teaching.
2. **Life skill Education**
    a. Understanding the concept of life skill Education with its classification.
    b. Understanding the definition of leadership training.

DEPARTMENT OF ENGLISH: COURSE OUTCOME/PROGRAMME SPECIFIC OUTCOME

- **CC1 (SEMESTER I, HISTORY OF ENGLISH LITERATURE AND PHILOLOGY- 6 CREDITS)**

Course Objectives:

The syllabus for Core Course 1 (CC1) under the Choice Based Credit System (CBCS) is structured to provide students with a comprehensive idea about the development of English literature and language over the ages. It traces the trajectory of the growth of English literature from the period of its inception, dating back to the seventh century, to the present era. The course is also designed to help students develop an understanding of the structural development of the English language and also to inform them about the various external linguistic influences that have contributed to the making of the language as we now know it to be.

Course Outcomes:

a. The CC1 module consists of two groups— the first one (Group A) deals with the History of English Literature, while the second one (Group B) focuses on Philology.
b. The completion of the course is supposed to benefit the students in the following ways:

2. The course offers extensive insight into the history of English literature, while laying special emphasis on various literary movements, genres and writers that are held to be the representatives of their times.
3. It helps the students to evaluate the way socio-cultural and historical phenomena influence the literary production of a particular period.

4. By familiarizing students with the socio-cultural ambience and the discursive frameworks of various ages, the course helps the students to develop a nuanced appreciation of the literary stalwarts of those times.
5. The students are also offered an in-depth understanding on the growth of the English language under the influence of various other languages including Latin and French, besides being mentored in the structural nitty-gritties of the language.

- **CC2 (SEMESTER I, EURPOEAN CLASSICAL LITERATURE- 6 CREDITS)**

Course Objectives:

The syllabus for Core Course 2 (CC 2) of the Choice Based Credit System is designed to familiarize students with Greek and Latin texts which are integral for developing a consummate understanding of English literature. The course is woven around selected texts that help students to appreciate the way these classical authors have influenced their English literary successors.

Course Outcomes:

The completion of the course is supposed to benefit the students in the following ways:

1. It offers a comprehensive understanding of social and intellectual climate of ancient Greek and Roman society.
2. It will enable students to trace the way classical generic conventions have been taken up and worked upon by English writers at a later date.
3. The perusal of texts like Homer's *The Illiad* and Ovid's *Metamorphosis* will familiarize students with classical mythology. This will, in turn, help them to decipher the classical allusions that are often found to feature in works of various English writers.

CC1/GE1 (Semester I, Poetry and Short Story: 6 Credits)

Course Outcomes-

1. Introducing students to the seminal practitioners of English Literature and laying the foundation for contextualising specific texts against definite historical backdrops.
2. Analysing the art of story-telling and the various structural elements of a short story with special reference to James Joyce's *Araby*, Conrad's *Lagoon.*
3. Understanding the Romantic Movement and its implications in the works of second generation Romantic poets-Keats and Shelley while thoroughly examining university prescribed texts like *Ode To Autumn, To a Skylark.*
4. Investigating the efficacy of specific literary terms like caesura, blank verse to understand the significance of metrical patterns and the art of versification.
5. Instituting comparisons with various literary Movements to help deconstruct texts with greater clarity, as in the case of *Araby*.

- **AECC1 – COMMUNICATIVE ENGLISH: 2 CREDITS (SEMESTER 1)**

Course Objectives:

The purpose of this course is to introduce students to the theory, fundamentals and tools of communication and to develop in them vital communication skills which should be integral to personal, social and professional interactions.

Course Outcomes:

The completion of the course is supposed to benefit the students in the following ways:

1. This course aims at addressing the importance of communication skills through an interactive mode of teaching-learning process and by focusing on various dimensions of communication skills.
2. It'll also help the students to learn the language of communication, such as personal communication, social interactions and communication in professional situations such as interviews, group discussions and office environments, important reading skills as well as writing skills such as report writing, note-making etc.
3. It'll also enable the students to commit fewer errors while organizing, structuring and writing sentences as the course focusses on improving the grammatical skills of the students.

- **CC3 (SEMESTER II, INDIAN WRITING IN ENGLISH: 6 CREDITS)**

Course Objectives:

The objective of the course is to familiarize the students with the emergence and growth of Indian Writing in English in the context of colonial experience. The course will discuss issues concerning Indian Writing in English such as the representation of culture, identity, history, constructions of nation, (post)national and gender politics, cross-cultural transformations. The student will be appreciating Nation-Nationalism; Counter Discourse; Subalternity; Identity Movements.

Course Outcomes:

After the completion of this course, the participants would gain insight into 'Indianness' through representative works. Students will be able to-

1. appreciate the historical trajectory of various genres of Indian Writing in English from colonial times to till the present
2. analyze Indian literary texts written in English in terms of colonialism, post-colonialism, regionalism, and nationalism
3. Understand the role of English as a medium for political awakening and the use of English in India for creative writing

4. analyze how the sociological, historical, cultural and political context impacted the texts selected for study
5. analyse the strength and constraints of Indian English as a literary medium.
6. evaluate critically the contributions of major Indian English poets and dramatists
7. develop a literary sensibility and display an emotional response to the literary texts and cultivate a sense of appreciation for them
8. apply the ideas encapsulated in Indian Aesthetics to literary texts

- **CC4 (SEMESTER II, BRITISH POETRY AND DRAMA (14TH – 17TH CENTURY): 6 CREDITS**

Course objectives

The growth of English language and literature over the centuries from a totally different state- more in the condition of a dialect in the earliest periods- to what it is in the present century should form the background knowledge of every student of English literature. The quaint systems and structures of the medieval English developed rather quickly during the 16th and 17th centuries. The objective of this course is to introduce the music and quaintness of the English sounds and vocabulary of the earliest period in English literary history to the students to enable them to have a historical perspective of the developments over the centuries. The course also introduces the great masters of the early period such as Chaucer, Spencer, Shakespeare, Marlowe and Donne.

Course Outcomes :

After the completion of this course, students will be able to-

1. comprehend the significance of Elizabethan literature and the writers belonged and its impact on literary works produced world over.
2. evaluate the significance of the socio-political and historical events which shaped the perspective of the Elizabethan Age

3. explain how socio-historical factors have influenced individual texts and how individual texts are representative of their age
4. identify and explain the formal and literary features of each genre and text, and how they contribute to the complexity of values and emotions represented in the texts
5. develop a clear understanding of Renaissance Humanism that provides the basis for the texts suggested
6. Analyze the various elements of poetry, such as diction, tone, form, genre, imagery, figures of speech, symbolism, theme, etc.
7. To know several Shakespearean sonnets, understand the sonnet form, analyze particular Shakespearean sonnets, and appreciate Shakespeare's contribution to the form.
8. gain insight into the age of Shakespeare and the uniqueness of Shakespearean creative output with regard to both his sonnets and plays
9. to have a nuanced understanding of the dramatic literature of the Elizabethan period, with regard to the classical and romantic strains embedded in the plays
10. To apply a knowledge of the social, political, and intellectual context of Elizabethan England to an understanding of Shakespeare's and Marlowe's works
11. To understand the great ideas conveyed in Shakespeare's dramas and appreciate the rhetorical and poetic art through which those ideas are conveyed.

CC2/GE2 (Essay, Drama and Novel , Semester II: 6 Credits)

Course Outcomes-

1. Understand the genre of essays in Romantic period and how Charles lamb has cultivated this genre in Romantic period and the philosophy of that era through a detailed study of *Dream Children: A Reverie*.

2. Dissecting the genre of essay and that changes in a symbolic overtly political postcolonial context in George Orwell's 'Shooting an Elephant'.

3. Discussing how the symbolic act of 'shooting the elephant' reflects on the 'the real nature of imperialism—the real motives for which despotic governments act', how the essay broadens the focus to tyranny in general and not just imperialism. A cross-referential study of Orwell's *Animal Farm* and *1984* for a better understanding of the prescribed text.

4. Analysing the significance of fate, destiny and coincidence in Thomas Hardy's craft of storytelling.

5. Examining the larger framework and socio-political scenario of Victorian England in *The Mayor of Casterbridge* and Thomas Hardy's portrayal of the main protagonist and his treatment of women in the novel.

- **CC5 (SEMESTER 3, CODE – ENG-A-CC-3-5-TH/TU)**
  AMERICAN LITERATURE: 6 CREDITS

COURSE OBJECTIVES :

This course will examine the roots of American literature by focusing multiple genres—poetry, drama, stories and novel. It explores literature that reveals and emerges from multiple perspectives such as race, gender, ethnicity, socio-economic class and historical period. Various concepts like Antebellum and Postbellum America, Puritanism, Transcendentalism, the American Romantics and American Frontier will be introduced to the students. They will have an awareness

of the social, historical, literary and cultural elements of the changes in American literature by identifying and describing distinct literary characteristics of American literature and analyze literary works of eminent American writers.

This course offers introduction to American Dream, Race, Ethnicity, Multiculturalism and Realism. The students will inculcate a rhetorical approach to the literary study of American texts and also the conceptions, generalizations, myths and beliefs about American cultural history.

COURSE OUTCOMES:

1. After successful completion of this course in semester III, students will be able to-

2. understand the depth and diversity of American literature, keeping in mind the history and culture of the United States of America from the colonial period to the present.
3. understand the social-cultural-ecological-political, historical, religious and philosophical contexts of the American spirit in literature including the idea of democracy, Millennial Narratives, the Myth of Success, the American Adam, the Myth of the Old South, the Wild West, Melting pot, Multiculturalism, etc.
4. evaluate the thoughts, beliefs, customs, struggles, and visions of African American writers
5. Understand the American style of writing and ideologies like Transcendentalism, corruption, pride, power and obsession along with spiritualism and Christian values.
6. Critically analyze American literary texts in the light of several movements in literature and understand the changing faces of texts with developments in culture. Students can compare/contrast literary works through an analysis of genre, theme, character, and other literary devices
7. understand the changing notions of class, gender, ethnicity in a postcolonial, diasporic and neocolonial world order.

CC6 (SEMESTER 3, CODE – ENG-A-CC-3-6-TH/TU) POPULAR LITERATURE: 6 CREDITS

Course Objective:

The syllabus for Core Course 6 (CC 6) of the Choice Based Credit System is designed to familiarize students with the notions of Popular Culture. They'll get to know about the practices, beliefs, and objects that are dominant or prevalent in a society at a given point in time and how they are interspersed with literature of that time or age. The course revolves around certain selected texts that shall aim at providing the students with a comprehensive understanding of the term 'Popular Culture' and how it influences an individual's outlook towards certain topics.

Course Outcomes:

The completion of the course is supposed to benefit the students in the following ways:

1. It will encourage students to analyse the complexities of popular culture and its social and cultural function.
2. It will enable students to perceive how gender, sexuality, race, ethnicity, class and other socially codified markers of identity are represented in popular culture.
3. It will also help the students to explore the many competing theories, methods, concepts and frameworks that surround, explain and situate popular culture, examine popular culture examples and discuss critical issues such as ethics, politics and histories.

- ## CC7 (SEMESTER III, BRITISH POETRY AND DRAMA, 17th-18th CENTURY: 6 CREDITS)

Course Objectives:

The syllabus for the Core Course 7 (CC7) is designed to introduce the students to the literary trends of English literature during the seventeenth and eighteenth centuries. The module prescribes texts by eminent authors like John Milton, Alexander Pope, John Webster and Aphra Behn, who have contributed significantly in shaping the literary output of the era.

Course Outcome:

The completion of the course would enable the students to:

1. Develop a thorough understanding of the various eras in the history of English literature including the Renaissance, Restoration and Neoclassical periods through the perusal of representative works of the time.
2. Investigate the way the volatile socio-political scenario influenced the literary production of the era.
3. Gain insights into the genre of Comedy of Manners through an appreciation of Aphra Behn, the one of the most prolific female figures of Restoration theatre.
4. Decode the stylistic aspects of epic poetry and mock-heroic poetry which is quintessential for comprehending the works of Milton and Pope included in the module.

- **CC3/GE3 (SEMESTER 3, CODE – ENG-G-CC-3-3-TH/TU) - 6 CREDITS**

(5 CREDITS THEORY AND 1 CREDIT TUTORIAL)

WOMEN'S WRITING AND WOMEN'S EMPOWERMENT

COURSE OBJECTIVES:

This paper on Women's Writing and Women's Empowerment introduces students to a body of literature that has emerged with growing feminist awareness of women's lives and their representation. It invites students to examine how women's texts pay attention to the historical and political conditions of their times, to the status and condition of women and to the ways in which they embody a politics of resistance. It expects students to look at the way a woman writer participates in the questions of selfhood, at women's relations with men and with other women, and at the implications of women speaking, writing, and empowering themselves by finding their own voices and interrogating women's work and roles in society.

COURSE OUTCOMES :

After successful completion of this course in semester III, students will be able to -

1. Learn how and on what grounds women's writing can be considered as a separate genre. They can examine and appreciate the role played by socio-cultural-economic contexts in defining women. It will enlighten them about the issues and concerns of the women writers of the developed and developing countries. They can understand and appreciate the representation of female experience in literature.

2. Analyze the Literary texts through the perspective of gender to achieve particular literary, rhetorical and aesthetic effects.The students will have an awareness of class, race and gender as social constructs and how they influence women's lives. They will be equipped with analytical, critical and creative skills to interrogate the biases in the construction of gender and patriarchal norms.

3. To explore the writing style of women, the students come to know some of the developments, themes, and narrative strategies of women's writing. Students can analyse literary texts through the perspectives of gender,

knowing the central points of a selection of feminist theory, and can use it as a context for reading literary texts.

4. Understand various perspectives in Women's Writing which represents women’s voices and histories, breaking the silence of patriarchal oppression and the students will come to know how these significant Others of the human population and their writings contributed to our understanding of womanhood and authorship.

- **LCC (L1)-1 (SEMESTER III, CODE – ENG-G-LCC-1-3-1-TH/TU) - 6 CREDITS (5 CREDITS THEORY AND 1 CREDIT TUTORIAL)**

Programme Objective:

This course is designed to help the students to enhance language and communication skills. The primary objective of the course is to familiarize the students with the varieties of language – formal and informal, correct and incorrect, and also help them understand the difference between American English and British English among other things.

Programme Outcomes:

The completion of the course is supposed to benefit the students in the following ways:

1. It aims to help the students attain communicative competence so that they can use language accurately and appropriately
2. It’ll help them to understand the basic features of communication and aim at improving language skills.
3. This course will also allow the students to gain useful letter/report writing tools, tips and techniques to effectively apply the skills to their everyday workplace correspondence.

4. It will also demonstrate the particulars of writing effective emails, whilst improving punctuation and grammar. Also making sure that the style, content and message is concise, correct and appropriate.

- **SEC-A2 (SEMESTER III, BUSINESS COMMUNICATION: 2 CREDITS)**

Course Objectives:

This paper is a skill enhancement course under the new CBCS system that helps students grow tools for acquiring language and literary skills. The primary objective of this paper is to help students write letters, reports and notices which would enable them to navigate through business communication smoothly in professional field. In any organized job sector- governmental or corporate, one is expected to already know how to write formal curriculum vitae, formal letters, reports and minutes of any meeting held. This course is directed towards that professional training.

Course Outcomes:

After completion of this course in semester three, students would be able to-

1. Understand the significance of business communication in any organized job sector or even how to write any formal letter to bank, post office or editor of a newspaper for our daily existence.
2. Comprehend how business communication is only relevant for a working professional but for anyone interacting with any governmental services necessary for our quotidian lives.
3. Write their curriculum vitae for applying to any jobs or even the letters of acceptance or rejection afterwards.
4. Navigate through e-correspondence. In today's time and age, it is absolutely mandatory to know how one should write any emails and the professional etiquettes of writing one.

- **CC8 (SEMESTER IV, CODE – ENG-A-CC-4-8-TH/TU) 18TH CENTURY BRITISH LITERATURE: 6 CREDITS**

Course Objective:

The objective of this course is to provide the students with an in-depth assessment of the social and the intellectual background of 18th century British Literature. The course will explore themes of social upheaval, reversals of personal status, political satire, geographical exploration and the comparison between the supposed natural state of man and the supposed civilized state of man in 18th Century Britain.

Course Outcomes:

1. This course will enable the students to identify and describe distinct literary characteristics of the 18th century British literature driven by reason, intellect, correctness and satirical spirit.
2. It will help them to develop an understanding of 18th-century British literature within its cultural and historical context.
3. It will also allow the students to evaluate how novel as a genre blossomed in England in the first half of the 18th century - to analyze the various social and economic causes of the novel's popularity and thus its influence in the depiction of individual character, society, culture, and politics.
4. It will also provide a deeper insight into the sophistication of theatrical thinking during this period, with complex subplots and characters intended as ironic parodies of common stereotypes.

- **CC9 (Semester IV, BRITISH ROMANTIC LITERATURE : 6 CREDITS)**

Course Objectives:

The syllabus for Core Course 9 (CC9) under the Choice Based Credit System is designed to familiarize the students with the Romantic Age, an important

period of literary development in the history of English literature. The course is woven around selected texts by contemporary literary stalwarts in order to introduce the students to the various literary trends and genres of the time.

Course Outcome:

The completion of the course in semester four would enable the students to:

1. Gain insights into the unique traits of the literary movement of "Romanticism" through the representative works of eminent writers like William Wordsworth, John Keats , Charles Lamb and Mary Shelley.
2. Examine the way literary devices like symbolism, allegory and metaphor were employed by contemporary writers in order to articulate their artistic vision.
3. Understand the way concepts like idealism, individualism and pantheism percolated into the literary output of the Romantic era.
4. Investigate the efficacy of important Romantic concepts like "imagination" and "fancy" through the perusal of iconic texts like Samuel Taylor Coleridge's *Biographia Literaria,* which features among the list of recommended readings for the course.
5. Appreciate the genre of essay as it was cultivated in the Romantic period by eminent essayists like Charles Lamb, who incorporated within it the intricacies of dream-narrative and autobiographical elements.

- **CC10 (SEMESTER 4, CODE – ENG-A-CC-4-10-TH/TU)**
  19th CENTURY BRITISH LITERATURE: 6 CREDITS

COURSE OBJECTIVES:

The nineteenth century witnessed extraordinary social and cultural change in Britain, from the rise of industrial capitalism to the emancipation of women, from the decline of Christian belief to the growth of Empire, from urbanisation to the emergence of mass literacy. This course will introduce students to some significant texts and literary movements of the period, in the wider context of social transformation and emerging literary practices. Issues to be considered will include the establishment of the novel as the dominant literary genre, the ways in which social values are encoded and contested in literary texts, and the relationship of traditional and experimental practices in poetic forms. Students will here encounter the poetry that is characteristic of the Victorian period – forms like the dramatic monologue, the love poem, pre-Raphaelite experiments and the beginnings of modern poetic experiments by Hopkins. They will also find examples of the great Victorian fiction that closely followed the social concerns of the period and experimented with narrative voice and perspective. The course aims to develop students' analytic and critical skills through an engagement with a range of issues and methodologies in literary studies.

COURSE OUTCOMES:

After successful completion of this course in semester IV, students will be able to –

1. Identify and analyze the socio-economic-political contexts that influence the literature of the period. Students will be acquainted with the historical and political awareness of literary texts as reflected in the transition from nature to culture across various genres.

2. Appreciate female voices of the Victorian period and understand the female writer’s role / position in society, the tension between the private domestic sentiments and the larger public concerns, the contemporary responses and modern critical re-assessments.

3. Familiar with the pattern of development and change in the themes and literary techniques used by the Victorian novelists and poets. Students will be acquainted with various prose and poetic styles.

4. To understand the existing conflict between faith and doubt in Victorian society.

5. Have an analytical knowledge of some of the key aspects of Victorian literature and culture. They will come to know how to use primary and secondary sources to explore relevant historical and cultural contexts, and how to use those contexts for their readings of literary texts.

6. Analyze, discuss and write critically about the use of supernatural and gothic tropes and their significance in a range of Victorian texts. Students will be enlightened with a range of Victorian literature in relation to a range of contexts including Victorian anxieties about modernity, madness, sexual transgression and disease.

- **SEC-B2 (Semester IV, Academic Writing and Composition: 2 Credits)**

Course Objectives:

This paper is a skill enhancement course under the new CBCS system that helps students to learn how to write academic papers. Unlike any other formal piece of writing, academic writing is based on a thorough, impersonal and objective research on a given topic. It enables students to hone critical thinking skills and research aptitude. It is also equally significant for students what plagiarism means in academic field and what regulations or norms one must follow for conducting ethical research. This particular course is extremely relevant for students who want to pursue higher studies where they have to actively write term papers and learning how to do citation and bibliography would give them an advantage.

Course Outcomes:

After the completion of this course, students will be able to-

1. Understand what entails in an academic piece of writing and how it is different from any other formal or creative piece of writing.
2. Comprehend how to conduct an ethical research work, put citation, references and prepare bibliography at the end of an academic paper.
3. Besides teaching academic writing, this course also teaches students to summarize or paraphrase academic works which is essential for preparing notes and answers.
4. Write critical appreciation of already existing research works and to conduct literature review.

- **CC4/GE4 (SEMESTER IV, ACADEMIC WRITING : 6 CREDITS)**

Course Objectives:

The course is aimed at the enhancement of creative faculties of students by honing their skills of interpretative analysis and critical thinking. The paper helps the students to learn the techniques of writing essays, paraphrases and academic articles. It also involves introducing the students to various styles of citation that are integral for writing academic papers. The overall agenda of the course lies in developing the research aptitude of the students.

Course Outcome:

The completion of the course would help the students to:

1. Engage in critical thinking within a structured framework.
2. Acquire the skills of academic writing which would equip the students to tackle with ease the term papers and dissertations during the course of their academic career.
3. Develop a thorough understanding about the ethics of conducting academic research.

4. Maintain the etiquettes of academic writing by providing proper citations and refraining from unethical academic practices like plagiarism.

- **LCC2- 1 (Alternative English, Semester IV, Language, Society and Personality: 6 Credits)**

Course Objectives:

This course is part of the 'Alternative English' section under the new CBCS system. The primary objective of this course is to familiarize students with the literary works of various authors, social reformers and historians. This course brings together a mélange of works by Shashi Tharoor, Ismat Chughtai and Ramachandra Guha to look at the project of nation building and various social reformers and litterateurs who have had significant influence over Indian culture. This course also introduces a few academic essays on Gandhi, Tagore and Ishwar Chandra Vidyasagar to dissect the how their works in various sectors have eventually contributed to the building of modern India.

Course Outcomes:

After the completion of this course students will be able to-

1. Comprehend how different personalities such as Gandhi, Tagore and Ishwar Chandra Vidyasagar have helped to shape a modern and secular India.
2. Study literary works of different authors who are not necessarily fiction writers, but rather social reformers and historians. It would solidify their understanding of English non-fiction pieces and the current conflicted socio-political scenario of modern India on which these pieces are based on.
3. Understand how literature is not just imaginary stories but rather a reflection of the realism of human existence which is also primarily shaped by the political and historical backdrop of any nation.

CC11 (SEMESTER 5, CODE – ENG-A-CC-5-11-TH/TU) WOMEN'S WRITINGS: 6

CREDITS

COURSE OBJECTIVES:

This paper on Women's Writing introduces students to a body of literature that has emerged with growing feminist awareness of women's lives and their representation. It invites students to examine how women's texts pay attention to the historical and political conditions of their times, to the status and condition of women and to the ways in which they embody a politics of resistance. It expects students to look at the way a woman writer participates in the questions of selfhood, at women's relations with men and with other women, and at the implications of women speaking, writing, and empowering themselves by finding their own voices and interrogating women's work and roles in society.

COURSE OUTCOMES :

After successful completion of this course in semester V, students will be able to -

1. Learn how and on what grounds women's writing can be considered as a separate genre. They can examine and appreciate the role played by socio-cultural-economic contexts in defining women. It will enlighten them about the issues and concerns of the women writers of the developed and developing countries. They can understand and appreciate the representation of female experience in literature.

2. Analyze the Literary texts through the perspective of gender to achieve particular literary, rhetorical and aesthetic effects. The students will have an awareness of class, race and gender as social constructs and how they influence women's lives. They will be equipped with analytical, critical and creative skills to interrogate the biases in the construction of gender and patriarchal norms.

3. To explore the writing style of women, the students come to know some of the

developments, themes, and narrative strategies of women's writing. Students can analyse literary texts through the perspectives of gender, knowing the central points of a selection of feminist theory, and can use it as a context for reading literary texts.

4. Understand various perspectives in Women's Writing which represents women's voices and histories, breaking the silence of patriarchal oppression and the students will come to know how these significant Others of the human population and their writings contributed to our understanding of womanhood and authorship.

CC12 (SEMESTER 5, ENGA, EARLY 20 TH CENTURY BRITISH LITERARATURE, 6 CREDITS)

Course Objectives:

The syllabus for Core Course 12 (CC12) of the Choice Based Credit System is designed to familiarize the student with the British literature of the early twentieth century which is integral for developing a consummate of English literature. The course is woven around selected texts that are integral for comprehending the relation between the changing intellectual climate andliterary developments of the period.

Course Outcomes:

After the successful completion of the course, the students will –

1. Be familiarized with the works of the twentieth century stalwarts like G.B. Shaw, T.S. Eliot, W. B. Yeats, Wilfred Owen and D.H. Lawrence, whose

contribution in the development of the literature of the modern era cannot negated.

2. Develop an understanding about the twentieth century literary movement of Modernism and the way it influenced the literary artefacts of the time.
3. Be introduced to the literary techniques like stream of consciousness, interior monologue that were a part of the literary experimentation engaged in by the practitioners of Modernism.
4. Be acclimatized with the genre of War Poetry through the perusal of poets like Wilfred Owen.
5. Develop an understanding of the insights, conventions, experimentations associated with the Modern literary texts, including poetry, novel and plays, as also gain knowledge of the socio-political and philosophical undercurrents inherent in these early twentieth century literary productions.

DSE-A1 (SEMESTER 5, CODE –ENG-A-DSE-A-5-1-TH/TU) MODERN INDIAN WRITING IN ENGLISH TRANSLATION: 6 CREDITS

Course Objectives:

This course is designed to familiarize the students with the various features of Indian literature in English. It will help the students to understand the multifaceted nature of cultural identities in the various Indian literatures through indigenous literary traditions often involving a comparative study of the original and the translated texts to see the process of negotiation that constructs, and is constructed in, the English language translation.

Course Outcomes:

After Completion of this Course Students will be able to -

1. Perceive how and why Indian literature emerged as a distinct field of study.
2. Trace the development of history of English literature from its beginning to the present day.
3. Interpret the works of great writes of Indian writers in English.

4. Demonstrate, through discussion and writing, an understanding of significant cultural and societal issues presented in Indian English literature.

DSEA2 (SEMESTER 5, CODE – ENG-G-DSEA-5-2-TH/TU) - 6 CREDITS

MODERN INDIAN WRITING IN ENGLISH TRANSLATION

Course Objectives:

This course is designed to familiarize the students with the various features of Indian literature in English. It will help the students to understand the multifaceted nature of cultural identities in the various Indian literatures through indigenous literary traditions often involving a comparative study of the original and the translated texts to see the process of negotiation that constructs, and is constructed in, the English language translation.

Course Outcomes:

After Completion of this Course Students will be able to -

1. Perceive how and why Indian literature emerged as a distinct field of study.
5. Trace the development of history of English literature from its beginning to the present day.
6. Interpret the works of great writes of Indian writers in English.
7. Demonstrate, through discussion and writing, an understanding of significant cultural and societal issues presented in Indian English literature.

DSE-B2 (SEMESTER 5, CODE – ENG-A-DSE-B-5-2-TH/TU)
CONTEMPORARY

INDIA: WOMEN AND EMPOWERMENT: 6 CREDITS

COURSE OBJECTIVES:

The syllabus for Discipline Specific Elective B2 (DSE-A3) under the Choice Based Credit System (CBCS) is structured to provide students with a comprehensive idea about the Social Construction of Gender, History of Women's Movement in India in the pre-independence era and History of Women's Movement in India in the post-independence era. The course is designed to focus on the contemporary issues like Domestic Violence, Female Foeticide, Sexual Harassment, Dalit Women's struggle and Double Marginalization.

COURSE OUTCOMES:

After successful completion of this course in semester V, students will be able to-

1. Learn the history of the women's movements in India

2. Familiarize with feminist theory and laws; interdisciplinary approaches to the notion of empowerment.

3. Understand the need to analyze and debate over issues that are current in the Indian scenario like female foeticide, gender equality, double marginalization, domestic violence, sexual harassment etc.

LCC (L1)-2 (SEMESTER 5, ENGG, 6 CREDITS, LANGUAGE, IMAGINATION AND CREATIVITY)

Course Objectives:

This syllabus for this module of LCC 1(2) for the Choice Based Credit System is structured to familiarize the students with the use of figurative language and the way it has been used by various British writers like Word worth, Tennyson and Indian poets like Tagore and Derozio in their poetry. Also, the paper has a section for creative writing which is meant to guide the students towards thinking in an original and creative way.

Course Outcome:

The completion of the course will enable the students to—

1. Differentiate between plain language of regular speech and the figurative language that is used in poetry.
2. Appreciate the way figurative language can enhance the aesthetic charms of a literary piece.
3. Be introduced to the various rhetorical devices like metonymy, metaphor, personification and alliteration which will aid them to improve their appreciation of poetry, in particular and literary texts, in general.
4. Be acquainted with the art of creative writing as the syllabus for this course is designed to provide them with the knowledge of writing travelogues, stories and advertisement contents.

CC13 (SEMESTER 6, CODE – ENG-A-CC-6-13-TH/TU)

MODERN EUROPEAN DRAMA: 6 CREDITS

Course Objectives:

The syllabus for Core Course 13 (CC13) under the Choice Based Credit System is designed to introduce the students to the best of experimental and innovative dramatic trends of modern Europe. It will enable the students to understand the causes behind the rise of modern European drama, the social, political and cultural changes associated with it and the origin and major themes related to the Theatre of the Absurd, Epic Theatre, Realistic Theatre etc.

Course Outcomes:

After the completion of this course students will be able to-

1. Learn about the socio-political changes and the element of realism in Modern European drama.

2. Comprehend the characteristics of epic theatre and its respond to the political climate of that time.
3. Understand the realistic aspects of theatre in the works of Ibsen and other dramatists.
4. Reflect upon the great upheaval that the world had undergone during 20th century and the constructive role of literary activism/movements in restoring humane values.

CC14 (SEMESTER 6, ENGA, POSTCOLONIAL LITERATURES, 6 CREDITS)

Course Objective:

The syllabus of CC14 of the Choice Based Credit system is shaped to familiarize the students to Commonwealth Literature which is used to designate literary works from territories that were part of the British colony. The course is woven around texts by English-speaking writers from the Caribbean, Australia, Africa and India and includes texts by Noble Laureates like Pablo Neruda, Derek Walcott, Gabriel Garcia Marquez along with the works of eminent figures like Chinua Achebe, David Malouf and Mamang Dai who are well-noted for their contribution in the field of Postcolonial literature.

Course Outcome:

The completion will enable the students to —

1. Be familiarized with the idea of nation and nationalism and the valorization of cultural identities as it is conveyed through these postcolonial texts.
2. Develop an understanding of the way postcolonial subjectivities have been constructed through a negotiation with the colonial history of a nation.
3. Be aware of the ways such postcolonial texts offer a resistance to the hegemonic metanarratives of colonial discourse and bear testimony to the decolonization struggles of a nation.
4. To appreciate the way these literary texts attest to a nation’s quest for seeking pride in one’s indigenous culture and legacy.

DSE B3 (SEMESTER 6, ENGA, AUTOBIOGRPHY, 6 CREDITS)

Course Objective:

The syllabus for the DSEB 3 of the Choice Based Credit System is designed to introduce the students to the autobiographies of eminent authors, theatre artists, political figures and historians. This course introduces the students to the autobiographies of an eclectic group of people from various walks of life, including Rabindranath Tagore, Mahatma Gandhi, Nirad C. Chaudhuri and Binodini Dasi.

Course Outcome:

The completion of the course will enable the students to—

1. Be familiarized with the changing socio-political situations in India during the nineteenth and twentieth centuries as is reflected through the autobiographical works of these eminent figures.
2. Learn about the experiences, insights and ideologies of these eminent personalities that are incorporated in such works of autobiography.
3. Engage in a comparative understanding of the historical, cultural and sociological analysis of early twentieth century India and the British colonial encounter in India through such pieces of non-fiction.
4. Study the literary works of different authors who are not necessarily writers of fiction but rather theatre artists, politicians and social reformers. It would help the students to appreciate the fact that literature is not just imaginary stories but pieces which reflect the realities of human existence which is shaped by the socio-political forces of the contemporary times.

DSE-A3 (SEMESTER 6, CODE – ENG-A-DSE-A-6-3-TH/TU) PARTITION LITERATURE: 6 CREDITS

COURSE OBJECTIVES:

The syllabus for Discipline Specific Elective A3 (DSE-A3) under the Choice Based Credit System (CBCS) is structured to provide students with a comprehensive idea about the problem, politics, pain and cause of the biggest historical burden of the Indian post colony, the partition, and to make their understanding of the event more comprehensive. This course will provide students with a socio-historical reading of the momentous events of Partition in India, critical interpretations and literary readings of the trauma, guilt, silences and sufferings evoked by Partition and an introduction to the different perspectives on the concepts of borders, boundaries, nation and the consequences of Partition.

COURSE OUTCOMES:

After successful completion of this course in semester VI, students will be able to-

1. explain historical and socio-cultural factors responsible for the Partition of Indian Sub-continent.
2. demonstrate critical understanding of manifestations of the experience of the partition in various art forms.
3. link and analyze the eco-socio-historical-cultural contexts and dimensions related to the Partition of India e.g. nation, nationalism, communication, violence, exile, homelessness, refugee, rehabilitation, resettlement, border and border lands (colonialism and post colonialism), literary responses to the partition in different parts of Indian continent and interpret them.
4. interpret texts and experience and relate it to their contexts and experiences

- **DEPARTMENT OF GEOGRAPHY: COURSE OUTCOME/PROGRAMMEOUTCOME/ PROGRAMME SPECIFIC OUTCOME:**

GEO-A-CC-1-TH

- Understanding Earth's tectonic and structural evolution with reference to geological time scale
- Knowledge about Earth's interior with special reference to seismology and Isostasy.
- Understanding Plate Tectonics as a unified theory of global tectonics: Processes and landforms at plate
- margins and hotspots .
- Understanding origin and types Folds and Faults.
- Unit II: Geomorphology
- Gain knowledge about degradational processes: Weathering, mass wasting, and resultant landforms
- Understanding processes of entrainment, transportation, and deposition by different geomorphic
- agents. Role of humans in landform development
- Explaining Development of river network and landforms on uniclinal and folded structures. Surface
- expression of faults
- Understanding Development of river network and landforms on granites, basalts and limestones [4]
- Understanding Coastal processes and landforms
- Understanding Glacial and glacio-fluvial processes and landforms
- Understanding Aeolian and fluvio-aeolian processes and landforms
- Explaining Role of time in geomorphology: Schumm and Lichty's model. Models on landscape
- evolution: Views of Davis, Penck, King, and Hack. Significance of systems approach

GEO-A-CC-1-01-P – Geotectonics and Geomorphology practical

.

- Measurement of dip and strike using clinometer
- Megascopic identification of (a) *mineral samples*: Bauxite, calcite, chalcopyrite, feldspar, galena, gypsum, hematite, magnetite, mica, quartz, talc, tourmaline; and (b) *rock samples*: Granite, basalt, dolerite, laterite, limestone, shale, sandstone, conglomerate, slate, phyllite, schist, gneiss, quartzite, marble
- Extraction and interpretation of geomorphic information from Survey of India 1:50k topographical maps of plateau region: Construction of relief profiles (superimposed, projected, and composite). Delineation of drainage basins. Construction of relative
- Relief map, slope map (Wentworth's method), drainage density map, stream ordering (Strahler), and bifurcation ratio on a drainage basin (c. 5' x 5')
- Construction of hypsometric curve and derivation of hypsometric integer of a drainage basin (c. 5' x 5') from Survey of India 1:50k topographical maps of plateau region.

GEO-A-CC-1-02-TH – Cartographic Techniques

- Understanding Maps: Components and classification
- Develop Concept and application of scales: Plain, comparative, diagonal and Vernier
- Understanding Coordinate systems: Polar and rectangular
- Concept of generating globe
- Understanding Grids: Angular and linear systems of measurement
  Bearing: Magnetic and true, whole-circle and reduced
- Understanding Concept of geoid and spheroid with special reference to Everest and WGS-84
- Develop Map projections: Classification, properties and uses
- Develop Concept and significance of UTM projection
- Representation of data using dots, spheres and divided proportional circles
- Representation of data using isopleth, choropleth, and chorochromatic maps
- Gain knowledge about Survey of India topographical maps: Reference scheme of old and open series.

GEO-A-CC-1-02-P – Cartographic Techniques practical

.

- Construction of scales: Plain, comparative, diagonal and Vernier
- Construction of projections: Polar Zenithal Stereographic, Simple Conic with one
- standard parallel, Bonne's, Cylindrical Equal Area, and Mercator's
- Thematic maps: Proportional squares, pie diagrams with proportional circles, dots and
- spheres
- Developing Thematic maps: Choropleth, isopleth, and chorochromatic maps

GEO-A-CC-2-03-TH – Human Geography

- Analysing Nature, scope and recent trends. Elements of human geography
- Explaining Human Geography: Resource, locational, landscape, environment
- classifying race and Ethnicity
- Understanding Space, society, and cultural regions (language and religion)
- Unit II: Society, Demography and Ekistics
- Understanding Evolution of human societies: Hunting and food gathering, pastoral nomadism,
- subsistence farming, and industrial society
- Explaining Human adaptation to environment: Case studies of Eskimo, Masai and Maori
- Analysing Population growth and distribution, composition; demographic transition
- Understanding Population–resource regions (Ackerman)
- Analysing Development–environment conflict
- Types and patterns of rural settlements
- Understanding Rural house types in India
- Understanding Morphology and hierarchy of urban settlements

GEO-A-CC-2-03-P – Human Geography practical

.

- Bringing out Spatial variation in continent- or country-level religious composition by divided proportional circles [12]
- Measuring arithmetic growth rate of population comparing two decadal datasets
- Graphical representation and analysis of Types of age-sex pyramids (progressive, regressive, intermediate, and stationary):
- 4.Analysing Nearest neighbour analysis from Survey of India 1:50k topographical maps of plain region (c. 5' x 5')

2.7 GEO-A-CC-2-04-TH – Thematic Mapping and Surveying

- Developing Concepts of rounding, scientific notation. Logarithm and anti-logarithm. Natural and log scales
- Developing Concept of diagrammatic representation of data
- Preparation and interpretation of geological maps
- Preparation and interpretation of weather maps
- Preparation and interpretation land use land cover maps
- Preparation and interpretation of socio-economic maps
- Principal national agencies producing thematic maps in India: NATMO, GSI, NBSSLUP,
- NHO, and NRSC / Bhuvan
- Developing Basic concepts of surveying and survey equipment: Prismatic compass
- Developing Basic concepts of surveying and survey equipment: Dumpy level , Theodolite, Abney level and Laser distance measurer

GEO-A-CC-2-04-P – Thematic Mapping and Surveying practical

- .

- Knowledge about Traverse survey using prismatic compass
- Knowledge about Profile survey using dumpy Level
- Height determination of base accessible and inaccessible (same vertical plane method)
- objects by theodolite
- Interpretation of geological maps with uniclinal structure, folds, unconformity, and Intrusions

GEO-A-CC-3-05-TH – Climatology

- Understanding the nature, composition and layering of the atmosphere.
- To learn Insolation: Controlling factors. Heat budget of the atmosphere.
- Knowledge about temperature: horizontal and vertical distribution. Inversion of temperature: types, causes and consequences.
- Knowledge about on Overview of climate change: Greenhouse effect. Formation, depletion, and significance of the ozone layer.

- To learn about the condensation: Process and forms. Mechanism of precipitation: Bergeron-Findeisen theory, collision and coalescence. Forms of precipitation .
- Knowledge about air mass: Typology, origin, characteristics and modification ‘
- To learn about fronts: Warm and cold, frontogenesis, and frontolysis .
- Understanding Weather: Stability and instability, barotropic and baroclinic conditions .
- Knowledge about circulation in the atmosphere: Planetary winds, jet streams, index cycle .
- Understanding atmospheric disturbances: Tropical and mid-latitude cyclones, thunderstorms .
- Developing knowledge about monsoon circulation and mechanism with reference to India .
- To learn about climatic classification after Thornthwaite (1955) and Oliver .

GEO-A-CC-3-05-P – Climatology Lab

- To learn the measurement of weather elements using analogue instruments: Mean daily temperature, air pressure, relative humidity, and rainfall .
- To learn about Interpretation of a daily weather map of India (any two): Pre-Monsoon, Monsoon, and Post-Monsoon .
- Gaining knowledge about construction and interpretation of hythergraph and climograph (G. Taylor) [15]
- To learn construction and interpretation of wind rose .
- Viva-voce based on laboratory notebook (5 Marks)

GEO-A-CC-3-06-TH – Hydrology and Oceanography

- Understanding systems approach in hydrology. Global hydrological cycle: Its physical and biological role
- Gain knowledge about run off: controlling factors. Infiltration and evapotranspiration. Run off cycle .
- Learn about drainage basin as a hydrological unit. &principles of water harvesting and watershed management.
- Understanding about groundwater: Occurrence and storage. Factors controlling recharge, discharge and movement .
- Gain knowledge about major relief features of the ocean floor: Characteristics and origin according to plate tectonics .
- Learn about physical and chemical properties of ocean water .
- Developing knowledge about water mass, T–S diagram .
- Understanding Air-Sea interactions, ocean circulation, wave and tide .
- To learn about Ocean temperature and salinity: Distribution and determinants .
- Gain knowledge about Coral reefs: Formation, classification and threats .
- To learn Marine resources: Classification and sustainable utilisation .
- Understanding Sea level change: Types and causes .

GEO-A-CC-3- 06-P – Hydrology and Oceanography Lab

- To learn about construction and interpretation of rating curves .
- Developing knowledge about construction and interpretation of hydrographs and unit hydrographs .
- Learn about construction and interpretation of monthly rainfall dispersion diagram (Quartile method), Climatic water budget and Ergograph .
- Learn about construction of Theissen polygon from precipitation data .
- Viva-voce based on laboratory notebook (5 Marks)

GEO-A-CC-3-07-TH – Statistical Methods in Geography

- Learn about importance and significance of statistics in Geography .
- Developing knowledge on discrete and continuous data, population and samples, scales of measurement (nominal, ordinal, interval and ratio) .
- Gain knowledge about sources of geographical data for statistical analysis .
- Collection of data and preparation of statistical tables .
- Learn about sampling: Need, types, significance, and methods of random sampling .
- Understanding theoretical distribution: Frequency, cumulative frequency, normal, and probability .
- Developing knowledge about central tendency: Mean, median, mode, and partition values .
- Learn the measures of dispersion range, mean deviation, standard deviation, and coefficient of variation .

- Developing knowledge about association and correlation: Product moment correlation and rank correlation,
- Learn about regression: Linear and non-linear .
- Learn the time series analysis: Moving average .
- Knowing hypothesis testing: Chi-square test and T-test .

GEO-A-CC-3-07-P – Statistical Methods in Geography Lab

- Learn about construction of data matrix with each row representing an aerial unit (districts / blocks /*mouzas* / towns) and corresponding columns of relevant attributes .
- Developing knowledge based on the above, a frequency table, measures of central tendency, and dispersion would be computed and interpreted using histogram and frequency curve.
- Developing knowledge from the data matrix, a sample set (20%) would be drawn using random, systematic, and stratified methods of sampling and the samples would be located on a map with an explanation of the methods used .
- Developing knowledge based on the sample set and using two relevant attributes, a scatter diagram and linear regression line would be plotted and residual from regression would be mapped with a short interpretation .
- Viva-voce based on laboratory notebook (5 Marks)

GEO-A-CC-4-08-TH – Economic Geography

- Learn the meaning and approaches to economic geography .
- Developing concepts in economic geography: Goods and services, production, exchange, and consumption .
- Developing concept of economic man. Theories of choices .
- Learn about economic distance and transport costs .
- Developing concept and classification of economic activities .
- Learn about factors affecting location of economic activity with special reference to agriculture (von Thünen), and industry (Weber) .
- Developing knowledge on primary activities: Agriculture, forestry, fishing, and mining .
- Developing concept on secondary activities: Classification of manufacturing, concept of manufacturing regions, special economic zones and technology parks .
- Developing concept about tertiary activities: Transport, trade and services .
- Knowledge about transnational sea-routes, railways and highways with reference to India .
- Learn about international trade and economic blocs .
- Knowledge construction about WTO and BRICS: Evolution, structure and functions .

GEO-A-CC-4-08-P – Economic Geography Lab

- Construction and analysis of choropleth mapping of state-wise variation in GDP .
- Construction the proportional divided circles to show State-wise variation in occupational structure by .
- Developing knowledge on Time series analysis of industrial production (India and West Bengal) .
- Construction detour index and shortest path analysis to show transport network analysis .
- Viva-voce based on laboratory notebook (5 Marks)

GEO-A-CC-4-09-TH – Regional Planning and Development

- Developing concept about regions, types and delineation .
- Learn about regional Planning: Types, principles, objectives, tools and techniques .
- Learn about regional planning and multi-level planning in India .
- Knowledge about developing concept of metropolitan area and urban agglomeration .
- Developing concept of growth and development, growth versus development .
- Learn about indicators of development: Economic, demographic, and environmental .
- Developing knowledge on human development: Concept and measurement .
- Learn theories and models for regional development: Cumulative causation (Myrdal) .
- Understanding models and theories in regional development: Stages of development (Rostow), growth pole model (Perroux) .
- Developing knowledge about underdevelopment: Concept and causes .
- Learn about regional development in India: Disparity and diversity .
- Need and measures for balanced development in India .

GEO-A-CC-4-09-P – Regional Planning and Development Lab

- Developing knowledge on delineation of formal regions by weighted index method .
- Developing concept of delineation of functional regions by breaking point analysis .
- Developing knowledge about measurement of inequality by location quotient .
- Learn about measuring regional disparity by Sopher index .
- Viva-voce based on laboratory notebook (5 Marks)

GEO-A-CC-4-10-TH – Soil and Biogeography

- Learn the factors of soil formation .
- Knowing about definition and significance of soil properties: Texture, structure, and moisture .
- Developing knowledge about definition and significance of soil properties: pH, organic matter, and NPK .
- Understanding soil profile. Origin and profile characteristics of lateritic, podsol and chernozem soils .
- To learn about soil erosion and degradation: Factors, processes and management measures.

Humans as active agents of soil transformation .

- Gaining knowledge about principles of soil classification: Genetic and USDA. Concept of land capability and its classification .
- Learn about concepts of biosphere, ecosystem, biome, ecotone, community and ecology .
- Learn about concepts of trophic structure, food chain and food web. Energy flow in ecosystems .
- Understanding Classification of world biomes (Whittaker). Geographical extent and characteristics of tropical rain forest, savanna, hot desert, taiga and coral reef biomes .
- Gain knowledge about bio-geochemical cycles with special reference to carbon dioxide and nitrogen .
- Understanding causes of deforestation, consequences and management .
- Learn about biodiversity its definition, types, threats and conservation measures .

GEO-A-CC-4-11-P – Soil and Biogeography Lab

- Learn about determination of soil reaction (pH) and salinity using field kit .
- Knowledge about determination of soil type by ternary diagram textural plotting.
- Anlyse plant species diversity determination by matrix method .
- Learn about time series analysis of biogeography data .
- Viva-voce based on laboratory notebook (5 Marks)

GEO-A-CC-5-11-TH – Research Methodology and Fieldwork

- Understanding the meaning, types and significances of research in geography.
- To learn literature review and formulation of research design.
- To learn how to defining research problem, objectives and hypothesis.
- Knowledge about the research materials and methods.
- To learn techniques of writing scientific reports: Preparing notes, references, bibliography, abstract, and keywords
- Understanding plagiarism: Classification and prevention
- Gain knowledge about the fieldwork in Geographical studies: Role and significance. Selection of study area and objectives. Pre-field academic preparations. Ethics of fieldwork.
- Apprehension of field techniques and tools: Observation (participant, non-participant), questionnaires (open, closed, structured, non-structured). Interview
- Understanding field techniques and tools: Landscape survey using transects and quadrants, constructing a sketch, photo and video recording.
- To analyse the positioning and collection of samples. Preparation of inventory from field data
- To learn Post-field tabulation, processing and analysis of quantitative and qualitative data
- fieldwork: Logistics and handling of emergencies
- Knowledge about

GEO-A-CC-5-11-P – Research Methodology and Fieldwork

- Perception and comprehension about the research methodology & filed work.

GEO-A-CC-5-12-TH – Remote Sensing, GIS and GNSS

- To learn about principles of Remote Sensing (RS): Types of RS satellites and sensors
- Developing concepts about the Sensor resolutions and their applications with reference to IRS and Landsat missions .
- Understanding the Image referencing schemes and acquisition procedure of free geospatial data from NRSC / Bhuvan and USGS .
- Knowledge about preparation of False Colour Composites from IRS LISS-3 and Landsat TM / OLI data.
- Understanding the principles of image interpretation. Preparation of inventories of landuse land cover (LULC) features from satellite images.
- Gain knowledge about the acquisition and utilization of free Digital Elevation Model data: CartoDEM, SRTM and ALOS .
- To learn about the GIS data structures types: Spatial and non-spatial, raster and vector
- Understanding the principles of preparing attribute tables, data manipulation, and overlay analysis.
- Understanding the principles and significance of buffer preparation.
- Understanding the principles and significance of overlay analysis
- Understanding the principles of GNSS positioning and waypoint collection.
- Analysing the principles of transferring of GNSS waypoints to GIS. Area and length calculations from GNSS data.

GEO-A-CC-5-12-P – Remote Sensing, GIS and GNSS

- knowledge about Image georeferencing and enhancement. Preparation of reflectance libraries of LULC features across different image bands of IRS L3 or Landsat OLI data .
- To learn Supervised image classification, class editing, and post-classification analysis .
- To learn digitization of features and administrative boundaries. Data attachment, overlay, and preparation of annotated thematic maps.
- To learn Waypoint collection from GNSS receivers and exporting to GIS database .

GEO-A-DSE-A-5-01-TH – Fluvial Geomorphology

- To learn about the scope and components of Fluvial Geomorphology. Rivers as hydro-systems. Geographers' approach to study of rivers.
- Analysing the processes and significance of sediment entrainment. The Hjulstrom curve
- Understanding the models of channel initiation and network development.
- To learn about the linear, areal and altitudinal properties of drainage basin. Horton's stream laws.
- Understanding the Fundamentals of Rosgen stream classification system.
- knowledge about the fluvial morphodynamics: Adjustment of channel forms to tectonic, climatic, sea level and land use changes.

- To learn about the large rivers of the tropics: Characteristics and significance.
- To learn about the concepts regarding the fluvial landforms: Terraces, alluvial fans, badlands and accretion topography.
- Understanding the riverbank erosion and river degeneration: Processes, management, and impact on land use.
- knowledge about the human intervention on fluvial systems : Types and consequences .
- Understanding the concept and significance of ecological flow.
- Gain knowledge about the integrated watershed management: Principles and significance.

GEO-A-DSE-A-5-01-P – Fluvial Geomorphology

- To learn about the concepts regarding the identification of drainage patterns and construction of channel profiles from Survey of India 1:50k topographical maps. Computation of sinuosity indices from river planforms.
- To learn the explanation of riverbank erosion: Quantification of eroded area and vulnerability zonation using multi- dated maps and images.
- knowledge about the flood frequency analysis from hydrographs.
- Analyses of pebbles: Sphericity and roundness indices.

GEO-A-DSE-B-5-05-TH – Cultural and Settlement Geography

- Understanding the definition, scope and content of cultural geography.
- knowledge about development of cultural geography in relation to allied disciplines.
- Gain knowledge about the cultural hearth and realm, cultural diffusion, diffusion of major world religions and languages.
- Learn about the cultural segregation and cultural diversity, culture, technology and development.
- Knowing the Races and racial groups of the world.
- Understanding the cultural regions of India.
- Learn about the rural settlement: Definition, nature and characteristics.
- Understanding the rural settlement: Site, situation, and morphology
- Gain knowledge about the rural house types with reference to India, social segregation in rural areas. Census of India categories of rural settlements .
- Developing knowledge about urban settlement: Census of India definition and categories.
- Developing concepts regarding urban morphology: Models of Burgess, Hoyt, Harris, and Ullman.
- knowledge about city-region and conurbation. Functional classification of cities: Schemes of Harris, Nelson, and McKenzie.

GEO-A-DSE-B-5-05-P – Cultural and Settlement Geography

- Develop knowledge about mapping language distribution of India.
- Learning about CD block-wise housing distribution in any district of West Bengal using proportional square.
- Identification different rural settlement types from Survey of India 1:50k topographical maps.
- knowledge about social area analysis of a city (After Shevky & Bell) .

GEO-A-CC-6-13-TH – Evolution of Geographical Thought

- To learn about Development of pre-modern Geography: Contributions of Greek, Chinese, and Indian geographers.
- To learn about impact of 'Dark Age' in Geography and Arab contributions.
- Knowledge about geography during the age of 'Discovery' and 'Exploration' (contributions of Portuguese voyages, Columbus, Vasco da Gama, Magellan, Thomas Cook).
- Understanding the transition from cosmography to scientific Geography (contributions of Bernard Varenius and Immanuel Kant). Dualism and Dichotomies (General vs. Particular, Physical vs. Human, Regional vs. Systematic, Determinism vs. Possibilism, Ideographic vs. Nomothetic).
- Gaining knowledge about evolution of Geographical thoughts in Germany, France, Britain, and United States of America
- Knowing the contributions of Humboldt and Ritter.
- Knowing the contributions of Richthofen, Hartshorne–Schaeffer, Ratzel, La Blache.
- Understanding the trends of geography in the post-World War-II period: Quantitative revolution, systems approach .
- Learn about structuralism and historical materialism.
- Developing perception regarding changing concept of space with special reference to Harvey .
- Understanding the evolution of Critical Geography: Behavioural, humanistic, and radical .
- Comprehensive study towards post modernism: Geography in the 21st Century.

GEO-A-CC-6-13-P – Evolution of Geographical Thought

- Learn about the changing perception of maps of the world (Ptolemy, Ibn Batuta, Mercator)comprehensive study.
- Construction of mapping voyages; Columbus, Vasco da Gama, Magellan, Thomas Cook
- Group Presentation of five to ten students on any selected school of geographical thought .

GEO-A-CC-6-14-TH – Hazard Management

- Understanding the classification of hazards and disasters. Hazard continuum.

- Learn about approaches to hazard study: Risk perception and vulnerability assessment. Hazard paradigms.
- Gain knowledge about the responses to hazards: Preparedness, trauma, and aftermath. Resilience, capacity building.
- Knowing about hazards mapping: Data and geospatial techniques .
- Learn about earthquake: Factors, vulnerability, consequences, and management .
- Learn about landslide: Factors, vulnerability, consequences, and management.
- Learn about land subsidence: Factors, vulnerability, consequences, and management.
- Learn about tropical cyclone: Factors, vulnerability, consequences, and management.
- Learn about flood: Factors, vulnerability, consequences, and management.
- Learn about riverbank erosion: Factors, vulnerability, consequences, and management.
- Learn about fire: Factors, vulnerability, consequences, and management.
- Understanding the biohazard: Classification, vulnerability, consequences, and management

GEO-A-CC-6-14-P – Hazard Management

- Perception and comprehension about a selected hazard management through preparation and submission of a project report.

GEO-A-SEC-A-3-02-TH – Tourism Management

- Understanding the scope and Nature of tourism management
- Analysing different types of tourism in national and international level
- Understanding different factors before planning tourist destination , knowledge about tourism product.
- Understanding impact of tourism. Learning the use of IT in tour planning and operation.
- Case study of Important tourist destination in India.

GEO-A-SEC-B-4-03-TH – Rural Development

- Getting the knowledge about the concept of Rural Development and its measure.
- Studying different approaches to rural development particularly of Mahatma Gandhi, Lewis and Myrdal.
- Getting knowledge about important rural development and poverty alleviation project of Central Govt. of India.
- Understanding Panchayeti raj system and it role in rural government.

GEO-A-DSE-A-6-04-TH – Resource Geography

- Learn about natural resources: Concept and classification.
- Gain knowledge towards the approaches to resource utilization: Utilitarian, conservational, community based adaptive.
- Understanding the significance of resources: Backbone of economic growth and development.
- Learn about pressure on resources. Appraisal and conservation of natural resources.
- Knowledge regarding Problems of resource depletion at global scenario.
- Learn about sustainable resource development.

- Learn about distribution, utilisation, problems and management of metallic mineral resources: Iron ore, bauxite, copper .
- Learn about distribution, utilisation, problems and management of non-metallic mineral resources: Limestone, mica, gypsum .
- Learn about distribution, utilisation, problems and management of energy resources: Conventional and non-conventional.
- Understanding the contemporary energy crisis and future scenario.
- Knowledge regarding politics of power resources.
- Learn about limits to growth and sustainable use of resources & concept of resource sharing.

GEO-A-DSE-A-6-04-P – Resource Geography

- Construction of mapping and area estimate of changes in forest or vegetation cover from maps and/or satellite images .
- Construction of mapping and number estimate of changes in water bodies from maps and/or satellite images .
- Understanding the decadal changes in state-wise production of coal and iron ore.
- Learning the computation of Human Development Index & comparative decadal change of top five Indian states.
-

GEO-A-DSE-B-6-08-TH – Geography of India

- Learn about physiographic divisions with reference to tectonic provinces.
- Understanding the climate, soil and vegetation: Classification and interrelation .
- Developing knowledge about population: Distribution, growth, structure, and policy .
- Gain knowledge regarding tribes of India with special reference to Gaddi, Toda, Santal, and Jarwa.
- Developing concept of agricultural regions. Green revolution and its consequences.
- Learn about mineral and power resources: Distribution and utilisation of iron ore, coal, petroleum, and natural gas.
- Understanding the industrial development: Automobile and information technology.
- Learn about regionalisation of India: Physiographic (R.L. Singh) and economic (P. Sengupta).
- Developing concept of physical perspectives: Physiographic divisions, forest and water resources.
- Learn about resources: Agriculture, mining,, and industry.
- Understanding the population: Growth, distribution, and human development .
- Gain knowledge regarding regional issues: Darjeeling Hills and Sundarban.

GEO-A-DSE-B-6-08-P –Geography of India

- Construction of monthly temperature and rainfall graphs of five select stations from different physiographic regions of India.

- Understanding the crop combination & comparison of any two contrasting districts from West Bengal.
- Understanding annual trends of production of mineral resources and manufacturing goods over two decades with the help of statistical techniques.
- Construction of composite Index.

GEOGRAPHY GENERAL

GEO-G-CC-1-TH- PHYSICAL GEOGRAPHY

- Understanding Earth's tectonic and structural evolution with reference to geological time scale
- Knowledge about Earth's interior with special reference to seismology and Isostasy.
- Understanding Plate Tectonics as a unified theory of global tectonics: Processes and landforms at plate
- Understanding origin and types Folds and Faults.
- Gain knowledge about degradational processes: Weathering, mass wasting, and resultant landforms
- Understanding processes of entrainment, transportation, and deposition by different geomorphic
- Understanding Development of river network and landforms on granites, basalts and limestones [4]
- Understanding Coastal processes and landforms
- Understanding Glacial and glacio-fluvial processes and landforms
- Understanding Aeolian and fluvio-aeolian processes and landforms
- evolution: Views of Davis, Penck, King. Significance of systems approach.
- Understanding systems approach in hydrology. Global hydrological cycle: Its physical and biological role
- Gain knowledge about run off: controlling factors. Infiltration and evapotranspiration. Run off cycle .
- Learn about drainage basin as a hydrological unit. &principles of water harvesting and watershed management.
- Gain knowledge about major relief features of the ocean floor: Characteristics and origin according to plate tectonics .
- Learn about physical and chemical properties of ocean water .
- To learn Marine resources: Classification and sustainable utilisation .

GEO-A-CC-1-01-P – Geotectonics and Geomorphology practical

- Measurement of dip and strike using clinometer
- Megascopic identification of (a) *mineral samples*: Bauxite, calcite, chalcopyrite, feldspar, galena, tourmaline; and
  (b) *rock samples*: Granite, basalt, dolerite, laterite, limestone, shale, sandstone, conglomerate, slate, phyllite, schist, gneiss, quartzite.
- Extraction and interpretation of geomorphic information from Survey of India 1:50k
- topographical maps of plateau region: Construction of relief profiles (superimposed,

projected, and composite). Construction of relative relief map, (c. 5' x 5')

- Extraction and interpretation of of drainage characteristics from Survey of India 1:50k topographical maps of plateau region.

GEO-G-CC-2-02-TH – Environmental Geography

- Understanding insolation and Heat Budget and horizontal and vertical distribution of atmospheric temperature and pressure
- Learn about planetary wind systems And Indian Monsoons: Mechanisms and controls
- Developing knowledge about tropical and temperate cyclones and thunderstorms .
- Learn about of global climatic change: Greenhouse effect. Ozone depletion .
- Knowing the scheme of world climatic classification by Köppen.

- Learn about factors of soil formation.
- Knowing about soil profile development under different climatic conditions.
- Learn about physical and chemical properties of soils as example Texture, structure, pH, salinity, and NPK status .
- Developing knowledge about USDA classification of soils.
- Learn about causes of Soil erosion and its management.

- Learn about ecosystem and Biomes. Distribution and characteristics of major biomes of world.
- Developing knowledge about Plant types, ecological adaptations:
- Learn about biodiversity and its types, threats and management with special reference to India.

GEO-G-CC-2-02-P – Environmental Geography

- Learn to Interpret of daily weather map of India from any season: Pre-Monsoon or Monsoon or Post-Monsoon
- Developing knowledge to construction and interpretation of hythergraph, climograph (G. Taylor) and wind rose (seasonal) .
- Developing knowledge to identify soil type by ternary diagram textural plotting.
- Learn to prepare peoples' biodiversity register

GEO-G-CC-3-03-TH – Human Geography

- Learn about sectors of the economy: Primary, Secondary, Tertiary and Quaternary. Factors affecting location of economic activities .
- Gaining knowledge about Location of economic activities and
- Location of Cotton, Iron and Steel industries with special reference to India.
- Understanding globalisation and integration of world economies .

- Gaining knowledge about human society: Structure, functions, social systems. Population and migration: overview, causes and effects .
- Learn about types and characteristics of social organizations.
- Developing knowledge about Race, Language and Religion
- Knowing about Social Issues: Diversity, conflict and transformation.

- Developing knowledge about cultural landscape and its elements .
- To learn about rural and urban settlements.
- Understanding the differentiation in cultural landscapes.
- To learn about cultural regions and cultural realms .
- Developing knowledge about diffusion of culture and innovations.

GEO-G-CC-3-03-P– Human Geography Lab

- Construction of proportional divided circles by State-wise occupational structure data.
- Developing knowledge about time series analysis of industrial production using any two manufactured goods from India .
- Construction and measuring arithmetic growth rate of population comparing two datasets .
- To learn nearest neighbours analysis: Rural example from Survey of India

GEO-G-CC-4-04-TH – Cartography

- Learning the Classification of Maps and map Scales their significance, and applications.
- Getting knowledge about coordinate systems and Bearing: learning the mathematics behind there conversion.
- Learning about the properties and uses of different map projection.
- Gaining knowledge about topographical map and idea collecting information from those maps
- Representation of data by different trigonometrical shaped.
- Gathering knowledge about Indian mapping agency.
- Learning the basics of Remote Sensing with special reference to ISRO missions .
- Learning the principles of preparing standard FCCs and classified raster images .
- Gaining knowledge about GIS software.
- Learning the theoretical concept of analog surveying with prismatic compass and dumpy level.

GEO-G-CC-4-05-P – Cartography Lab

- Learning Graphical construction of scales:
- Learning construction of projections: Simple Conic with one standard parallel, Cylindrical Equal Area,, and Polar Zenithal Stereographic .
- Learning construction of thematic maps: Proportional squares, proportional circles, choropleths, and isopleths .
- Learning preparation of thematic overlays from satellite imagery,

GEO-G-SEC-B-4/6-03-TH – Rural Development.

Getting the knowledge about rural Development: Concept, basic elements, measuring the level of rural development

- Studying different model and approaches to rural development particularly of Mahatma Gandhi,
- Understanding area based approach to rural development: Drought prone area programmes, PMGSY, SJSY, MGNREGA, Jan Dhan Yojana
- Panchayeti raj system and it role in rural government.

GEO-G-DSE-A-5-02-TH – Geography of Tourism

- To learn about scope and Nature: Concepts and issues, tourism, recreation and leisure inter-relations; geographical parameters of tourism by Robinson.
- knowledge about types of Tourism: Ecotourism, cultural tourism, adventure tourism,

medical tourism, pilgrimage, international, national .

- Understanding the factors influencing tourism: Historical, natural, socio-cultural and economic; motivating factors for pilgrimages .
- Developing knowledge about the spatial pattern of tourism: Spatial affinity; areal and locational dimensions comprising physical, cultural, historical and economic; International travel destinations- cultural and historical.
- Learn about the impact of tourism: Physical, economic, social, and perceptive positive and negative impacts.
- Knowledge about environmental laws and tourism – current trends, spatial patterns and recent changes.
- Learn about role of foreign capital and impact of globalisation on tourism.
- Understanding the recent trends of tourism: International and domestic (India) and local, sustainable tourism, Meeting Incentives Conventions and Exhibitions (MICE).
- Developing knowledge about the tourism in India: Tourism infrastructure; regional dimensions of tourist attraction; case studies of Dal lake, Goa, Garhwal Himalaya, desert and coastal areas.
- Knowledge about promotion of tourism: National tourism policy. Role of Internet.
- Gaining knowledge about Infrastructure and support system: Accommodation and supplementary accommodation, other facilities and amenities
- Learn about tourism circuits-short and longer detraction: Agencies and intermediaries, Indian hotel industry.

GEO-G-DSE-A-5-02-P – Geography of Tourism

- Mapping of Tourist flow analysis .
- Construction of tourist flow projection from time-series data.
- Construction of isochronic map showing tourist resource and travel time.
- Bringing out the Environmental Impact Assessment of tourism development: Preparation of questionnaire.

GEO-G-SEC-A-3/5-02-TH – Forest and Wildlife Management

- Understanding the concept of forest and wildlife management: Importance and strategies. Role and significance of stakeholders. Tangible and intangible benefits of forest and wildlife management.

- Learn about the legal framework of forest and wildlife protection in India: The Indian Forest Act 1927, Forest Conservation Act 1980, Wild Life Protection Act 1972, Biodiversity Act 2002.
- Knowledge about forests as common property resources. Forest rights: Tribals and forests. Gender dimension of forest management. Management of poaching and illegal logging.
- To learn about principles of community participation and joint forest management. Causes and management of human–wildlife conflicts with special reference to Jangal Mahal, Sundarban and Duars.

GEO-G-DSE-B-6-04-TH – Population Geography

- Learn about development of Population Geography as a field of specialization. Relation between population geography and demography. Sources of population data, their level of reliability and problems of mapping.
- Understanding the population distribution: Density and growth. Classical and modern theories on population growth, Demographic transition model.
- Gain knowledge of world patterns and determinants of population distribution and growth. Concept of optimum population.
- Understanding the population distribution, density, and growth in India.
- Learn about types of population composition(Age–sex, rural–urban, literacy and education).
- Developing knowledge about the measurements of fertility and mortality & concept of cohort and life table .
- Learn about population composition of India: Urbanisation and occupational structure.
- Learn about migration(Causes and types).
- Gain knowledge national and international patterns of migration with reference to India.
- Understanding the population and development: Population–resource regions (Sekerman). Concept of human Development Index and its components.
- Learn about population policies in developed and less development countries. India's population policies. Population and environment, implication for the future.
- Knowledge about contemporary issues(Ageing of population, declining sex ratio, population and environment dichotomy, impact of HIV/AIDS).

GEO-G-DSE-B-6-04-P – Population Geography

- Construction of population projection by arithmetic method.
- Construction of Population density mapping(State-wise for India).
- Construction of analysis of work participation rate(Total and gender-wise for India).

Construction of analysis occupation structure by dominant and distinctive functions (Districts of West-Bengal).

SOUTH CALCUTTA GIRLS' COLLEGE

Department of History

Course Outcomes 2020-2021

History Honours Programme

Semester-I

CC1-History of India from Earliest Times to C 300 BCE

Students study the history of India from the earliest times up to 300BCE; theperiodization of Indian history; sources, historical interpretations, pre-history, rise of food production, early civilizations, Harappan, Vedic, early history of South India and the rise of Jainism and Buddhism.

CC2- Social Formations and Cultural Patterns of the ancient world other than India

Provides understanding of Pre-history in the World context, Evolution of human kind, hunting-gathering to the beginnings of agriculture and animal husbandry,'Neolithic Revolution', Bronze Age civilization in Egypt with reference to economy, society, state structure, religion,the advent of iron and aspects of ancient Greece and Rome.

Semester-II

CC3- History of India C 300 BCE to C 750 CE

Provides understanding of developments in Society, Polity, Economy and culture in ancient India from Mauryan to post-Gupta era; rise of empires; agrarian economy; trends in urbanization; patterns of trade; concept of early medieval India; changes in society; Consolidation of the Brahmanical tradition; cultural developments- literature, science, Art and architecture.

CC4-Social Formations and Cultural patterns of the Medieval World other India

The Department offers Group B- Medieval Europe. The course provides an overview of medieval Europe. Students study the decline of the Roman Empire and its historiography; the rise of feudalism in Europe and its effects on all aspects of European civilization, the Carolingian Renaissance and developments in the culture and society; Position of Women; urbanization; Medieval art and architecture; crisis in feudalism; the position of Christians and Jews under Islam.

Semester-III

CC5:History of India (CE 750 – 1206) CE

Students study the history of India from early medieval up to establishment of the Delhi Sultanate (1206 CE). They develop an understanding of the sources of early medieval history, political structure, religious matters, royal genealogies and rituals. They gain an insight into the debate on feudalism and changes inmedieval agrarian structure as well as trade and commerce. The coming of Islam and the impact on religion and culture, the development of regional literature and the emergence of popular religious cults are discussed.

CC6: **Rise of the Modern West – II**

This course is concerned with the Transformation of Europe from the decline of feudalism to the rise modern Europe.Students study the trends in economic historythat led to rise of Capitalism and the historical debate among scholars on the transition.The focus of the course is on the Renaissance and the Reformation and how these movements shaped the emergence of early modern Europe.Students gain an understanding of the voyages of discovery of new lands and theirimpact, the Scientific Revolution,the origins of modern science, the English Civil War of the 17th Century and the emergence of parliamentary democracy.

CC7:**History of India (c.1206-1526) CE**

This course concerns with the history of medieval India from 1206 till 1556. It is a study of the Delhi Sultanate and the regional states covering the political, economic, social and cultural history. Students gain an understanding of the primary sources of the period, both Persian and vernacular literature, changes in rural economy, the patterns of trade and commerce, urbanization, developments in religion and the rise of a syncretic culture.

SEC A(1): Archives and Museums

The course provides an introduction to museums and archiveswhich are important institutions for students of History. Students get an overview of the history of establishment of museums and archives, types of museums and archives, their functions, processes of collection, documentation,preservation and the outreach programmes.Visits to museumsgive a first-hand experience of the functioning of these institutions.

Semester IV

CC8:Rise of the Modern West – II

From this course students gain knowledge of the developments that led to rise of modern Europe in the political, economic and intellectual spheres- the printing and military revolutions, the impact of the 17^{th} century crisis, the scientific revolution, emergence of the Enlightenment and parliamentary democracy. The economic changes that created the background of the first Industrial Revolution are also studied.

CC9:History of India (c 1526 – 1605)

Provides knowledge in respect of inception of Mughal empire from 1526 CE upto 1605 CE till the regime of Akbar. The students get an overviewof the sources of the Mughal empire, the foundation and the challenges to the Mughal state, Ideology of the State in Mughal India. Their study also incorporates the consolidation of Mughal rule under Akbar, its expansion and integration, religious tolerance and Sulh-i-kul, rural society, economy, revenue system and the relation between zamindars and peasants.

CC10:History of India (c 1605 – 1750s)

This course is a study of the developments in the reigns of the Mughal rulers Jahangir, Shah Jahan and Aurangzeb in the light of literary accounts. They develop an understanding of the changes in policies, agrarian crisis, developments in trade, commerce and other aspects of the economy. The causes of the decline of the Mughal empire are investigated. Students also study the development in regional history-the Marathas and the Rajputs, cultural developments and the eighteenth century debate.

SEC B (2): Art Appreciation: An Introduction to Indian Art

India has a rich art heritage from the prehistoric times. This course introduces the students to the history of art and architecture of India and its evolution from ancient to contemporary times. They able to appreciate the diversity of this medium and the contribution of various cultures and communities that shaped the diverse forms of this tangible heritage.

Semester-V

CC11: History of modern Europe (c.1780-1939)

This is the History of modern Europe which was started from French revolution of 1789 to the background of second world war of 1939. The students will gain the knowledge of the History of the French revolution of 1789, the reign of terror of French, the Napoleonic era of 1799-1815, the Vienna settlement of 1815, Metternich System, The July revolution of 1830, the February revolution of 1848. They also aware the knowledge of unification of Germany and Italy of 1870, rise of Bismarck and his foreign policy, the socio-economic and cultural transformation of Europe, industrial revolution in England and other parts of Europe, the 1^{st} world war, the Russian Revolution of 1917, Europe between two world war, the great economic depression of 1929, fascism in Italy and Nazism in Germany, the Spanish civil war and the background of 2^{nd} world war.

CC12: History of India (c. 1750s-1857)

This paper will help to students to learn the History of India from 1750 to 1857 along with the foundation of colonial power in India, the decline of Mughal and the emergence of successor States, colonial states formation and ideology, the colonial rural economy and society, the trade and industry of colonial India, De industrialization, the popular resistance and movement as like the peasants uprisings.

DSE - A1 : History of Bengal (c. 1757-1905)

The DSE course contains the history of Bengal from Plassey to Bengal partition of 1905. Here students learn the Nawabi rule in Bengal along with the political, social, economic and cultural history, also included the colonial administrative history from 1757 to 1833, socio religious reform movements, Hindu and Muslim revivalist movements, insurgencies against the Raj i.e. Sannyasi and Fakir revolts, indigo revolt, pabna peasant uprising, Curzon's Bengal partition.

DSE – B1 : History of Modern East Asia-I China (c. 1840-1949)

This course will help to the students to know that the history of China from 1840 to 1949, Chinese feudalism, the canton commercial system, the Opium wars, open door policy, agrarian and popular movement, Taiping rebellion, self strength movement, emergence of Chinese nationalism, the revolution of 1911, Sun Yat Sen and his contribution, may fourth movements of 1919, formation of Chinese Communist party (CCP), the communist movement, rise of Mao Tse Tung and making of people's republic of china.

Semester-VI

CC13: History of India (c.1857-1964)

The course contains the History of modern India including the Nehruvian era till 1964. Here students will learn the rise of Nationalism in India, the formation of Indian National Congress, the moderates and extremists phase, the socio cultural reform movements, Brahmo Samaj, Prarthana Samaj, Arya Samaj, Aligarh movement, Wahabi movement, singh Sabha movement etc. The rise of Gandhian nationalism and the Rowlatt Satyagraha, Jalianwala Bagh massacre, Non cooperation, civil disobedience and quit India movement, communal politics from 1906 to 1947, rise of muslin league, RSS, Hindu mahasabha, independence and partition, framing of Indian constitution, the Nehru years.

CC14: History of World Politics: 1945-1994

This is the History of global world. The students will gain the knowledge of impact of 2^{nd} world war, the emergence of Cold war, Truman doctrine, Marshall plan and NATO, SEATO, CENTO, COMECON, Warsaw pact, Korean crisis, sovietisation in eastern Europe, De stalinisation , the Détente politics, Cuban crisis, the Glasnost and perestroika, the fall of Barlin wall and the crisis of socialist regime in eastern Europe, the fall of USSR and the rise of unipolar world system, Globalisation, china and the global politics, middle East crisis, suez canel crisis, Decolonisation, the civil rights movement, anti apartheid movement, the faminist movement.

DSE – A3: History of Bengal (c. 1905-1947)

This paper provides the knowledge of the history of Bengal from swadeshi movement to till independence, the swadeshi movement, the anti partition movement, the revolutionary nationalism of Bengal, communal politics from 1906-30, the Gandhian nationalism and movements in Bengal

perspectives, the left politics, the labour movement, caste movement, women's movement from 1920-46, Subhas Chandra Bose and INA, Partition of Bengal and communal riots, great Calcutta killing, and formation of East Pakistan.

DSE – B3: History of Modern East Asia-II Japan (c.1868- 1945)

This is the History of Japan from feudal society to Hiroshima and Nagasaki incidents. This paper provides the information about the transformation of Japanese society from feudalism to capitalism, the Meiji Restoration, military reforms, socio cultural and educational reforms of Japan, the Japanese imperialism towards china, Manchuria and Korea, the people's rights movements, second world war and American occupation, the post war changes.

COURSE OUTCOMES IN HISTORY GENERAL COURSE

SEMESTER 1: GE/CC1-History of India from Earliest Times up to 300 CE

The course gives an introduction to the history of ancient India from the earliest times up to the pre-Gupta period. Students are acquainted with prehistory, primary sources, Harappan civilization, Vedic period, rise of Mahajanpadas, Jainism and Buddhism, emergence and growth of empires-Mauryan, Satavahana and Kushana and the early history of Sangam Age. The course also provides an understanding of aspects of social, economic, religious history.

SEMESTER 2: GE/CC2- History of India from. C.300 to1206 CE

The course covers the period of the Guptas, Harshvardhana, the Pallavas, the Chalukyas, the Rashtakutas, the Cholas, the Pala &Pratiharas, the coming of the Arabs, the rise of the Rajput states, the struggle for power in North India. Students obtain an understanding of the causes of the fall of empires and the success of the Turkish invaders. Apart from economic and social history, the cultural achievements and cultural developments particularly of the Gupta age are given attention.

SEMESTER 3: GE/CC3-History of India from 1206 to1707 CE:

The paper deals with an extensive period of Indian history from the establishment of the Delhi Sultanate and regional states up to the death of Aurangzeb, covering the important political developments in the Sultanate era, and the rise and consolidation of the Mughal empire. The administrative system, relationship of the state and religion, developments in economy, society, art and religious movements are covered in this course.

SEMESTER 3:SEC-A- 1: Historical Tourism: Theory &Practice

By undertaking this course, students gain an understanding of India's architectural heritage and an overview of the concepts of tourism. The field visit to museums help to gain an understanding of functioning of museums.

SEMESTER 4: GE/CC4: History of India; 1707-1950 CE:

The course provides an understanding of the period of Indian history from the decline ofMughal Mughal Empire to the establishment of the Indian Republic. The historiographical debate on the break-up of the Mughal Empire and the expansion of the political power of the colonial power, Students study various aspects of Colonial India, the socio-religious reform movements in 19th century India, the rise of nationalism, the Gandhian movements, Revolutionary Movements, communal Politics culminating in the partition and transfer of power.

SEC-B -1: Museums &Archives in India

The course provides an introduction to museums and archives which are important institutions for students of History. Students get an overview of the history of establishment of museums and archives, types of museums and archives, their functions, processes of collection, documentation, preservation and the outreach programmes. Visits to museums give a first-hand experience of the functioning of these institutions.

SEMESTER-V

DSE-A2: Some Aspects of European History: c.1780-1945

This paper is the History of Modern Europe from French revolution to the end of 2nd world war. The students will gain the knowledge of French revolution, causes, consequences, Napoleonic era, July and February revolution of 1830 & 1848. The unification movement of Germany and Italy, socio-economic changes in Europe, 1st world war, facism and Nazism in Italy and Germany, origin and course of 2nd world war.

SEC-A2: Indian History and Culture

This SEC course helps to general programme students towards the environment, culture, tradition and practices, urbanization and urbanism, social inequality and Gender, cultural Heritage of India, Historical tourism, violence, cultural form and cultural expressions where included the performing arts, fair and festivals.

SEMESTER-VI

DSE – B2: Some Aspects of society and Economy of Modern Europe: 15th -18th century

The History of transformation Europe from 15th- 18 th century provide the knowledge of transformation of feudal society to capitalism society, Renaissance, it's different roots, and reformation movement and it's origin, nature and impact. The European colonialism, economic development of 16th century, the Mediterranean economy and Atlantic economy, the industrial revolution in England.

SEC – B2: Orality and Oral culture in India

This paper provides the Orality and Oral culture in India and how it is closed with the writing of History, the historiography and History of Orality, life histories, research methodologies and the documentation of Orality, the oral histories and oral traditions in Indian perspective.

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DEPARTMENT OF JOURNALISM AND MASS COMMUNICATION: COURSE OUTCOME/PROGRAMME OUTCOME/ PROGRAMME SPECIFIC OUTCOME:

I. COURSE OUTCOME:

(**New Syllabus for CBCS JORA**)

1. INTRODUCTION TO JOURNALSM (CCI)

Understanding News: meaning and concept, Hard news vs. Soft news, attribution, verification, balance and fairness, brevity, dateline, credit line, by-line; Different forms of print-A historical Perspective, Factors affecting news treatment, Neutrality and bias in news. , - Language of news- Robert Gunning: Principles of clear writing Rudolf Flesch formula- skills to write news;

Developmentof Print Journalism: Different forms of print-A historical Perspective, Sociology of news:, Paid news and Yellow Journalism , Penny press, Tabloid press ,Agenda Setting, Trial by media, gatekeepers; Politics of news;

Introduction to Journalism-Practical - Basic knowledge of Computer for print journalism; Handling Page Making Software and Photo

Editing Software; Writing a News Report from given points; Writing Headlines from News Stories; Writing Intro; language of news.

Rewriting and Summarizing a given piece of news with headlines and suitable intro; Creating a sample page on computer with hard and soft news; Writing Anchor Story; Writing article; Assignment: Preparing a presentation on types and categories of News.

Contact hours: 4hrs/week THEORY 4hrs/week PRACTICAL

2. History of Indian Journalism (CCII)

Early Indian Journalism: Contributions of James Augustus Hickey, James Silk Buckingham and Calcutta Journal, Serampore Baptist Missionary Press: Digdarshan, SamacharDarpan;.

Social reform movement: Social Reform Movement and Raja Rammohan Roy, H.L.V. Derozio and Young Bengal Movement, Iswar Chandra Gupta and SambadPrabhakar; History of Press Ordinances and Liberation of Press; Inception and Rise of Nationalist Journalism: Hindu Patriot and contributions of Harish Chandra Mukherjee, Somprakash; Movement against Vernacular Press Act.

Extremist Press: Sandhya, Bande-Mataram and Jugantar; Contribution of Bipin Chandra Pal and BalGangadharTilak; Contribution of Mahatma Gandhi in Indian Journalism; Contributions of Nationalist Press in Freedom Movement: National Herald, TheHindstan Times, The Indian Express.

News Agencies , Major newspapers and Eminent Journalists: Recommendations of Indian Press Commissions; Rise of newspaper houses: Ananda Bazar Patrika - The Telegraph, National Herald, The Hindu, The Times of India, The Statesman;
Development of News Agencies; Contributions of Eminent Journalists: M. Chalapathi Rau, Vivekananda Mukhopadhyay, BarunSengupta, DilipPadgaonkar, N.Ram.

Contact hours: 5hrs/week Tutorial:1hr/week

3. Reporting and Editing (CCIII)

News: Elements, Values, Objectivity**;** Beat and Source: definitions, Principles of News (Report) Writing: Intro, Lead; Principles of Agency News; Principle of Page Making; Interviewing:
Research, planning, framing questions, writing the piece;Feature: Definition. Types;Advertorials.
EDITOR - Positions, qualities, duties and responsibilities of: Correspondents: Special Correspondent, District Correspondent, Foreign Correspondent; Columnist, Photo Journalist, News Coordinator,
Executive Editor, Assistant Editor, Chief Reporter, Chief Sub-Editor, Sub-Editor, News Editor, Chief of News Bureau; Headline: types, importance, writing headline for newspaper; Principle of writing an Editorial, Post Editorial; Principles of Sub-Editing;
Specialization in Journalism: Interpretative and Investigative Journalism, PoliticaL Journalism, Crime and Legal Journalism, Public Affairs Reporting, Human Interest Stories and Human Rights Reporting, Corporate, Economic, Financial and Business Journalism.
BEAT REPORTING Agriculture Journalism, Science Journalism, Sports Journalism, Film Journalism, Environment
Journalism, Fashion and Entertainment Journalism, Page-3 Reporting, Column Writing, Writing for Magazine, Special and supplementary Pages.

Contact hours: 5hrs/week Tutorial:1hr/week

4. Media and Communication (CCIV)

COMMUNICATIONS - Communication: Definition, Processes and Semiotic school; Forms of Communication (verbal,
non-verbal, paralanguage, iconic, semiotic etc.), Levels of Communication (intrapersonal, interpersonal, group, public, mass communication), Functions of communication and mass communication (surveillance, correlation, transmission, entertainment, validation,mobilization)
MEDIA IN DEMOCRACY Role of Media in a Democracy: Responsibility to Society, Contemporary debates and issues
relating to media; Online journalism, Citizen Journalism;Covering news: Covering Speeches, Meetings and Press Conferences; Covering of beats- crime, courts, city reporting, local reporting, hospitals, health; education, sports; Understanding new media: e-mail, social media; Ethics in journalism.

Introduction to Media and Communication (Practical)

Writing a News Feature; Writing feature on other topics of interest; Principles of Editing a given piece of News Report and Agency Copy including a suitable lead and headline; Writing Column; Book Review, Film Review, Review of Television Programmes, Writing Editorial, writing posteditorial, Writing Anchor Story.

NEWSPAPER PUBLISHING :Publishing a Tabloid Journal using Page making software and photo editing software; Elements of page design including slug, info-graphics, blurbs, shoulder, reverse etc.

Contact hours: 4hrs/week Theory 4hr/week Practical

5. Communication, Media, Society (CC V)

EARLY COMMUNICATION MODELS - Classical Rhetoric form of Communication; Shannon-Weaver's Mathematical model of communication and criticism; Schramm-Osgood's Interactive model of communication; Newcomb's Systemic model and Westley-McLean's Mass Communication model; David Berlo's Linear model; Roman Jakobson's communication model; Basic concepts of Semiology: Sign, Code, Text.

COMMUNICATION MODELS - Normative theories of press; Four Models of communication: Transmission Model, Ritual or Expressive, Publicity model, Reception model; McQuail's four theories of mass communication: Social scientific theory, Normative theory, Operational theory, Everyday or Common sense theory.

DOMINANT PARADIGM - Phases of media society relations: Mass Society, Functionalism, Critical Political Economy, Technological Determinism, Information Society; Dominant media paradigm and Hypodermic series of models, One-step flow theory, Development paradigm of media: Two-step flow theory, Diffusion of Innovation and Media Dependency theory; Active Audience proposition: Uses and Gratifications model.

COMMUNICATION THEORIES - Cultivation Theory; Agenda Setting series of models (Priming-Framing-Gatekeeping-Agenda Setting); Spiral of Silence; Information Imbalance: McBride Commission; Globalization of media and Propaganda model; Understanding Media Conglomeration; Corporate (organizational) Communication models: Conduit Model, Grapevine model.

Contact hours: TH: 5hrs + TU1hr

6. MEDIA AND CULTURAL STUDIES (CCVI)

CULTURAL SCHOOLS ;Frankfurt Critical School: Culture Industry; Semiotic School: Ferdinand De Saussure, C.S. Peirce, Roland Barthes: Meaning of text message, Signification, Myth; Birmingham School: Centre for Contemporary Cultural Studies; Marshall McLuhan: Medium is the Message.

Understanding Culture; Definitions of Culture: Mass Culture, Popular Culture, Folk Culture; Elite culture, Commercial culture.

DEVELOPMENT COMMUNICATION - Ev. Rogers' Development communication school, Dominant Paradigm of Development Model;

Communication and development of third world media: Indian experience; Public Sphere and Public Media: Jurgen Habermas; Corporatization and Globalization of Mass Media.

COLONIALISM AND POST COLONIALISM - Political Economy of media, Ideology and Hegemony; Ideas of Cultural Studies: Colonialism,

Postcolonialism, Nationalism, Internationalism, Hybrid Culture, Poststructuralism and Postmodernism; Representation of nation, class, caste and gender issues in Media (assignment based).

Contact hours: TH: 5hrs + TU1hr

7. INTRODUCTION TO RADIO (CCVII)

HISTORY OF RADIO IN INDIA History of AIR; Inception and Growth of Radio News in India; Educational Radio in DevelopinG countries (Neurath Project); Development of entertainment programmes in AIR: reach and access; From Amateur or Ham to FM and Digitalization of Radio in India; Radio in democratic periphery: participatory, community driven, special need like disaster; Audience segment. Autonomy of AIR: PrasarBharati.

DIFFERENT TYPES OF RADIO PROGRAMMES - Radio formats: Community Radio, Campus Radio; National Programme in AIR; Radio Jockey: Role and Responsibilities. Radio Magazine, Interview, Talk Show, Discussion, Feature, DocumentaryStudio interviews, Panel discussions, Phone-in programmes; Pre-Production for Radio Script: Writing radio commercials, teasers and promos.

PRACTICAL ON RADIO PRODUCTION - Radio Personnel; Radio Script: Pre-Production, Production skills; Copywriting; Field recordingskills, livestudio broadcast with multiple sources, Cuesheet and recording, news production; Editing, Creative use of Sound Editing (Computer based), special sound effects,

Phone-in programme.

Contact hours: 4hrs/week Theory 4hr/week Practical

8. SKILL ENHANCEMENT COURSE (SEC)

1. **Radio Writings & Presentation**

Radio writing techniques: Writing for radio idioms and spoken word, elements of radio news; Radio feature, News reel, Radio Talk, Interview; Pre-production idea and research, radio script, storyboarding, proposal writing, budget, floor plan, pilot; Production: Use of sound, listening, recording, using archived sound; Editing: creative aspects of editing; Ethical issues. Working in Radio news room; functions of recording room; Sound for Radio: different types- Sync/non-sync/natural and ambience sound; Frequency and Wavelength; Analogue to Digital Sound; Special effects, menu and synthesis.

Or

2. **Photo Journalism**

Introduction to Photo Journalism: basic needs of photography,Importance of photographs in print media;Evaluating Photo Journalist's job;Photo caption in print media, Analysis of a Photo Text,

Handling Photography Equipments; Digital Photography;Ethics of Photo Journalism; Case Studies in Photo Journalism.

Understanding the mechanisms of Photography: Types of photographic cameras and their structure (Pin-hole, SLR, TLR, D-SLR); Lenses (types and their perspective/angle of view); Aperture (f-stop & T-stop); Shutters (Focal plane & Lens shutter); Light meters (Incident, reflected & through Lens: Average, Centre weighted, Spot & Metrics) and Focus and Depth of Field;

Outdoor photo-shoot on 10 news based issues with suitable captions/analyses;

editing of photographs with photo editing software.

9. Introduction to Television (CCVIII)

Public Service Broadcasting: Doordarshan: early days, introduction of news, commercials and entertainment; Satellite TV to Private TV; 24X7 news and news channels; narrowcasting and outside coverage; audience segment; Agenda Setting techniques used by TV channels; Ethical issues and recent sting operations.

Television programme format: Visual text: basics of visual, reporting skills and editing, graphics and special effects, camera positioning; TV news techniques: finding the story, packaging: use of clippings, PTC, VO, AVO; Viewership rating: TAM, TRP

Presenting real lives in Television: constructing reality in reality shows; TV Talk Shows: Hosting, Legal pitfalls; Soap, News Magazine, Interview; Television Documentaries: understanding, writing a concept, script writing and shooting.

Editing (PRACTICAL): Introduction to Video Editing, Camera and Shooting techniques, Editing Techniques, TV Script Writing.

Contact hours: TH: 4hrs / week+ practical 4 hrs / week

10. <u>Film Theories and Production (CC- IX)</u>

Film and Cinema: Film as a medium of mass communication; History of Indian Motion Pictures; French New Wave Cinema: Left Bank and Cahier du cinema group; Italian Neo-Realist Movement; Auteur theory; An Overview of Iranian New Wave Cinema: Abbas Kiarostami, Mohsen Makmalbaf, Jafar Panahi; Imperfect Cinema of Latin America.

Overview of Indian New Wave: Satyajit Ray, Rittick Ghatak, Mrinal Sen, Shyam Benegal, Rituparno Ghosh, Aparna Sen, Mira Nair, Adoor Gopalkrishnan; Exploring contemporary Bombay cinema narratives: Satire, Action, Family melodrama, Masala films, Gangster films, Nationalist, Underworld drama, NRI narratives; History of Documentary Films; Animation cinema.

Film production: Pre-production, production and post-production; Basic camera shots and sequence; Direction; Editing, Dubbing, Lights, Sound Effects and Music; Language of cinema: Montage, Mise-en-scene.

History of Documentary Films (Global and Indian Perspectives); Documentary movements in

India; Role of NFDC and Films Division; Role of CBFC in India; Contributions of Filmmakers: Akira Kurosawa, Ingmar Bergman, Sergei Eisenstein, Federico Felini, Charles Chaplin.

Contact hours: TH: 5hrs + TU1hr

11. <u>Media Management, Press Laws (CC-10)</u>

Media Ownership: types of various media ownership patterns; Changing patterns of Media management; Corporatization of mass media after globalization; FDI in Indian media; Managerial departments of newspaper and functions.

Dual Economy: Circulation versus Advertisement; Media Autonomy: Prasar Bharati experience;Digital Development of media and legal frameworks; DTH, TRP; Apex Regulatory and Publicity Bodies: ABC, NRS, DAVP, PIB, Publication Division, Films Division.

Indian media laws : Freedom of Information and freedom of press: Indian experience; From Press Commission to

Press Council of India: before and after globalization; Right to Information Act, Right to privacy. Freedom of speech and expression; Media Laws: Defamation, Contempt of Court, Sedition,

Official Secrets Act, Copyright Act, Press Registrations of Books Act, Obscenity Act, Working Journalists Act, Parliamentary Proceedings Act, Code of Ethics.

Contact hours: TH: 5hrs + TU1hr

12. <u>Skill Enhancement Course (SEC)</u>

Documentary Film Production - Understanding the Documentary film, Introduction to Realism, Debate; Observational and Verite
documentary; Introduction to Shooting styles; Introduction to Editing styles; Structure and scripting the documentary; Documentary Production, Pre-Production, Researching the Documentary, Research: Library,
Archives, location, life stories, ethnography; Writing a concept: telling a story; Treatment; Writing a proposal and budgeting.
OR
Feature Film Production - Basic production concepts and elements of screenwriting for a low budget; Basic principles of camera composition and lighting for a "film look"; Developing story ideas from
contemporary events, personal experiences, favorite movie genres; Making an outline of basic
plot development (setup, confrontation, payoff); filling it in with descriptions of the action, and finally the dialogue;
Effective and efficient methods of shooting scenes for editing, and working with actors; Actual production of the class script(s); Evaluating raw footage and possible post-production fixes for faults; Editing the footage for maximum impact; Adding sound effects, ADR, and music scoring; finecut.

13. <u>Introduction to New Media(CC-11)</u>

Key Concepts and Theory: Defining new media, terminologies and their meanings – Digital media, new media, online, media; Overview of Online Journalism: Why newspapers and broadcast outlets are on the Web;Understanding Virtual Cultures and Digital Journalism; Information society and new media, Technological Determinism, Computer Mediated Communication (CMC), Networked Society. Internet and its Beginnings, Remediation and New Media technologies, Online Communities,User Generated Content and Web 2.0, Networked Journalism, Alternative Journalism; Social, Media in Context, Activism and New Media; Citizen and Participatory Journalism: Hyperlocal Journalism; Security and Ethical Challenges in Online Journalism: Security challenges, Ethics of online journalism.

Tools of Online Journalism (Practical) Multimedia, Interactivity, Hyperlinks, Weblogs and Content
Management Systems (CMS); New Media and Social Networks: New Media, Social Networking and media activities; websites; Linear and Non-linear writing, Contextualized Journalism, Writing Techniques, Linking, Multimedia, Storytelling structures, Visual and Content Design, Website planning and visual design, Content strategy and Audience Analysis, Brief history of Blogging, Creating and Promoting a Blog.

Contact hours: TH: 4hrs / week+ practical 4 hrs / week

14. Development Communication (CC-XII)

Development: Concept, concerns, paradigms; Concept of development, Measurement of development, Development versus growth, Human development, Development as freedom, Models of development, Basic needs model: Nehruvian model, Gandhian model, Panchayati raj, Developing countries versus developed countries, UN millennium dev goals.

Development communication: Concept and approaches, Paradigms of development: Dominant paradigm, dependency, alternative paradigm, Dev comm. models – diffusion of innovation, empathy, magic multiplier, Alternative Dev comm. approaches: Sustainable Development, Participatory Development, Inclusive Development, Gender and development, Development support comm. – definition, genesis, area woods triangle.

MEDIA DEVELOPMENT - Role of media in development, Mass Media as a tool for development, Creativity, role and performance of each media-comparative study of pre and post-liberalization eras, Role, performance record of each medium- print, radio, TV, video, traditional media, Role of development agencies and NGOs in development communication; Critical appraisal of dev comm. programmes and govt. schemes: SITE, Krishi Darshan, Kheda,

Jhabua, MNREGA; Cyber media and dev –e-governance, national knowledge network, ICT for dev narrow casting Development support communication in India in the areas of: agriculture,

health& family welfare, population, women empowerment, poverty, unemployment, energy and environment, literacy, consumer awareness.

Contact hours: TH: 5hrs + TU1hr

15. Discipline Specific Elective (DSE)

Global Media & Politics -Imbalances in Global Information Flow: Rise of International News Agencies; Toward an alternative World Communication Order and McBride Commission; International Media Regulations

Gulf War and the rise of Global Media; Introduction to Global Media: NY Times, Wall Street Journal, Aljazeera. Major international television channels: BBC, CNN, FOX, CBC;

Globalization of Media: Media Conglomeration Time-Warner, Viacom, Walt Disney Corporation, News Corporation, Bartelsmann, Vivendi International, GE, Sony.

Cross Culture Communication- Problems among nations, Press System of Neighbouring countries of Indian subcontinent before and after Globalization, Herbert Schiller: Concept of Media Imperialism; Media and Present Indian Market: Information War, Fake Information;

Global Satellite system-Cable &Satellite TV (C&S), Direct To Home (DTH), Internet Protocal TV (IPTV).

OR

Media, Human Rights, Gender, Environment Studies - Rights: inherent, inalienable, universal, indivisible; Values: Dignity, liberty, equality, justice, unity in diversity; Balance between Rights and Duties; Problems: Poverty, underdevelopment and illiteracy; Women, children and the disadvantaged groups; Freedom and Responsibility, Freedom of Speech and Expression, Universal Declaration of

Human Rights, National Human Rights Commission, State Human Rights Commissions, RTI,
Right to Privacy. Media exposure and Gender Construction, Media stereotypes in newspaper, Gender & Advertising, Indecent representation of women in media (Act), Masculinity and Femininity: Cultural Studies, Feminist movement and Media Studies;
Human Rights Institutions: Amnesty International; NGOs;Major Human Rights Issues in India; Presentation: Human Rights issues and violations in International scenario and media operations

OR

Multimedia Journalism - Introduction to Multimedia; Multimedia and interactivity, Basics of multimedia reporting,
importance of audio, photo andvideo production skills in the newsroom in contemporary times,
brainstorming about story, ideas, legal and ethical issues and diversity in themedia - media law, ethics, multicultural sensitivity.
Print:Multi-platform Communications; Leads and Nut Graphs, News Writingfor Web, Content Development, Sources and Online Research, Story Organization, Strategies for effective interviewing and notetaking, Interviewing Techniques.
Audio & Video Content:Focus on audio recording, telling stories with sources and natural sound, bytes, editing & Placement of sound, Storytelling with video, broadcasting/ webcasting: Collecting content,Structuring story andwriting. Mobile journalism:Screen sizes & responsive web, Information multimedia and web architecture,
corporate websites, web feature stories, key points for web interactive narrative,interactiveusersvs. linear narratives, Interactive writer.

OR

Communication Research - Introduction to Research: Definition, Role, Function, Basic and Applied Research, Scientific Approach, Role of theory, in research, Steps of Research (Research question, Hypothesis, Review of Literature). Methods of Media Research: Qualitative-quantitative components, Content Analysis, Exploratory research: Qual-Quan (Mixed) method, Narrative Analysis, Historical Research, Semiotic Research Methods; Chi-Square Test, T-Test, Likert Scale. Sampling: Need for Sampling, Sampling Methods, Representativeness of the Samples, Sampling Error, Tools of data collection: Primary and Secondary data-Questionnaire, Focus Groups, Telephone, Surveys, Online Polls, Published work. Data Analysis Techniques; Coding and Tabulation, Non-Statistical Methods (Descriptive andBHistorical), Bibliography Writing the research report, Ethnographies and other Methods,
Readership and Audience Surveys; Ethnographies, textual analysis, discourse analysis Ethical perspectives of mass media research

Contact hours: TH: 5hrs + TU1hr

16. **Dissertation with**

- Students will do a micro research project(7000 to 8000 words) on any topic of social, political, cultural interest. The dissertation must include proper reference, bibliography.
- Students getting the project accomplished have to prepare a suitable presentation (of 10 minutes) strictly on the topic for Viva-Voce. 30

17.Political Communication (DSE)

Political Communication- Definition; Relationship of politics with mediated communication; Theoretical approaches: Jurgen Habermas on Political Communication; Role of media in politics: Power or Democratic Participation; Media bias, political participation and media choice. Mass persuasion and propaganda: Priming and Agenda Setting; Responsibilities of media in framing public opinion: Walter Lippmann, public policy, Noam Chomsky: Media Control;

Channels of political communication; Mediation, facilitation and dialogue; Leadership, politics and social advocacy; Fundamentals of political engagement. Identity politics in India: Role of mass media; The modern discourse of identity; Rhetoric of

Social Movements, local assertions and its links to global assertions, Human Development Index, Development and Environmental Concerns - conflict of interests between economic and environmental concerns

Symbolic and cultural forms of communication between politicians and their publics; Election

campaign strategies; Coverage of election campaigns in Indian media; Opinion and Exit Polls:

Political Framing. Political Advertisements; Digital Media and Political communication; Digital

Political campaigning; Fundamentals of Digital political advertising; Social media strategies in political communication: Use of Facebook, Whatsapp and Twitter

18. Advertising (CC-13)

Advertisement as a medium of communication: Contemporary experiences; historical overview of advertising, socio-economic and cultural impact; Advertising theories: AIDA model,

DAGMAR, Maslow's hierarchy model; advertising in mass media: media positioning, planning and scheduling.

Advertising research; advertising campaigning strategy (CPT analysis); Sales and marketing: SWOT(C) analysis, marketing and sales promotion, Unique Selling Proposition, consumer behaviour; Target Audience; brand positioning; Surrogate Advertising: Surrogacy vs. Sabotage; Ethics and Law: Advertising ethics and Laws, Cultural codes; Online Advertising. Ad Agency: research and planning including media planning, work procedure, agency-client relationship; Regulatory Boards, Case studies.

Advertising (Practical)

Types of advertisement: Classified-display, Local-regional-national-international Ad, consumer corporate ad, industrial-trade-retail Ad, government-private, outdoor, surrogate, radio-TVinternet- mobile; Advertisement copy and lay-out: Headline, Illustration, Subhead-

Text, Slogan, Logo, Storyboard making; Thumbnail-Rough-Final lay-out, Television Commercials.

Contact hours: TH: 4hrs / week+ practical 4 hrs / week

19. Public Relations (CC -14)

PR-Definitions, historical overview of the discipline, PR as Management function, Image Management; Public Relations versus Advertisement; Non-PR issues: Publicity, Propaganda, Public Opinion and Marketing; Publics: Definition, types; Integrated Marketing Communication.

PR Theories and principles: Research, planning, implementation and evaluation; James Grunig's Four PR models: Publicity model, Public Information model, Two-way asymmetrical model,

Two-way symmetrical model; Strategic Communication; PRO: Role, Qualities and Functions. Tools of PR: Press Release, Annual Report, House Journal, Press Conference and Press Tour,

Corporate Film; Relationship Management: Media Relations, Community Relations and CSR, Internal or Employee Relations.

Financial PR; Crisis PR: Issue-emergency-crisis, Crisis PR strategies; PR Agency: New Trends, In-house PR vs Agency, Client Agency relationship.

20. Folk and Community (DSE)

Culture and Tradition-Meaning of Culture, Tradition, Oral tradition; Dominant Culture versus Subaltern Culture.

Impact of Five Year Plans in fulfillment of rural development; NGO communication: Extension of rural objectives; Role of Rural Newspapers and Periodicals in contrast to District Pages of corporate newspaper houses.

Community and Folk Media in West Bengal; Definition and characteristics of community;

Traditional Folk Media (TFM) - Concept and Forms – meaning, characteristics; Difference from Mass Media;

Various forms of Folk Media in India: Tamasha, Keertana, Yakshagana, Nautanki, Jatra, Bhavai,

Ramlila and Raslila; Important Folk forms of Bengal: Gambhira, Kabigaan, Chhou, Raibneshe, Alkap, Kabigaan, Yatra, Leto, Baul.

21. Health & Science Communication (DSE)

Characteristics of Health Communication; Barriers to Effective Health Communication;

Strategies to improve health communication; Understanding culture to promote health communication; Health and Media: Changing health behaviour;

Health care system in India; Introduction to Epidemiology for Health Communicators; Effective

interpersonal communication between health care provider and client; Impediment to a Sound

Provider-Patient Relationship; Community Involvement in Health communication; Engaging patients in healthcare; Health literacy;

Contemporary Health Care Marketing; Interactive Marketing Communications; Advanced

Writing for Health Communicators; Research Methods for Health Communicators; Social Media
Strategies and Tactics for Health Communicators; Writing about medicine; mobile health design. Media and science journalism; Science as an essential element in political, corporate and
community news; major issues in science journalism; essential features of science reporters; role of a science page editor; popular science magazines - scope of science journalism on radio & television in developing countries; science based serials on radio and television; science journalism for the digital media.

B.A. (General) Journalism and Mass Communication
Under Choice Based Credit System (CBCS)

1. Basics of Journalism (GE/CC1)

Newspaper and socio-economic and cultural development in India; News: Definition; Elements of news; News Sources; Different types of new; The Editor: functions and responsibilities;
Editorial freedom; Role of theeditor; News Editor: duties and responsibilities; Chief Sub-Editor; Sub-Editors: duties and qualities.
Duties and Responsibilities of Reporter,Chief Reporter; Foreign Correspondent; Special Correspondent, Bureau Chief,District Correspondent;Structure of news: inverted pyramid;Intro;
Lead; Language of news writing; Objectivity; Feature: Definition, Types; Editorial: Importance,
Choice of subjects, Arrangement, Style of presentation. Editing: Principles of Editing; Copy Testing; Computer Editing; Differenttypes of Headlines;
Computer applications;Page Make-up; Front page and other pages; Principles to be followed;
Photo journalism: Definition, Importance; Duties, responsibilities of a news photographer;
Caption writing; Photo printingprocess.
Column and Columnist; Importance of column; Letters to the Editor; Importance; Proof reading; Symbols of proof reading; Duties and responsibilities of proof readers; The News Agencies:
functions; Styles of Agency reporting; Various international News Agencies; Political reporting, Financial reporting, Sports reporting.
Total Classes: TH: 5hrs + TU1hr. Per Week

2. **Media Management (GE/CC2)**

Newspaper as a business enterprise and its public service role; Indian experience; Ownership of Newspapers: Different types in India; Cross-media Ownership, Media Conglomeration& Convergence; Sources of revenue of newspapers; Scope in India; Departments of Newspaper

organizations and functions; Front page of a daily newspaper; Film review; Book review; Music review; Radio and Television review.

Circulation of newspapers; Circulation factors: Geographical factor, Social Factor, Economic,Technological factor; Promoting circulation; Newspaper'spolicy; Circulation department; Organization; Functions; Duties and responsibilities of the circulation manager; RNI; Audit Bureau of Circulation (ABC), National Readership Survey (NRS);

Advertisement department of a Newspaper; Administration of Ad-department; Advertisement

Manager: Duties and responsibilities; Different types ofadvertisement in newspapers: classified

and display; Newspaper as a medium of advertisement; Newspaper Printing: Evolution of newspaper printing process; Public Service Broadcasting:

PrasarBharati; Electronic Media Management: Licensing, Organizational Patterns; TRAI; The Broadcasting Bill 1997.

Total Classes: TH: 5hrs + TU1hr. Per Week

3. **Advertising and Public Relations (GE/CC3)**

Advertising: Definition; Different types; Classified and display; Advertisement medium; different types; relative advantages; Selection criteria; Ethics ofAdvertising; Market research; Brand positioning; Creative strategy; Market and its segmentation; Sales promotion; Advertising agency: structure, functions, important functionaries; Client-Agencyrelationship; Copy writing; Types of Copy; How to prepare; Principles of writing; Main features; Copy writer: qualities, duties and responsibilities.

Unit-3

Public Relations: Definition; PR as a management function;Publics in PR; Importance of PR; PRO: Qualities and Duties; PR in Public Sector; PR for Private Sector; PR Tools; Press Release;Press Conference; Press Rejoinder; Community Relations, Media Relations; Corporate PR; House Journal; PR Institutions: PRSI, IPR; Crisis PR; Corporate Social Responsibility (CSR).

PRINT AND ADVERTISING PRACTICAL : Basic knowledge of Computer for print journalism; Writing a News Report in about 150 words from given points; Writing Headlines from News Stories; Writing Headline, Intro; Writing Anchor Story; Writing article; Creating a display advertisement on Photo Editing Software.

Contact hours: TH: 4hrs / week+ practical 4 hrs / week

4. Skill Enhancement Course

Journalistic Writings: Writing News (Hard News, Soft News, Anchor News) Feature (News Feature), Editorial.

Newspaper Designing: Front Page, International Page, Business Page, Sports Page of a Newspaper through Page-making Software.

Film Appreciation: Analytical appreciation on 5 films (above mentioned);

Print Advertising: Making a display advertisement using suitable photo editing software; Candidates have to identify all elements of the advertisement copy.

5. **Press Laws and Indian Constitution(GE/CC4)**

Indian Constitution; Main features; Fundamental Rights; President of India: Power and position;

Prime Minister: power and position; Chief Minister: Power and position; Governor: Power and position; Parliament; Supreme Court; and High Court; Local governments;

Indian Foreign Policy;National Economic policy; New Industrial policy; Finance Commission and its functions; Five Year Plans: Objectives and Achievements;NitiAyog.

Press Laws: Defamation, Contempt of Court; Parliamentary Privileges Act; Article 19(1)A and

freedom of press; Copyright Act; Official Secrets Act; WorkingJournalists' Act; Journalistic Ethics; Freedom and responsibility of the press; Press Commission and Press

Council of India: Constitution, objectives and guidelines; Media Council of India.

Total Classes: TH: 5hrs + TU1hr. Per Week

6. **Skilled Enhancement Course**

Documentary Script Writing: Micro project of 1000 words on any social, political, cultural topic

Radio-Television Script Writing: Writing Scripts for Radio and Television News and Talk Shows

Anchoring: 3 minutes Programme Anchoring on topics of interest.

Media Presentation: PPT on any social or corporate planning (5 Slides).

7. Film Studies(GE/CC5) (DSE)

Film as a medium of mass communication; Early Indian Cinema, Adaptation of literature in cinema, Concepts of Avant GardeCinemaand Underground Cinema; Brief history of Documentary Cinema in India.

Film Movements: French New Wave, Italian Neo-realism; Post-independence popular Bombay films, Growth of regional cinema in India; Contemporary Indian film genres: Masala Films,

Underworld films, Art or Parallel cinema. Contributions of Eminent Filmmakers: Sergei Eisenstein, Akira Kurosawa, Charles Chaplin,

Satyajit Ray, MrinalSen, RitwikGhatak. Landmarks of Indian Cinema: PatherPanchali, GupiGyneBaghaByne, Meghe Dhaka Tara, Subarnarekha, AkalerSandhane,Guide, Sholey, Jane

Bhi Do Yaaro, Albert Pinto Ko Gussa Kiyun Ata Hain, Dahan, Chitrangada. Stages of Film Production: Pre-production, production, and post-production methods; Basic

camera use in films; Principles of film editing: Aesthetic, technical; Use of Software in Film editing; Film marketing.

OR

Specialized Writings

Writing on various social issues: fashion, music and art, education, employment opportunities; health, environment, crime, legal;

Press Conference and Interview; Techniques, stages of preparing an Interview; Different types of interview; Assignments on Interviewing;

Women and mass media; Women's page; Women's magazines: Scope in India; Assignments.

Ad-Copy for electronicmedia and print media;Storyboard writing;Writing Press Release

8. **Skill Enhancement Course**

Journalistic Writings: Writing News (Hard News, Soft News, Anchor News) Feature (News Feature), Editorial.

Newspaper Designing: Front Page, International Page, Business Page, Sports Page of a Newspaper through Page-making Software.

Film Appreciation: Analytical appreciation on 5 films (above mentioned);

Print Advertising: Making a display advertisement using suitable photo editing software; Candidates have to identify all elements of the advertisement copy

9. Broadcasting Media (GE/CC6)

Radio: Development of Radio broadcasting in India; Radio and society; Radio News: Elements of radio news; Differences in reportingand presentation between Radio and Television; FM Radio, Radio Jockey, Programme patterns of AIR, Radio Drama, Community Radio; Autonomy of Indian broadcasting; Impact of TV on Print media.

Television in India: Doordarshan; Satellite TV channels: BBC, CNN, NDTV, STAR Channels;

TV as news medium and entertainment medium;Differences in news reporting and presentation between Radio &TV;Balance Television and national development; Television Soap Opera, Reality Shows, Impact of

Television on Children, Women (assignments); Television Cartoon: Entertainment and Reality; Live Telecast for various TV programmes; Educational TV.

OR

International Relations

Basic concepts in International Relations: Foreign policy and diplomacy, Non-alignment movement; Indian Foreign Policies; Indo-Pak, Indo-Bangladesh relations.

United Nations: Formation, Charter and Objectives; UN and Millennium Development Goals; Indo-US relations; SAARC, ASEAN.

UN Security Council: Concept of security- traditional and non-traditional, Disarmament and arms control; Sino-Indian relations;

Global Media Economy: Colonialism and Neoliberalism, IMF, World Bank, WTO.

Total Classes: TH: 5hrs + TU1hr. Per Week

10. Skilled Enhancement Course

Documentary Script Writing: Micro project of 1000 words on any social, political, cultural topic;

Radio-Television Script Writing: Writing Scripts for Radio and Television News and Talk Shows;

Anchoring: 3 minutes Programme Anchoring on topics of interest.

Media Presentation: PPT on any social or corporate planning (5 Slides).

SOUTH CALCUTTA GIRLS' COLLEGE

DEPARTMENT OF PHILOSOPHY
COURSE OUTCOME/ PROGRAMME OUTCOME /PROGRAMME SPECIFIC OUTCOME
2020-2021

COURSE OUTCOME:

(**New Syllabus for CBCS (PHIA**) SEMESTER-I

Indian Philosophy – I (CCI)

CO 1-.Introducing Division of Indian Philosophical Schools: Āstika and Nāstika.

. **CO 2-Assessing** Cārvāka School—Epistemology, Metaphysics, Ethics.

CO3-Understanding Jainism—Concept of sat, Dravya, parya ,Guṇa.

Anekāntavāda, Syādvāda and Saptabhanginaya.

CO4- Explaining the key concepts of Buddhism— Four noble Truths, Theory of Dependent Origination (Pratītyasamutpādavāda), Definition of Reality

(Arthakriyākāritvamsattvam), Doctrine of Momentariness,

(Kṣanabhangavāda), Theory of no-soul (Nairātmyavāda), Four Schools of Buddhism (Basic tenets).

CO5- Understanding Nyāya –Pramā and Pramāṇa, Pratyakṣa (Definition), Sannikarṣa,

Classification of Pratyakṣa: Nirvikalpaka, Savikalpaka, Laukika, Alaukika.

CO6- Understanding Anumiti, Anumāna (Definition), vyāpti, parāmarśa, Classification of Anumāna: pūrvavat, śesavat, smānyatodṛsta, kevalānvayī, kevalavyātirekī, anvayavyātirekī, svārthānumāna, parārthānumāna, Upamāna (definition), Śabda (definition).

CO7- Analysing Vaiśeṣika—Seven Padārthas, dravya, guṇa, karma, sāmānya, viśeṣa, samavāya, abhāva.

Contact hours: 5hours theory &1 hour tutorial/ week

History of Western Philosophy - I (CC II)

CO-1 Understanding Pre Socratic Philosophy: Thales, Heraclitus, Parmenides, Empedocles, Anaxagoras, Democritus, Protagoras

CO 2-Explaining Plato**:** Theory of Knowledge, Theory of Forms. Doctrine of four causes, Form and Matter.

CO 3 Understanding Aristotle **:** Critique of Plato's theory of Forms.

CO 4 **Discussing** St.Thomas Aquinas: Faith and Reason, Essence and Existence

CO 5 Understanding Descartes: Cartesian method of doubt, Cogito ergo sum, Criterion of truth, Types of ideas, Proofs for the existence of God, Mind- body dualism , Proofs for the existence of the external world

CO 6- Analysing Spinoza: Doctrine of substance, Attributes and Modes, Existence of God, Pantheism, Three orders of knowing.

CO 7 Exploring Leibniz: Monads, Truths of reason, Truths of facts, Innateness of ideas, Some metaphysical principles: Law of Identity of indiscernible, Law of sufficient reason, Law of continuity, Doctrine of Pre-established harmony.

Contact hours: 5hours theory &1 hour tutorial/ week

PHI-G-CC-1 Indian Epistemology and Metaphysics

. **CO 1-**Tracing Sāmkhya—Satkāryavāda, Nature of Prakṛti , its constituents and proofs for its existence. Nature of Puruṣa and proofs for its existence, plurality of puruṣas,

theory of evolution

CO 2- ExplainingYoga—Citta, Cittavṛtti, Cittabhūmi. Eight fold path of Yoga, God

CO 3- Analysing Mīmāmsā (Prābhakara and Bhātta) :Anvitāvidhānvāda and Abhihitānvayavāda, Arthāpatti and Anupalabdhi as sources of knowledge

.

CO 4- Realising Advaita Vedānta—Sankara's view of Brahman, Saguṇa and Nirguṇa Brahman, Three grades of Sattā: prātibhāsika, vyavahārika and pāramārthika, Jīva, Jagat and Māyā.

CO 5- Understanding Viśistādvaita— Rāmānuja's view of Brahman, Jīva, Jagat. Refutation

Of the doctrine of Māyā.

SEMESTER II PHIA

Outlines of Indian Philosophy –II (CCIII)

CO 1-Tracing Sāmkhya—Satkāryavāda, Nature of Prakṛti , its constituents and proofs for its existence. Nature of Puruṣa and proofs for its existence, plurality of puruṣas, theory of evolution .

CO 2- ExplainingYoga—Citta, Cittavṛtti, Cittabhūmi. Eight fold path of Yoga, God

CO 3- Analysing Mīmāmsā (Prābhakara and Bhātta) :Anvitāvidhānvāda and Abhihitānvayavāda, Arthāpatti and Anupalabdhi as sources of knowledge

.

CO 4- Realising Advaita Vedānta—Sankara's view of Brahman, Saguṇa and Nirguṇa Brahman, Three grades of Sattā: prātibhāsika, vyavahārika and pāramārthika, Jīva, Jagat and Māyā.

CO 5- Understanding Viśistādvaita— Rāmānuja's view of Brahman, Jīva, Jagat. Refutation of the doctrine of Māyā.

Contact hours: 5hours theory &1 hour tutorial/ week

History of Western Philosophy – II (CCIV)

CO 1-Critically discussing Locke **:** Refutation of innate ideas, The origin and formation of ideas, Simple and Complex ideas, Substance, Modes and Relations, Nature of knowledge and its degrees, Limits of knowledge, Primary and Secondary qualities, Representative Realism.

CO 2-Evaluating Berkeley: Refutation of Abstract ideas. Criticism of Locke's distinction between Primary and Secondary qualities, Immaterialism, *Esse-est percipi*, Role of God .

CO 3-Evaluating Hume: Impression and ideas, Association of ideas, Distinction between Judgements , Theory of Self and Personal Identity, Scepticism.

CO 4-Critically analyzing Kant **:** Conception of Critical Philosophy, Distinction between A priori and A posteriori Judgements, Distinction between Analytic and Synthetic Judgements. Synthetic A priori Judgements, General problem of the Critique, Copernican Revolution in Philosophy, Transcendental Aesthetic **:** Space & Time—Metaphysical & Transcendental expositions of the Ideas of Space & Time

Contact hours: 5hours theory &1 hour tutorial/ week

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PHIG (GE/CC2) Western Epistemology and Metaphysics

CO 1- Classifying Different senses of 'Know'. Conditions of Propositional Knowledge, Origin of Concepts. Concept Rationalism-Views of Descartes and Leibniz, Concept Empiricism – Views of Locke, Berkeley and Hume .

CO 2- Examining Theories of the origin of Knowledge: Rationalism, Empiricism,Kant's Critical Theory.

CO 3-Understanding Realism: Naive Realism, Locke's Representative, Realism, Subjective Idealism (Berkeley)

CO 4- Examining Causality: Entailment Theory, RegularityTheory.

CO 5 –Discussing Mind- Body Problem: Interactionism, Parallelism and the IdentityTheory.

Contact hours: 5hours theory &1 hour tutorial/ week

SEMESTER-III

CORE COURSE

CC5 - PHILOSOPHY OF MIND

The students are introduced to the definition, nature and scope of psychology. They become acquainted with its different methods like introspection and introspection. Sensation, perception, illusion and hallucination are the important topics in this paper. Emphasis is given on analyzing and clarifying the different theories of learning, philosophical theories of mind, consciousness, intelligence and personality.

Contact hours: 5hours theory &1 hour tutorial/ week

CC6 -SOCIAL AND POLITICAL PHILOSOPHY

This particular course covers the primary concepts of social and political philosophy like society, community, family, caste and class. The students become familiar with the theories regarding relation between individual and society, social change and progress. This course is designed to develop interest among the students about the contemporary social issues and concerns.

Contact hours: 5hours theory &1 hour tutorial/ week

CC7- PHILOSOPHY OF RELIGION

This course helps the students to understand the different religious traditions and their implications. They are introduced to the theories of orthodox and heterodox schools of philosophy. Arguments for the existence and non-existence of God, the peculiarity of religious language are some of the topics in this paper. Basic tenets of Christianity and Islam are explained and analyzed. The course does not confine itself to discussion about ancient religious beliefs; it throws light upon the recent concepts of Universal Religion, inter- religious understanding and communications.

Contact hours: 5hours theory &1 hour tutorial/ week

SKILL ENHANCEMENT COURSE PHIA(SEC-A)

a) Logical Reasoning and Application: Indian and Western

The main objectives of logical reasoning, legal language, its nature and functions, inductive and deductive reasoning in law are the thrust areas of study. It has both theoretical and practical content. It helps to develop reasoning ability and an analytic outlook towards various life situations.

Contact hours: 2 hours/week

b) Man and Environment

This paper has been designed to foster environmental awareness and responsibility among the students. Classical Indian environmental attitude with special reference to Rabindranath Tagore, the Western philosophical theories of respect towards nature, concept of intrinsic value of nature and eco-feminism are the prominent areas of discussion and analysis in this paper.

Contact hours: 2 hours/week

B.A. (GENERAL) -CBCS SYLLABUS IN PHILOSOPHY

SEMESTER- III

PHI –G-CC3

WESTERN LIGIC: This paper includes Primary concept of logic like sentence, propositions , difference between sentence and proposition , characteristics of propositions, argument, Truth and validity Immediate inference based on the square of opposition, Boolean interpretation of propositions, Categorical syllogism: mood, figure and rules of validity, Testing of validity of the argument by venn diagram. The students not only

gain knowledge of traditional Aristotelian logic but also about symbolic logic. The use of symbols, truth functions, using of truth table for testing the validity of

argument and for testing statements form. It helps to develop a critical and logical mental attitude.

Contact hours: 5hours theory &1 hour tutorial/ week

SKILL ENHANCEMENT COURSE PHI-G SEC-A

a. Logical Reasoning and Application and b. Business Ethics are the papers included in this course. The topics like logical reasoning in theory and practice and legal reasoning are very interesting and motivating for the students. Study of management and value programme, laws and their identifications help the student to cope up with practical problems of life in present as well as in future.

Contact hours: 2 hours /week

SEMESTER-IV

CORE COURSE

CC-8-WESTERN LOGIC-I

This paper includes the primary concepts of logic and arguments-both deductive and inductive. Syllogistic arguments, rules and fallacies, Venn diagram, enthymeme, dilemma, the methods of experimental enquiry of Mill, patterns of scientific investigations, crucial experiments and probability are some of the topics discussed. This course helps the student to learn logical analysis, deduction and develop a rational bend of mind.

Contact hours: 5hours theory &1 hour tutorial/ week

CC-9- WESTERN LOGIC-II

Symbolic logic -the value of special symbols, truth-functions, dagger and stroke functions, various kinds of statement-forms are the core areas of study. The course helps the student to know about the methods of deduction and to prove the validity and invalidity of arguments.

Contact hours: 5hours theory &1 hour tutorial/ week

CC-10-EPISTEMOLOGY AND METAPHYSICS

This paper concentrates on the fundamental notions of knowledge and truth. The student can explore the important philosophical theories like Realism, Idealism, Phenomenalism, the concepts of cause and substance. It helps to develop a strong knowledge base of philosophical enquiry and criticism.

Contact hours: 5hours theory &1 hour tutorial/ week

SKILL ENHANCEMENT COURSE (SEC-B)

Emerging trends of thought

Business Ethics, Environmental Philosophy, Feminist Philosophy, Peace Studies and the Recent trends in ethics are the focal areas of study. The papers enable the students to acquire an integrated knowledge of the world and they develop a power of analysis and judgement of practical issues in life

related to gender, environment, peace and violence.

Contact hours: 2 hours/week

PHI-G-CC-4 PHILOSOPHY OF MIND

The paper provides an understanding of the basic concepts of psychology like sensation, perception, their relations, consciousness, its different levels and Freudian theory of dream. It also focusses on memory, its factors, forgetfulness, different theories of learning and intelligence.

Contact hours: 5hours theory &1 hour tutorial/ week

SEC-B

a. Man and Environment and b. Value Education are the papers under this course. The important topics are classical Indian and Western ethical theories towards environmental protection and sustainability. Peace and value education in Global perspective help the students to understand and judge the world events. They can form and express their individual opinions about global scenario.

Contact hours: 2 hours/week

SEMESTER –V

CORE COURSE

CC11: Nyaya Logic and Epistemology-I: The definition of Buddhi , it's two kinds, definition of Smriti, two kinds of Smriti, anubhaba,division of anubhaba, four fold division prama and pramana, definition of special causal condition and general causal condition, concept of anyathasiddhi and it's varities, kinds of causes, definition of pratyaksa and it's two fold division, nirvikalpaka and savikalpaka and evidence for the actuality of nirvikalpaka have been critically analysed in this course. Sannikarsa and its six varities , problem of transmission of sound, the claim of anupalobdhi as a distinctive pramana all these topics have been critically analysed in this course following " Tarkasamgraha" and "Tarkasamgraha Dipika" written by Annambhatta. As Nyāya is Indian logic and analytic philosophy so it will definitely develop logical mentality and power of analysis among the students.

Contact hours: 5hours theory &1 hour tutorial/ week

CC12- Ethics(Indian) : This course introduces about the karmayoga in Gita ,purusartha and their inter-relations, meaning of dharma, concept of Rna and Rta, classification of dharma: sadharandharma, asādhārandharma and varnasrama dharma , vidhi and nisedha. Discussions are made on Panchasila of Buddhist ethics ,mahabrata and anubrata of Jaina ethics which make them aware about the rich tradition

of indian ethics. More over discussions on nitya, naimittika and kamya karma in mimansa ethics spread awareness about right and duties.

Contact hours: 5hours theory &1 hour tutorial/ week

DSEA1 PHIA : Philosophy of Language (Indian)

This course deals with definition and classification of pada, conditions for understanding the meaning of a sentence: asatti, yogyata, tatparya, and akamsa, laksana or indirect signifying power of a term and different types of laksana, sabdabodha or the way to understand the meaning of sabda and also anvitabhidhanbad and avihitanvayavada which make them aware about the function of the philosophy of language.

Contact hours: 5hours theory &1 hour tutorial/ week

DSEB1 PHIA: An Enquiry Concerning Human Understanding – David Hume : This course deals with Hume's view on human understanding from empirical point of view. Different kinds of ideas and association of ideas have been discussed in first three chapters. In chapter four to six discussions are made on studying the skeptical doubts concerning the operations of the understanding and their solution and understanding probability. Idea of necessary connection, liberty and necessity, understanding the reason of animals have been discussed in chapter seven to nine. Chapter ten to twelve deals with understanding miracles, particular providence and future state. It creates analytic ,critical and experimental outlook among students. It opens a new arena of understanding towards life.

Contact hours: 5hours theory &1 hour tutorial/ week

DSEA1 PHIG - Ethics : Indian and Western : This course introduces to students about four purusarthas: dharma, artha, kama and moksa and their interrelation . It also deals with division of karma as sakāma and niskāma. Cārvaka ethics, four noble truth and eight fold path of Buddhist ethics has also been discussed here which enlightens students about the rich heritage of Indian ethics. It includes discussion on moral and non-moral actions, object of moral judgement, utilitarianism of Mill and Bentham, deontological ethics of Kant and theories of punishment from western ethics. Comparative study between Indian and western ethics develops a comparative outlook among students.

. Contact hours: 5hours theory &1 hour tutorial/ week

SEMESTER VI

CORE COURSE PHIA

CC13- Nyāya Logic and Epistemology-II : This course is based on nyāya logic and epistemology where definition of pramāna or source of knowledge such as anumāna, upomāna and sabda has been critically analysed. Moreover fallacies of anumāna called hetvābhāsa and it's different kinds have also been discussed in this course. Definition of sakti laksanā and different varities of laksanā has been

critically examined following Tarkosamgraha and Dipikā of Annambhatta. The three conditions of sābdabodha- ākānsā, yogyatā and sannidhi, arthāpatti as a distinctive source of pramāna, the theory of prāmānya, the prāvākar theory of akhyāti have been examined in this course. Nyāya is analytic philosophy

and this is Indian logic so it will definitely develop power of analysis and logical reasoning among students.

Contact hours: 5hours theory &1 hour tutorial/ week

CC14- Ethics (Western) : This course introduces nature and scope of ethics , classification of Ethics-

prescriptive, meta ethics and applied ethics, moral and non-moral actions, object of moral judjement-motive and intention. Moral theories of Plato and Aristotle, standard of morality- Hedonism, Utilitarianism, Deontological theory of Kant , Theories of punishment have been discussed in this course. Study of this course will definitely enlightens about moral rules and increase moral consciousness.

Contact hours: 5hours theory &1 hour tutorial/ week

DISCIPLINE SPECIFIC ELECTIVE COURSE

DSEA2- Applied Ethics : This course introduces nature and scope of applied ethics, issues of applied ethics like killing, Suicide, Euthanasia, Proverty, Affluence and Morality ,War and Violance, Terrorism . Discussion on nature and value of Human Rights , the ethics of care, value beyond sentient beings, Reverence for life, Deep ecology, concept of Kinship ethics , ecological concern in Indian thoughts-Jaina and Buddha views are made in this course. This will definitely increase awareness among students about critical and controversial social issues and develop clear outlook.

Contact hours: 5hours theory&1 hour tutorial/ week

DSE B2: M.K.GANDHI: Philosophy of M .K. Gandhi has been reflected in this course. Gandhi's conception of God and Truth, Nature of Man, Non-Violence, Satyāgraha, Swaraj, and Theory of Trusteeship has been discussed in this course which will make them familiar about the philosophy of Mahatma Gandhi.

Contact hours: 5hours theory&1hour tutorial/ week

DSEB1 PHIG- Applied Ethics and Philosophy of Religion: This course introduces students about nature and scope of applied ethics and nature and scope of philosophy of religion. Applied ethics deals with moral judgment of controversial social issues like killing, suicide, euthanasia, female feticide, terrorism and issues related to environment. Here the basic aim is to solve these crucial problems. So this type of discussion will be definitely beneficial for students. This will enlightens them about their rights and duties towards society and environment which is essential for every responsible citizen of country. Study of this course not only increase moral responsibility but at the same time enlightens emotional and spiritual side of mind by discussing nature of God, argument in support of the existence of God and problem of evil . Ground for disbelief in God ; view of Durkheim and Freud from western and Cārvāka view from Indian has also been discussed here which will develop a comparative outlook.

Contact hours: 5hours theory&1hour tutorial/ week.

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PART I: SEMESTER 1
CORE COURSE-1/GENERAL COURSE-1.
PHYG-CC1/ GEN1-TH

THEORY 60 HOURS; FULL MARKS- 50; CREDIT - 04

Unit 1.

Cellular Basis of Physiology

- Structure and functions of plasma membrane,
- Structure and functions of nucleus and
- Structure and functions of different cell organelles – Endoplasmic reticulum, Golgi bodies, Mitochondria, Lysosome and Peroxisome.

Unit 2.

Biophysical Principles, Enzymes and Chemistry of Bio-molecules

Physiological importance of the following physical processes:

- Diffusion,
- Osmosis and
- Surface tension.
- pH and Buffers –
- Significance in human body and maintenance of pH in the blood.
- Colloids - Classification and physiological importance.

Enzymes: Classification, factors affecting enzyme action. Concept of coenzymes and isozymes.

Carbohydrates**:** Definition and classification.

Monosaccharides –

Classification,
structure,
physiological importance.

Disaccharides – Maltose, Lactose and Sucrose:

Structure,
occurrence
physiological importance.

Polysaccharides – Starch, Glycogen, Dextrin, Cellulose.

Lipids:

Definition and
classification.

Fatty acids Classification.

Definition and importance of,
Saponification number and,
Iodine number.
Phospholipids,
Cholesterol & its ester -- physiological importance.

Amino acids, Peptides and Proteins**:** Classification and structure.
Structure of peptide bonds.

Nucleic acids: Structure of DNA and RNA.

Unit 3.

Digestion

- Structure in relation to functions of alimentary canal and digestive glands.
- Composition, functions and regulation of secretion of digestive juices including bile.
- Digestion and absorption of carbohydrate, protein and lipid.
- Movements of the stomach and small intestine.

Metabolism

- Glycolysis,
- TCA cycle,
- Importance of Glycogenesis, Glycogenolysis and. Gluconeogenesis.
- Beta oxidation of saturated fatty acid.
- Importance of Ketone bodies.
- Deamination & Transamination.
- Formation of urea.

PHYG-CC1P/GEN1P

PRACTICAL 50 HOURS; FULL MARKS- 30; CREDIT - 02

Unit 1:
Examination and staining of fresh tissues:

- Squamous,
- Ciliated and
- Columnar Epithelium by Methylene Blue stain.

Unit 2:

Qualitative tests for identification of:

- Glucose,
- Fructose,
- Lactose,
- Sucrose,
- Starch,
- Dextrin,
- Lactic acid,
- Hydrochloric acid ,
- Albumin,
- Acetone,
- Glycerol and
- Bile Salts.

Unit 3:

Quantitative estimation of

- Amino nitrogen by Sorensen's formol titration method (percentage to be done)

PART I: SEMESTER 2
CORE COURSE-2/GENERAL COURSE- 2.
PHYG-CC2/ GEN2-TH

THEORY 60 HOURS; FULL MARKS- 50; CREDIT – 04

Unit 1:

Blood and Body Fluids

- Blood: composition and functions.
- Plasma proteins: origin and functions.
- Blood cells-- their morphology and functions.
- Erythropoiesis.
- Hemoglobin: different types of compounds and derivatives.
- Coagulation of blood: mechanism, procoagulants, anticoagulants..
- Lymph and tissue fluids: composition, formation, and functions.

Unit 2:

Cardiovascular System

- Anatomy and histology of the heart.
- Properties of cardiac muscle.
- Origin and propagation of cardiac impulse.
- Cardiac cycle : Events. Heart sounds.

- Heart rate.
- Cardiac output: Determination by following Fick principle, factors affecting.
- Pulse - arterial and venous
- . Blood pressure and factors controlling. Baro- and chemoreceptors.
- Vasomotor reflexes.
- Peculiarities of regional circulations: coronary and cerebral.

Unit 3:

Respiratory System

- Anatomy and histology of the respiratory passage and organs.
- Role of respiratory muscles in breathing.
- Lung volumes and capacities.
- Exchange of respiratory gases between lung and blood and between blood and tissues.
- Transport of oxygen in blood
- Transport of carbon dioxide in blood.
- Neural regulation of respiration.
- Chemical regulation of respiration.
- Hypoxia.

PHYG-CC2P/GEN2P

PRACTICAL 50 HOURS; FULL MARKS- 30; CREDIT –02

Unit 1:

- Preparation and staining of human blood film with Leishman’s stain and identification of different types of blood cells.
- Preparation of hemin crystals.

Unit 2:

- Demonstration- kymographic recording of the unperfused heart of toad and effects of warm and cold saline.

Unit 3:

- Measurement of systolic and diastolic pressure by sphygmomanometer and determination of pulse and mean pressure.

Unit 4:

- Measurement of peak expiratory flow rate.
- Pneumographic recording of normal respiratory movements and effects of hyperventilation and breath-holding.

PART II: SEMESTER 3
CORE COURSE-3/GENERAL COURSE-3
PHYG-CC3/ GEN3-TH

THEORY 60 HOURS; FULL MARKS- 50; CREDIT – 04

Unit 1:
Nerve Physiology
- Structure of neurons.
- Origin and propagation of nerve impulse.
- Velocity of impulse in different types of nerve fiber.
- Properties of nerve fibers: all or none law, rheobase and chronaxie, refractory period. indefatiguability.
- Synapses: structure, mechanism of synaptic transmission. Motor unit.
- Myoneural junction: structure, mechanism of impulse transmission.
- Degeneration and regeneration in nerve fibers.

Unit 2:
Muscle Physiology
- Different types of muscle and their structure.
- Red and white muscle.
- Muscular contraction: structural, mechanical and chemical changes in skeletal muscle during contraction and relaxation.
- Isotonic and isometric contractions.
- Properties of muscle: all or none law, beneficial effect, summation, refractory period, tetanus, fatigue.

Unit 3:
- A brief outline of organization and basic functions (sensory, motor and association) of the nervous system, central and peripheral nervous system.
- Ascending tracts carrying touch, kinaesthetic,temperature and pain sensations.
- Descending tracts: pyramidal tract and brief outline of the extra-pyramidal tracts.
- Reflex action - definition, reflex arc, classification, properties.
- Functions of the spinal cord.
- Outline of functions of brain stem.
- A brief idea of the structure, connections and functions of cerebellum.
- Different nucleiand functions of thalamus and hypothalamus.
- Cerebral cortex: histological structure and localization of functions.
- CSF : composition, formation, circulation and functions.
- A brief description of the organization of the autonomic (sympathetic and parasympathetic) nervous system.

- Functions of sympathetic and parasympathetic nervous system.
- A brief idea of speech, aphasia, conditioning, learning and memory.

Unit 4:
Special Senses

Olfaction and Gustation:
- Structure of sensory organ,
- neural pathway of olfactory and gustatory sensation.
- Mechanism of olfactory and gustatory sensation.
- Olfactory and gustatory adaptation. After-taste.

Audition:
- Structure of ear,
- auditory pathway,
- mechanism of hearing.

Vision:
- Structure of the eye.
- Histology of retina.
- Visual pathway.
- Light reflex.
- Chemical changes in retina on exposure to light.
- Accommodation - mechanism.
- Errors of refraction..
- Light and dark adaptation.
- Elementary idea of colour vision
- colour blindness.

Skill Enhancement courses (SEC)
SEMESTER 3
SEC-A1/A2 -SEC(A1/A2)-TH
THEORY 30 HOURS; FULL MARKS- 100; CREDIT – 02
SEC-A1
Microbiology & Immunology (SECA1)
- Viruses - DNA virus and RNA virus.
- Viroids and Prions.
- Bacteriophages.
- Bacteria-structure and morphological classification.
- Gram positive and Gram negative and acid-fast bacteria.
- Pathogenic and non-pathogenic bacteria - definition with a few examples.
- Physical and chemical methods used in disinfection, sterilization and pasteurization.

- Nutritional requirement – complex and synthetic media, preparation of media ; physical factors required for growth (temperature, pH and gaseous requirement).
- Bacterial growth curve. Elementary idea of bacteriostatic and bacteriocidal agents.
- Beneficial and harmful microorganisms in food.
- Elementary knowledge of innate and acquired immunity.
- Humoral and cell mediated immunity.
- Toxins and toxoids.
- Vaccination – Passive and active immunisation, types and uses of vaccine.
- Immunological basis of allergy and inflammation.

SEC-A2

Clinical Biochemistry

Pathophysiological significance of the following blood constituents:

- glucose,
- serum protein,
- albumin,
- urea,
- creatinine,
- uric acid,
- bilirubin and
- ketone bodies.
- Lipid profile in health and diseases.

Pathophysiological significance of the following serum enzymes and isozymes:

- Lactate dehydrogenase,
- Creatine kinase,
- Amylase,
- Acid and Alkaline phosphatases,
- β-glucurodinase SGPT and
- SGOT.

PHYG-CC3P/GEN3P

PRACTICAL 50 HOURS; FULL MARKS- 30; CREDIT –02

- Silver Nitrate preparation of nodes of Ranvier.
- Silver nitrate preparation of corneal cell space.

- Examination and staining of skeletal and cardiac muscles by Methylene Blue stain.
- Demonstration : Use of kymograph, induction coil and mercury key. Recording of imple muscle curve with sciatic-gastrocnemius muscle preparation of toad.
- Determination of visual acuity by Snellen's chart / Landolt's C chart.
- Determination of colour blindness by Ishihara chart.
- Exploration of conductive and perceptive deafness by tuning fork method.

PART II: SEMESTER 4
CORE COURSE-4/GENERAL COURSE-4
PHYG-CC4/ GEN4-TH

THEORY 60 HOURS; FULL MARKS- 50; CREDIT – 04

Unit 1:
Endocrinology

- Hormones - classification. Elementary idea of mechanism of hormone action.
- *Hypothalamus:* Basic concept of neurohormone.
- Hypothalamo-hypophyseal tract and portal system.
- *Pituitary:* Histological structure, hormones, functions. Hypo and hyper active states of pituitary gland.
- *Thyroid:* Histological structure. Functions of thyroid hormones (T4T3).
- Thyrocalcitonin. Hypo and hyper-active states of thyroid.
- *Parathyroid:* Histological structure, functions of parathyroid hormone. Tetany.
- *Adrenal Cortex:* Histological structure and functions of different hormones.
- Hypo and hyper-active states of adrenal cortex.
- *Adrenal Medulla:* Histological structure and functions of medullary hormones.
- The relation of adrenal medulla with the sympathetic nervous system.
- *Pancreas:* Histology of islets of Langerhans. Origin and functions of pancreatic hormones. Diabetes mellitus.
- Brief idea of the origin and functions of renin-angiotensin, prostaglandins. erythropoietin and melatonin.
- Elementary idea of gastrointestinal hormone.

Unit 2:
Reproductive Physiology

- Primary and accessory sex organs and secondary sex characters.
- Testis: histology, spermatogenesis, testicular hormones and their functions.
- Ovary: histology, oogenesis, ovarian hormones and their functions.
- Menstrual cycle and its hormonal control.
- Maintenance of pregnancy – role of hormones.
- Development of mammary gland and lactation - role of hormones.

Unit 3:

Excretory Physiology

- Structure and function relationship of kidney.
- Mechanism of formation of urine.
- Normal and abnormal constituents of urine.
- Physiology of micturition.
- Renal regulation of acid-base balance.
- Non-excretory functions of kidney.

Unit 4:

Skin & its excretory functions

- Structure and functions of skin.
- Insensible and sensible perspiration
- Regulation of body temperature -- physical and physiological processes involved in it.
- Physiology of sweat secretion and its regulation.

SKILL ENHANCEMENT COURSES (SEC)

SEMESTER 4

SEC-B1/B2 -SEC(B1/B2)-TH

THEORY 30 HOURS; FULL MARKS- 100; CREDIT – 02

SEC-B1

Detection of Food Additives / Adulterants & Xenobiotics

- Definition of food adulterants/ additive.
- Tests for identifying food adulterants—
    - Metanil yellow,
    - Rhodamin B,
    - Saccharin,
    - Monosodium glutamate,
    - Aluminium foil ,
    - Dioxin,
    - Chicory and
    - Bisphenol.
- Concept of Xenobiotics- Types, sources and fate.
- Types of reactions in detoxification and their mechanisms oxidation,reduction, hydrolysis and conjugation.

PHYG-CC4P/GEN4P

PRACTICAL 50 HOURS; FULL MARKS- 30; CREDIT –02

Unit 1:

Study and Identification of Stained Sections of Different Mammalian Tissues and Organs:

- Esophagus,
- Stomach,
- Small Intestine,
- Large Intestine,
- Liver,
- Lung,
- Trachea,
- Spinal cord,
- Cerebral cortex,
- Cerebellum,
- Thyroid Gland,
- Adrenal Gland,
- Pancreas,
- Spleen,
- Testes,
- Ovary,
- Kidney,
- Artery and
- Vein.

Unit 2:

Identification of :Normal constituents of urine :

- Chloride,
- Sulphate,
- Phosphate,
- Creatinine and
- Urea;

Abnormal constituents of urine:

- Glucose,
- Protein,
- Acetone,
- Bile pigment and
- Bile Salt.

PART III: SEMESTER 5
DISCIPLINE SPECIFIC ELECTIVES
PHYG-DSE A1 -TH

THEORY 60 HOURS; FULL MARKS- 50; CREDIT – 04

Biological Statistics (DSE A1TH)

Basic concepts–

- Variable,
- population,
- parameter,
- sample,
- statistic.

Classification of data –

- qualitative and quantitative,
- continuous and discontinuous.
- Presentation of data–frequency distribution,
- bar diagram,
- pie diagram,
- frequency polygon and
- histogram.

Mean, median, mode,
standard deviation and
standard error of ungrouped data.

Concept of probability,
Null and Alternate Hypotheses,
Characteristics and uses of Normal and

t-distributions.

PHYG-DSE A1 -P
PRACTICAL 60 HOURS; FULL MARKS- 30; CREDIT – 02

DSE A1P

- Computation of mean, median, mode,
- standard deviation and
- standard error of the mean using physiological data like body temperature, pulse rate, respiratory rate, height and weight of human subjects.
- Graphical representation of data in bar diagram, pie diagram frequency polygon and histogram.

DISCIPLINE SPECIFIC ELECTIVES
PHYG-DSE A2 -TH

Haematology (DSE A2TH):

- Blood groups - ABO and Rh.
- Immunological basis of identification of ABO and
- Rh blood groups.
- Biochemical basis of ABO system and Bombay phenotype.
- Blood transfusion - precaution and hazards.
- Concept of blood bank.
- Erythropoietin and thrombopoietin .
- Foetal haemoglobin.
- Abnormal haemoglobins - thalassaemia and sickle-cell anaemia. Definition, determination and significance of
- TC, DC, ESR, Arneth count, PCV, MCV, MHC, MCHC, bleeding time, clotting time and prothrombin time.
- Anaemia - types (definition and causes). Leucocytosis, Leucopenia and Leukaemia. Purpura.
- Disorders of coagulation

PHYG-DSE A2 -P
PRACTICAL 60 HOURS; FULL MARKS- 30; CREDIT – 02

- DC of WBC,
- Estimation of haemoglobin ,
- Blood group determination,
- Bleeding time
- Clotting time.

PART III: SEMESTER 6
DISCIPLINE SPECIFIC ELECTIVES
PHYG-DSE B1 -TH

THEORY 60 HOURS; FULL MARKS- 50; CREDIT – 04

Work & Exercise Physiology and Ergonomics (DSE B1TH)

- Concept of physical work and physiological work.
- Classification of work loads.
- Energetics of muscular work.
- Measurement of energy cost.
- Cardiovascular and respiratory responses to graded exercise.
- Maximal oxygen consumption and post-exercise oxygen consumption – definition, factors affecting, measurement and significance.
- Muscle fatigue and recovery.
- Physical fitness and its assessment by modified Harvard Step Test.
- Ergonomics. Importance of ergonomics in occupational health and well being.
- Definition of anthropometry.
- Different body dimensions measured in anthropometry and their significance.

PHYG-DSE B1 -P

PRACTICAL 60 HOURS; FULL MARKS- 30; CREDIT – 02

DSE B1P

- Measurement of resting and working heart rate using thirty beats and ten beats methods respectively.
- Measurement of blood pressure before and after exercise.
- Determination of Physical Fitness Index by modified Harvard Step Test.
- Measurement of some common anthropometric parameters- stature, weight, eye height (standing), shoulder height, sitting height, knee height (sitting), arm reach, from wall, mid-arm circumference, waist circumference, hip circumference, neck circumference, head circumference, chest circumference.
- Calculation of BSA and BMI from anthropometric data.

PART III: SEMESTER 6
DISCIPLINE SPECIFIC ELECTIVES
PHYG-DSE B2 -TH

THEORY 60 HOURS; FULL MARKS- 50; CREDIT – 04

Human nutrition and dietetics (DSE B2TH):

- Basic constituents of food and their nutritional significance.
- Vitamins-Classification, functions, deficiency symptoms and daily requirements. Hypervitaminosis.
- Mineral metabolism – Ca, P, Fe. BMR: definition, factors affecting.
- Respiratory quotient: definition, factors affecting and significance.
- Biological value of proteins.
- Essential and non-essential amino acids.
- Nitrogen balance.
- SDA : definition and importance. Body calorie requirements – adult consumption unit.
- Dietary requirements of carbohydrate, protein, lipid and other nutrients.
- Dietary fibres. Principles of diet survey.
- Composition and nutritional value of common food stuffs.

PHYG-DSE B1 -P
PRACTICAL 60 HOURS; FULL MARKS- 30; CREDIT – 02

DSE B2P:

Diet survey report (hand-written) of a family (as per ICMR specification): Each student has to submit a report.

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DEPARTMENT OF POLITICAL SCIENCE: COURSE OUTCOME/PROGRAMME OUTCOME/ PROGRAMME SPECIFIC OUTCOME:

I. COURSE OUTCOME:

(**New Syllabus for CBCS PLSA**)

1. **Understanding Political Theory: Concepts(CCI)**

CO 1- .Conceptualising politics: meaning of *political*.

CO 2- Assessing key concepts I: State; Nation; Sovereignty (evolution); Power and Authority types and linkages;

CO3- Understanding the key concepts of Law. Liberty, Equality--- interrelationships.

CO4- Explaining the key concepts of Rights; Rawls' Justice & Freedom.

CO5- Classifying Democracy (with special reference to David Held);Authoritarianism.

CO6- Assessing the key concepts of Citizenship.

Contact hours: 5hrs/week Tutorial:1hr/week

2. **Understanding Political Theory: Approaches and Debates(CCII)**

CO 1- Analysing political approach: Normative; Legal-Institutional; Empirical-Behavioual---Systems Analysis; Structural Functionalism.

CO 2- Explaining Liberalism; Social Welfarism; Neo-Liberalism.

CO 3- Understanding Postcolonial; Feminist approaches

CO 4- Analysing the theories of Dialectical Materialism and Historical Materialism.

CO 5- Explaining key ideas of State (focus on Relative Autonomy); Class and Class Struggle; Surplus Value; Alienation.

CO 6- Conceptualising Democratic Centralism; Evaluating Lenin-Rosa Luxemburg debate; Revolution--- Lenin and Mao. Hegemony and Civil Society: Gramsci

Contact hours: 5hrs/week Tutorial:1hr/week

Constitutional Government in India(CCIII)

CO 1- Tracing the evolution of the Indian Constitution. Role of the Constituent Assembly---debates (overview). The Preamble.

CO 2- Explaining Citizenship and examining Fundamental Rights and Duties. Directive Principles.

CO 3- Analysing the nature of Indian Federalism: Union-State Relations.

CO 4- Discussing the tenets of Union Executive: President, Vice-President: election, position, functions (focus on Emergency Powers), Prime Minister, Council of Ministers, relationship of Prime Minister and President.

CO 5- Discussing the features of Union Legislature: Rajya Sabha, Lok Sabha: Organisation, Functions – Lawmaking procedure, Parliamentary procedure, Privileges, Committee system.

CO 6- Critically analyzing the important institutions of the government in states: Governor, Chief Minister and Council of Ministers: position and functions – State Legislature: composition and functions.

CO 7- Analysing Judiciary: Supreme Court and the High Courts: composition and functions – Judicial activism.

CO 8 - Looking at the Constitutional amendment. Major recommendations of National Commission to Review the Working of the Constitution.

Contact hours: 5hrs/week Tutorial:1hr/week

Politics in India:Structures and Processes(CCIV)

CO 1- Critically evaluating the.Party system: features and trends – major national political parties in India: ideologies and programmes. Coalition politics in India: nature and trends. Political parties in West Bengal: Overview

CO 2- Evaluating the Electoral process: Election Commission: composition, functions, role. Electoral reforms.

CO 3- Evaluating the role of various forces on Indian politics- business groups, working class, peasants in Indian politics.

CO 4- Critically analyzing the Role of (a) religion (b) language (c) caste (d) tribe.

CO 5- Assessing Regionalism in Indian politics.

CO 6 - Investigating the New Social Movements since the 1970s: (a) environmental movements (b) women's movements (c) human rights movements.

Contact hours: 5hrs/week Tutorial:1hr/week

3. Indian Political Thought: (CC5)

CO 1- . Ancient Indian Political ideas: overview.

CO 2- Assessing Kautilya: Saptanga theory, Dandaniti, Diplomacy

CO3- Understanding Medieval political thought in India: overview (with reference to Barani and Abul Fazal). Legitimacy of kingship.

CO4- Explaining the Principle of Syncretism.

CO5- Discussing Modern Indian thought: Rammohun Roy as pioneer of Indian liberalism – his views on rule of law, freedom of thought and social justice..

CO6- Assessing the Bankim Chandra Chattopadhyay, Vivekananda and Rabindranath Tagore: views on nationalism.

CO7- Critically the M.K. Gandhi: views on State, Swaraj, Satyagraha

Contact hours: 5hrs/week Tutorial:1hr/week

4. Comparative Government and Politics (CC6)

CO 1- Explaining The Evolution of Comparative Politics. Scope, purposes and methods of comparison. Distinction between Comparative Government and Comparative Politics..

CO 2- Explaining Major approaches to the study of comparative politics---Institutional approach (dominant schools: Systems approach and Structural Functional approach)--- limitations; New Institutionalism, Political Economy--- origin and key features.

CO 3- Understanding Development and democratization: S.P. Huntington

CO 4- Analysing Classification of political systems. Nature of liberal and socialist political systems; distinguishing features--- conventions, rule of law (UK), separation of powers, checks and balances, judicial review (USA), democratic centralism (PRC), referendum, initiative (Switzerland).

CO 5- Explaining Political Parties: Typology, features and roles (UK, USA, PRC and Bangladesh). Interest groups: roles (UK and USA).

CO 6- Understanding Unitary system: UK, Bangladesh. Federal system: USA, Russia.

CO7- Discussing Legislature in UK, USA and PRC: composition and functions of legislative chambers; Committee System in UK and USA

CO8- Analysing Executive in UK, USA, France and Russia: A comparative study of (i) Russian, French and American Presidency; (ii) British and French cabinet systems.

CO9- Explaining Judiciary in UK, USA and PRC (with focus on the Procuratorate): comparative study.

CO10- Discussing Rights of the citizens of UK, USA and PRC: A comparative study.

Contact hours: 5hrs/week Tutorial:1hr/week

5. Perspectives on International Relations (CC7)

CO 1- Understanding International Relations and outlining its evolution as academic discipline.

CO 2- Studying the Major theories of International Relations: (a) Classical Realism and Neo- Realism (b) Dependency (c) World Systems theory

CO3- Discussing and analysing emergent issues: (a) Development (b) Environment (c) Terrorism (d) Migration

CO4- Studying the making of foreign policy.

CO5- Classifying Indian foreign policy across the major phases: 1947-1962; 1962-1991; 1991-till date.

CO6- Studying bilateral relations: Sino-Indian relations; Indo-US relations.

Contact hours: 5hrs/week Tutorial:1hr/week

6. Indian Political Thought II (CC8)

CO 1- Analysing M.N. Roy's concept of Radical Humanism.

CO 2- Studying the Socilaist ideas of Narendra Deva, Ram Manohar Lohia, Jayaprakash Narayan

CO 3- Discussing the views on colonialism and nationalism of Sir Syed Ahmed Khan and Iqbal.

CO 4- Understanding Nehru's views on Socialism and Democracy and Subhas Chandra Bose's views on Socialism and Fascism..

CO 5- Analysing the contested notions of 'nation' of Savarkar and Jinnah

CO 6- Conceptualising Jyotiba Phule and Ambedkar's views on caste system and untouchability and Pandita Ramabai's views on social justice

Contact hours: 5hrs/week Tutorial:1hr/week

7. Global politics since 1945 (CC9)

CO 1- Analysing Cold War and its Evolution with special emphasis on (a) Emergence of Third World (b) NAM (c) Pan- Africanism. Discussing on Post-Cold War Era and Concept and Significance of Globalization.

CO 2- Discussing Transitional phase of Europe including **overview** on (a) European Union and (b) Brexit

CO3- Studying Major Institutions of Global Governance i.e (a) World Bank, (b) IMF, (c) WTO **as well as discussing on the Regional Oraganizations i.e (a) ASEAN, (b) OPEC, (c) SAFTA, (d) SAARC, (e) BRICS along with West Asia and Palestine Questions.**

CO4- Discussing Bilateral Relations between India and her neighbours: Pakistan and Bangladesh

CO5- Analysing India's Relation with Nepal, Bhutan and Srilanka

CO6- Studying Major Organs of UNO i.e (a) Genaral Assembly, (b) Security Council, (c) Secretariat (with focus on Secretary General). Evaluating the role of UNO in (a) Peace Keeping, (b) Human Rights and (c) Development with focus on Millenium DEvelopment Goals and Sustainable Development Goals.

Contact hours: 5hrs/week Tutorial:1hr/week

8. Western Political Thought and Theory: Concepts (CCX)

CO 1- Analysing Greek political Thought : Main features-Plato: justice, communism-Aristotle :state, classification of constitutions.

CO 2- Understanding Roman political thought : theories of Law and Citizenship- contributions of Roman thought.

CO 3- Analysing the Medieval political thought in Europe: major features .

CO 4- Explaining contribution of Machiavelli . Significance of Renaissance . Political thought of Reformation .

CO 5- Conceptualising Bodin : Idea of Sovereignty.

CO 6- Critically analysing Hobbes: founder of science of materialist politics.

CO 7- Analysing Locke : founder of Liberalism.Views on natural rights, property and consent.

CO 8 – Analysing Rousseau : views on freedom and democracy .

Contact hours: 5hrs/week Tutorial:1hr/week

WESTERN POLITICAL THOUGHT AND THEORY II

Code: PLS-A-CC-5-11-TH+TU (CC11)

CO1: Analysing Bentham's concept of Utilitarianism and John Stuart Mill's views on liberty and representative government

CO2: Understanding Hegel's theory of Civil Society and State

CO3: Evaluating T. H. Green's philosophy of Freedom and Obligation

CO4: Studying the basic characteristics of Utopian and Scientific Socialism

CO5: Assessing the Varieties of non-Marxist socialism: Fabianism, Syndicalism and Guild Socialism

CO6: Studying an overview of Anarchism

CO7: Understanding Cultural Marxism through an overview of the Frankfurt School and studying the emergence and basic contentions of Post-Marxism

POLITICAL SOCIOLOGY

Code: PLS-A-CC-5-12-TH+TU (CC12)

CO1: Studying the Social bases of politics and tracing the emergence of Political Sociology

CO2: Assessing the concepts of Political Culture and Political Socialization with reference to their nature, types and agencies

CO3: Learning the concept and types of Political Participation

CO4: Understanding Political Development and Social Change

CO5: Analysing the concept and structures of Political Communication

CO6: Studying the inter-relation between Social Stratification and Politics with special reference to caste, tribe, class and elite

CO7: Evaluating the basic issues and inter-relation between Gender and Politics

CO8: Examining the varying perspectives of Religion and Politics

CO9: Analysing the conditions and modes of intervention of Military and Politics

CO10: Studying the Electorate and Electoral Behaviour (with special reference to the Indian context)

Public Administration-- Concepts and Perspectives Code: PLS-A-CC-6-13-TH+TU

Module I:

CO1: Analysing the nature, Scope and Evolution of Public Administration – Private and Public Administration. Principles of Socialist Management.
CO2: Underlining challenges to discipline of Public Administration and responses: New Public Administration, Comparative Public Administration, Development Administration (Indian context).
CO3: Discussing major concepts of administration: (a) Hierarchy (b) Unity of Command (c) Span of Control (d) Authority (e) Centralization, Decentralization and Delegation (f) Line and Staff.
CO4: Describing Public Administration in the era of globalization, liberalization and privatization. Governance: conceptual emergence--- distinction with government. e-governance: features and significance.

Module II:

CO5: Analysing Bureaucracy: views of Marx and Weber.
CO:6 Discussing Ecological approach to Public Administration: Riggsian Model.
CO7: Signifying Administrative Processes: (a) Decision making (b) Communication and Control (c) Leadership (d) Coordination.
CO8: Analyzing Public Policy: definition, characteristics. Models. Policy implementation.
Contact hours: 5hrs/week Tutorial:1hr/week

Administration and Public Policy in India Code: PLS-A-CC-6-14-TH+TU

Module I

CO1: Analysing Continuity and change in Indian administration: brief historical overview.
CO2:Describing Civil Service in India (Bureaucracy): recruitment (role of UPSC, SPSC), training.
CO3:Narrating Organization of Union Government: Secretariat Administration: PMO, Cabinet Secretariat.

CO4: Enumerating Organization of State Government: Chief Secretary – relations between Secretariat and Directorate.
CO5: Analysing District Administration: role of District Magistrate, SDO, BDO.

Module II:

CO6: Discussing Local Self Government: Corporations, Municipalities and Panchayats in West Bengal, structure and functions. 73rd and 74th Amendment: overview.
CO7: Analysing Planning: Planning Commission, National Development Council. District Planning. Changing nature of planning: NITI Ayog. Budget--- concept and significance.
CO8: Analysing Financial Administration: Public Accounts Committee, Estimates Committee – role of CAG.
CO9: Describing Citizen and administration: functions of Lokpal and Lokayukt. Right to Information--- Citizen Charter.
CO10: Signifying Citizen and social welfare policies: MGNREGA; Sarva Shiksha Abhiyan (SSA); National Health Mission (NRHM).

Contact hours: 5hrs/week Tutorial:1hr/week

Skill Enhancement Courses

1. **Democratic Awareness through Legal Literacy**

   CO 1-Outlining Laws relating to Criminal jurisdiction-provisions relating to filing an FIR, arrest, bail, search and seizure and some understanding of the questions of evidence and procedure in the Criminal Procedure Code.
   CO 2-Describing offences under IPC.

   CO 3-Discussing Personal laws. Customary Laws in Indian perspective

   CO 4-Analysing Laws relating to Dowry, sexual harassment and violence against women.
   CO 5-Highlighting Laws relating to consumer rights.
   CO 6-Briefing Right to Information, Laws relating to Cybercrimes and Anti-terrorist laws: Implications for security and human rights.

   Contact Hours: 2 hrs/week

2. **Legislative Practices and Procedures** Code: PLS-A-SEC-4-B(1)
   CO1-Discussing Powers and Privileges Members of Parliament:- Constituency Work. CO 2-Describing Powers and function of State legislative Assemblies:.
   CO 3-Describing the Functionaries of rural and urban local self-government from Zila

Parishad, Municipal Corporation to Panchayat/ Ward.

CO 4-Describing the stages of how a bill becomes a law, role of standing committees in reviewing a bill, legislative consultants, the framing of rules and regulations.

CO 5- Enumerating Types of committees.

CO 6-Analysing role of committees in reviewing government finances, policy, programmes and legislation.

CO 7- Conceptualising powers and functions of people's representative at different tiers of governance

Contact Hours: 2 hrs/week

Discipline Specific Elective Courses :

Gender and Politics **Code: PLS-A-DSE-5-A(1)-TH+TU**

Module I:

CO-1: Discussing 'Patriarchy' with analysis of a. sex-gender debates b. public-private issues and c. the concept of power.

CO-2: Studying 'Feminism'.

CO-3: Analysing Family, Community, State by thorough discussion of a. family, b. community and c. state.

Module II:

CO-4: Discussing history of the women's movement in India, and the issue related to work and labour.

CO-5: Analysing violence against women

CO-6: Conceptualising the issues related to a. visible and invisible work, b. reproductive and care work and c. sex work.

Contact hours: 5hrs/week Tutorial:1hr/week

Indian Foreign Policy in a Globalising World **Code: PLS-A-DSE-5-B(1)- TH+TU**

Module I:

CO-1: Studying India's Foreign Policy: from a post colonial state to an aspiring global power

CO-2: Discussing India's Relations with the USA and USSR/ Russia

CO-3: Analysing India's Engagement with China

Module II:

CO-4: Discussing India in South Asia emphasising on debating regional strategies

CO-5: Analysing India's negotiating style and strategies: Trade, Environment and Security Regimes

CO-6: Understanding India in the contemporary multipolar world.

Contact hours: 5hrs/week Tutorial:1hr/week

3. Citizenship in a globalised world PLS-A-DSE-6-B(3)-TH+TU

CO1- Discussing the classical conception of citizenship
CO2- Describing the evolution of citizenship and the modern state
CO3- Analysing the concept of citizenship and diversity
CO4- Exploring citizenship beyond the nation state: globalisation and global justice
CO5- Examining the idea of cosmopolitan citizenship

Contact hours: 5hrs/week Tutorial:1hr/week

4. Public policy in India PLS-A-DSE-6-A(3)-TH+TU

CO1- Describing the introduction to policy analysis
CO2- Explaining the analysis of policy vis-a-vis the theories of state
CO3- Analysing the effects of political economy and policy on interest groups and social movements
C04- Exploring the Nehruvian vision, economic liberalisation and recent developments on ideology and policy

Contact hours: 5hrs/week Tutorial:1hr/week

(**New Syllabus for CBCS PLSG**)

1. **Introduction to Political Theory(GE/CC1)**

CO 1- Explaining nature and scope Political Science, Different approaches--- Normative, Behavioural, Post-Behavioural, Marxist, Feminist.

CO 2- Analysing the concept of State: Contract theory; Idealist theory; Liberal theory; Marxist theory; Gandhian theory. Sovereignty of the State: Monistic and Pluralist theories. Doctrine of Popular Sovereignty.

CO 3- Evaluating the foundational concepts: Law; Right; Liberty; Equality--- meanings, sources, interrelationships.theories of the State: Contract theory, Idealist theory, Liberal and Neo-liberal theory, Marxist theory and Gandhian theory.

CO 4- Discussing Nationalism and Internationalism—meanings and features; Democracy--- meaning and nature.

CO 5- Accessing the different theories and concepts of Marxism, like Dialectical and Historical Materialism; Class and Class Struggle; Theory of Revolution; Lenin's Theory of Imperialism.

CO 6-Analysing Fascism: meaning, features, significance.

CO 8- Understanding Political parties and interest groups: functions and role; Methods of representation: territorial, functional, proportional.

Contact hours: 6hrs/week

2. **Comparative Government and Politics (GE/CC2)**

CO 1- Examining diverse political systems:Liberal-democratic, Authoritarian .Socialist – forms of Political Systems: Unitary and Federal, Parliamentary and Presidential

CO 2- Exploring the Constitution of UK: Basic features with major focus on Conventions and rule of Law. Legislature: composition and functions with major focus on the concept of parliamentary sovereignty. Executive: composition and functions of the Cabinet with major focus on the role of the Prime Minister – the concept of Cabinet Dictatorship; (d) Role of the Crown;(e) Party system- role of the Opposition.

CO 3- Exploring the US Constitution: Basic features (b) US federalism (c) Bill of rights (d) Legislature: composition and functions with major focus on the Presiding Officers and Committee System; (e) The Executive: The President: election, powers and functions. US Cabinet: composition and functions; (f) Supreme Court: composition and functions; (g) Party system.

CO 4- Exploring the Chinese Constitution: (a) Significance of the Revolution (b) Basic Basic features with special reference to General Principles(c) Communist Party: structure, functions, role (d) Rights and Duties of Citizen (e) The National Government: i) The Executive: President, Premier, State Council, ii) The Legislature: National People' Congress ,Standing Committee iii) The Judiciary.

CO 5 – Discussing Salient features of the Constitutions of Bangladesh,France,Switzerland.

Contact Hours: 6hrs/week

3. Government and Politics in India(GE/CC3)

CO 1- Explaining Evolution of the Constitution (brief) . The Preamble; Fundamental Rights. Directive Principles.

CO 2- Analysing Union-State Relations – nature of federalism .

CO 3- Evaluating Union Executive: President, Vice-President, Prime Minister, Council of Ministers .

CO 4- Discussing the Union Legislature: Lok Sabha and Rajya Sabha--- organisation, functions, law making procedure, privileges, committee system , Speaker .

CO 5- Analysing the Judiciary: Supreme Court and High Courts—composition and functions: Judicial; Activism in India .

CO 6- Analysing Constitutional amendment procedure.

CO 7- Understanding Government in States: Governor; Council of Ministers and the Chief Minister; State Legislature: composition and functions .

CO 8- Understanding Local Government : rural and urban . Significance of 73 rd and 74 th Amendments .

CO 9- Explaining Election Commission and election reforms .

CO 10- Analysing Party System in India : national political parties; Ideologies and programmes . Recent trends in India: rise of regional political parties; coalition politics.

CO 11- Discussing Regionalism: Nature, roots, types .

CO 12- Varieties of social and political movements : a) caste ,tribe b) religion c) environment; d) women's movements .

Contact hours: 6hrs/week

4. International Relations (GE/CC4)

CO 1- Studying and Analysing Different Approaches of International Relations : (a) Classical Realism (Hans Morgenthau) & Neo-Realism (Kenneth Waltz), (b) Neo- Liberalism

(Robert O Keohane and Joseph Nye), (c) Structural Approaches: World System Approach (Immanuel Wallerstein) and Dependency School (Andre Gunder Frank), (d) Feminist Perspective (J. Ann Tickner)

CO 2- Discussing about Origin and Various Phases of First Cold War. Analysing the Rise and Fall of Détente and Second Cold War .

CO 3-. **Analysing** the issues behind End of Cold War and Collapse Soviet Union. Analysing the situation of Post Cold War Era and Emerging Centres of Power (European Union, Russia, China and Japan)

CO 4- Discussing about India's Foreign Policy with focus on (a) Historical, Geo-Politocal, Economic, Domestic and Strategic Determinants, (b) India's Non-Alignment Policy, (c) India as Emerging Power

Contact hours: 6hrs/week

Skill Enhancement Course:

Democratic Awareness through Legal Literacy Code: PLS-A-SEC-3-A(1)-TH

Module I

CO1:Laws relating to Criminal jurisdiction-provisions relating to filing an FIR, arrest, bail, search and seizure and some understanding of the questions of evidence and procedure in the Criminal Procedure Code.

CO2:Offences under IPC.

CO3:India: Personal laws. Customary Laws

CO4:Laws relating to Dowry, sexual harassment and violence against women.

Module II

CO5:Laws relating to consumer rights.

CO6:Right to Information.

CO7:Laws relating to Cybercrimes.

CO8:Anti-terrorist laws: Implications for security and human rights.

Elementary Dimensions of Research Code: PLS-G-SEC-4-B(1)-TH

CO 1- Describing Concepts, variables (dependent and independent), propositions and hypothesis.

CO 2- Analysing Research design: definition, purpose of research, units of analysis, fallacies.

CO 3- Underlining Ethics in research---issues and problems.

CO- 4 learning Research Report writing.

CO 5- Enumerating Sources and Techniques of data collection – quantitative and qualitative data

CO 6- Understanding Sampling: definition, probability and non-probability. Scales and Measurement

CO 7- Analysing Statistical method of data analysis: descriptive and inferential (Overview).

Graphic representation of data

(Bar graph, Histogram, Pie Chart)

Contact Hrs: 2hrs/week

Discipline Specific Elective Courses :

Indian Foreign Policy Code: PLS-G-DSE-A-5-1B-TH+TU

Module I

CO1. Explaining Foreign Policy: meaning and determinants.
CO2. Analysing National Interest as key concept in foreign policy.
CO3. Studying Instruments of foreign policy: diplomacy; propaganda; military.

Module II

CO4 Discussing the Evolution of Indian foreign policy.
CO5. Explaining Basic principles of Indian foreign policy.
CO6. Analysing India and her neighbours: Bangladesh; Pakistan; Nepal; Sri Lanka.

Contact hours: 6 hours a week.

Human Rights: Theory and Indian Context Code: PLS-G-DSE-B-6-2B-TH+TU

Module I

CO1.Understanding History of the idea of human rights; Evolution of generations of human rights.
CO2.Discussing Universal Declaration of Human Rights: provisions and significance.
CO3.Analysing UN and human rights: charters; UN Human Rights Commission; Vienna Declaration and Programme of Action.

Module II

CO5. Describing Indian Constitution and the foundation of rights.
CO6. Explaining National and State Human Rights Commissions: structure and functions.
CO7.Analysing Human rights in India: problems and remedies.

Contact hours: 6 hours a week.

DEPARTMENT OF PSYCHOLOGY

COURSE OUTCOME/PROGRAMME OUTCOME/ PROGRAMME SPECIFIC OUTCOME

I. COURSE OUTCOME:

1: INTRODUCTION TO PSYCHOLOGY

CO 1: Introduction: What is psychology? Perspectives on behaviour; Methods of psychology; Subfields of psychology; Psychology in modern India.

CO 2: Perception: Perceptual processing, Role of attention in perception, Perceptual organization, Perceptual sets, Perceptual constancies, Depth perception, Illusions.

CO 3: Learning and Motivation: Principles and applications of Classical conditioning, Operant conditioning, and Observational learning; Cognitive influences on learning; Perspectives on motivation, Types of motivation, Motivational conflicts.

CO 4: Memory: Models of memory: Levels of processing, Parallel distributed processing, Information processing; Reconstructive nature of memory; Forgetting; Improving memory.

CO 5: Practicum:

1. a) Spaced and unspaced method of learning on memorization capacity and b) Retroactive inhibition on the memorization capacity of the subject
2. Determine of the rate of perceptual reversibility of the subject by using Human Profile/Flower Vase Card

Contact Hours: 50 hours (per semester)

Practical: 4 hrs (per week)

2: STATISTICAL METHODS FOR PSYCHOLOGICAL RESEARCH-I

CO 1: Introduction: Psychological Research; Relevance of Statistics in Psychological Research; Descriptive and Inferential Statistics; Variables and Constants; Scales of Measurement, Frequency Distribution; Computation of Percentiles and Percentile Ranks. Graphic Representation of data: Histogram, Frequency Polygon, Bar Diagram, Pie Chart, Cumulative Frequency Graph, Skewness and Kurtosis.

CO 2: Measures of Central Tendency and Variability: Calculations of different measures of Central tendency such as the Mode, the Median and the Mean, their properties and comparison among these measures and calculations of different measures of Variability such as the Range, the Semi-Interquartile Range, the Variance and the Standard Deviation, their properties and comparisons.Central Tendency Measures in Normal and Skewed Distributions, Effects of Linear Transformations on Measures of Central Tendency, Effects of Linear Transformations on Measures of Variability.

CO 3: Standard (z) Scores and The Normal Probability Distribution: Standard Scores; Properties of z-scores; Transforming raw scores into z-scores, Determining a raw score from a z-score, Some Common Standard Scores and their comparisons. Nature and Properties of the Normal Probability Distribution; Finding Areas when the Score is Known, Finding Scores when the Area is Known; The Normal Curve as a Model for Real Variables; The Normal Curve as a Model for Sampling Distributions; Divergence from Normality (Skewness and Kurtosis).

CO 4: Correlation, Random Sampling and Sampling Distributions: The Meaning of Correlation; Historical Perspective; The Scatterplot of Bivariate Distributions; Correlation: A Matter of Direction and Degree; The Coefficient of Correlation from Pearson's and Spearman's Rank-Order Correlation Coefficient; Correlation and Causation; The Effects of Score transformations; Cautions concerning Correlation Coefficients, Random Sampling; Using a

Table of Random Numbers; The Random Sampling Distribution of the Mean and its different uses. Random Sampling With and Without Replacement.

CO 5: Practicum: 1. Graphical representations (Frequency Polygon, Histogram, Pie Chart, Smoothed Curve, Ogive), 2. Computation of Central Tendency and Variability measures, 3. Skewness, Kurtosis, Normal Probability Curve- Areas and Z scores and 4. Pearson Product Moment Correlation Coefficient.

Contact Hours: 50 hours (per semester)
Practical: 4 hrs (per week)

3: BIOPSYCHOLOGY

CO 1: Introduction to biopsychology: Nature and scope; Methods and ethics in biopsychology, Divisions of biopsychology.

CO 2: The Functioning brain: Structure and functions of neurons; Neural conduction and synaptic transmission.

CO 3: Organization of Nervous system: CNS & PNS: Structure and functions. Functional abnormalities of neurotransmitters: dopamine and serotonin hypothesis.

CO 4: Neuroendocrine system: Structure, functions and abnormalities of major glands: Thyroid, Adrenal, Gonads, Pituitary.

CO 5: Practicum: Any 2 practicum pertaining to CC-3
1. Determination of the effect of variation of different levels of attentive task on arousal.
2. Reaction Time – Simple, Choice and Discriminative Reaction Time.
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Contact Hours: 50 hours (per semester)
Practical: 4 hrs (per week)

4: PSYCHOLOGY OF INDIVIDUAL DIFFERENCES

CO 1: Personality: Nature of personality; Biopsychosocial foundations of personality; Culture, gender and personality; Perspectives on personality: Psychodynamic (Freud), humanistic (Maslow) and social (Bandura).

CO 2: Intelligence: Concept of intelligence, its different approaches and factors. Gardner's multiple intelligences; Emotional Intelligence, Group differences in intelligence; Extremes of intelligence.

CO 3: Indian approach: Self and Identity from Indian Perspective: Nyaya, Vedanta and Buddhist views of self. Concept of Triguna from Sankhya perspective.

CO 4: Enhancing individual's potential: Self-determination theory; Enhancing cognitive potential, Selfregulation and self enhancement; Fostering creativity.

CO 5: Practicum: Any 2 practicum pertaining to CC-4

Two psychological tests (one based on Intelligence and one based on personality).

1. Intelligence: a.) WASI II and Intelligence test by Terman & Merrill (1937).
2. Personality: The Sixteen Personality Factor (16PF) Questionnaire by Cattell (2001).

Contact Hours: 50 hours (per semester)

Practical: 4 hrs (per week)

5: DEVELOPMENT OF PSYCHOLOGICAL THOUGHT

CO 1: Understanding Psyche: A universal quest for understanding Consciousness. Indian Perspective: Yoga and Vedant: Western Perspective. Emergence of modern psychology: Questions from Western view; Debates: Free Will and Determinism, Empiricism and Rationality.

CO 2: Positivist Orientation: Developments in Behaviourism (Watson), Neo-behavouristic traditions

(Skinner), Cognitive revolution- A Paradigm Shift)

CO 3: Analytic Debates: Clinical Vs Phenomenological, Freudian Psychoanalysis, Analytical Psychoanalysis; Carl Jung Developments in Psychoanalysis: The shift towards social and cultural; Developments of Third Force: Humanistic and Existential

CO 4: Contemporary Developments*:* Psychology of Gender.

CO 5: Practicum: Any 2 practicum pertaining to CC-

1. Word Association Test-

Word Association Test- by Dr. Girindra Sekhar Bose

2. Indian Gender Role Identity Scale-

Basu, J. (2010). Development of The Indian Gender Role Identity Scale (IGRIS). Psychometric Properties and Application. Journal of Indian Academy of Applied Psychology, 36, 25-34.

Contact Hours: 50 hours (per semester)

Practical: 4 hrs (per week)

6: PSYCHOLOGICAL RESEARCH

CO 1:Basics of Research in Psychology: What is Psychological Research? The Goals of Psychological Research, Paradigms of Research, Principles of Good Research, Ethics in Psychological Research. **Research Traditions :**Quantitative& Qualitative orientations towards research & their steps, Comparing Qualitative& Quantitative Research Traditions, Formulating a problem & developing a testable research question / research hypothesis.

CO 2:Sampling: Probability & Non probability sampling methods.

CO 3: Methods of Data Collection: Case study, Observation, Interview & Focus group discussion, Survey, Use of Secondary Data

CO 4: Psychological testing: Characteristics of a test – standardization, reliability, validity, norms, applications & issues.

CO 5 : Practicum : Any 2 practicum pertaining to CC-6 Semi Projective Techniques-

1. Semi Structured Interview on Coping compared with Coping Scale by Rao, K., Subbakrishna, D.K. & Prabhu,G.C. (1989). Development of a Coping Checklist- A Preliminary Report. Indian Journal of Psychiatry, 31 (2), 128-133.

2. Sentence Completion Test:

Sacks, J.M & Levy, S. (1950). Sentence Completion Test (SSCT). Dr. Joseph M. Sacks & other Psychologists of the New York Veterans Administrative Mental Hygiene Service.

Contact Hours: 50 hours (per semester)

Practical: 4 hrs (per week)

7: SOCIAL PSYCHOLOGY

CO 1: Introduction: Nature and scope of social psychology; Overview of the history of social psychology (including development in India); Relationship with sociology and anthropology.

CO 2: Understanding and evaluating the social world: Social cognition, Social perception, Attitudes, Attitude-behaviour link; Strategies for attitude change

CO 3: Social interaction and Influence: Interpersonal attraction, Pro-Social Behaviour, Aggression, Social Influence

CO 4: Group Dynamics and Inter-group relations: Nature of groups, Consequences of belonging (performance, decision making, cooperation and conflict), Nature of intergroup relations (prejudice, inter-group conflict, intervention techniques)

CO 5: Practicum: Any 2 practicum pertaining to CC-7

1. On Group Cohesiveness by Sociogram Method
2. On Social Facilitation by Problem Solving-Individual and Group Situations

Contact Hours: 50 hours (per semester)

Practical: 4 hrs (per week)

8: Understanding Psychological Disorders

CO 1: Understanding Abnormality: Issues in defining Normality and Abnormality**;** Issues in diagnosis and classification; Nature of Clinical Assessment

CO 2: Clinical Picture and etiology of Disorders I: Anxiety disorders (any 2 disorders):- Generalized Anxiety Disorder and Obsessive Compulsive Disorder
Somatoform disorders – Hypochondriasis and Conversion disorders

CO 3: a**)** Clinical Picture and etiology- Mood disorders
b) Clinical Picture- Eating disorders.

CO 4 : a). Clinical Picture and etiology: Schizophrenia
b). Clinical Picture- Personality Disorder: Anti Social Personality Disorder
c). Clinical Picture- Disorders of Development: Mental Retardation, ADHD

CO 5:Practicum: Any 2 practicum pertaining to CC-8
1. Anxiety State Trait Anxiety Inventory: Spielberger, C.D., Gorsuch, R.L., & Lushene, R.G. (1970). STAI Manual; Palo Alto. Consulting Psychologists Press.
2. Personality: Kundu Introversion Extraversion Inventory (1976, Copyright) by Dr. Ramanath Kundu, Department of Psychology, University College of Science & Technology, 92 Acharya Prafulla Chandra Road. Calcutta-700009.

Contact Hours: 50 hours (per semester)

Practical: 4 hrs (per week)

9: STATISTICAL METHODS FOR PSYCHOLOGICAL RESEARCH-II

CO 1: Introduction to Inferential Statistics and Hypothesis Testing about the Difference between Two Independent Means: The meaning of Statistical Inference and Hypothesis Testing; Hypothesis Testing about the difference between Two Independent means; Null and the Alternative Hypotheses; The Random Sampling Distribution of the Difference between Two Sample Means; Properties of the Sampling Distribution of the Difference between Means; Choice of *HA*: One-Tailed and Two-Tailed Tests; Steps for Hypothesis Testing; The *t* Distribution; Characteristics of Student's Distribution of *t*; Computing *t* Using Definitional Formula only; Assumptions Associated with Inference about the Difference between Two Independent Means; The Statistical Decision regarding Retention and Rejection of Null Hypothesis.

Interpreting the Results of Hypothesis Testing

A Statistically Significant Difference versus a Practically Important Difference; Errors in Hypothesis Testing; Power of a Test; Levels of Significance versus *p*-Values.

CO 2: Hypothesis Testing About the Difference between Two Dependent (Correlated) Means

The Null and Alternative Hypotheses; Determining a Formula for *t*; Degrees of Freedom for Tests of No Difference between Dependent Means; Testing a Hypothesis about Two Dependent Means using the formula involving standard errors and correlation only; Assumptions When Testing a Hypothesis about the Difference between Two Dependent Means.

Confidence Intervals

Confidence Intervals for μx - μy; The Relation between Confidence Intervals and Hypothesis Testing; The Advantages of Confidence Intervals.

CO 3: Hypothesis Testing for Differences among Three or More Groups: One-Way Analysis of Variance (ANOVA). Concept of ANOVA. Concept of t and F test and their relationship. (No computation of ANOVA)

CO 4: Hypothesis Testing for Categorical Variables and Inference about Frequencies

The Chi-Square as a Measure of Discrepancy between Expected and Observed Frequencies; Logic of the Chi-Square Test; Assumptions of Chi-Square; Calculation of the Chi-Square Goodness-of-Fit-Test- One

Way Classification; Chi Square for Two Classification Variables-Contingency Table Analysis; Interpretation of the Outcome of a Chi-Square Test.

Nonparametric Approaches to Data

Introduction to Distribution-free Nonparametric Tests; Comparison with Parametric Tests; Uses and Applications of Nonparametric Tests.

Theoretical Introduction to SPSS Statistical Package

CO 5: Practicum : Any 2 practicum pertaining to CC-9

1. On Computation of t test
2. On Computation of Chi Square

Contact Hours: 50 hours (per semester)

Practical: 4 hrs (per week)

10: APPLIED SOCIAL PSYCHOLOGY

CO 1: Introduction: Nature of applied Social Psychology, Social influences on behaviour, Methodological approaches – Participatory Action and Learning research techniques.

CO 2: Applying Social Psychology-I: Environment, diversity. (Practicals below)

CO 3: Applying Social Psychology-II: work, health, legal system.

CO 4: Intervention and Evaluation: Process of intervention; need for evaluation for effective programmes. Case studies in Indian context.

CO 5 :Practicum: Any 2 practicum pertaining to CC-10

1. Likert Scale Construction on Environment
2. Diversity to be measured in terms of Ethnic Prejudice by Bogardus's Social Distance Scale (Revision of Goode and Hatt)

Contact Hours: 50 hours (per semester)

Practical : 4 hrs (per week)

11: UNDERSTANDING AND DEALING WITH PSYCHOLOGICAL DISORDERS

CO 1: Biological etiology-explanations and interventions for Mood disorders and Schizophrenia: Application in case of mood disorders and schizophrenia

CO 2: Insight oriented explanations and interventions: Psychoanalytic perspective – Conversion disorder, OCD, Dissociative disorder; Humanistic and Existential perspective – Application in case of crises intervention **(12 hours)**

CO 3: Behavioural and Cognitive explanations : Application in case of : phobias, depression.

CO 4: Perspectives of Counselling: Concept, Steps, Types- Directive, Nondirective and Eclectic

CO 5 Practicum: Any 2 practicum pertaining to CC-11
1. Psychiatric Morbidity: General Health Questionnaire 28:
2. Aggression: State Trait Anger Expression Inventory

Contact Hours: 50 hours (per semester)

Practical : 4 hrs (per week)

12: DEVELOPMENTAL PSYCHOLOGY

CO 1: Introduction: Concept of Human Development; themes (Cephalocaudal and Proximodistal) and research designs

CO 2: Stages of Life Span Development: Prenatal Development, Birth and Infancy, Childhood, Adolescence, Adulthood

CO 3: Domains of Human Development: Cognitive development: perspectives of Piaget and Vygotsky; Language Development; Emotional Development; Moral Development: Perspective of Kohlberg; Personality Development

CO 4: Socio-Cultural Contexts for Human Development: Family; Peers, Media & Schooling; Human Development in the Indian context

CO 5 Practicum: Any 2 practicum pertaining to CC-12
1. Parent Child Relationship: a.) Rao, N. (1989). Manual for Parent Child Relationship Scale. National Psychological Corporation

3. Aptitude: Vohra, S. (1997). Davis's Battery of Differential Abilities. National Psychological Corporation

Contact Hours: 50 hours (per semester)

Practical : 4 hrs (per week)

13: ORGANIZATIONAL BEHAVIOUR

CO 1: Introduction: Historical antecedents of Organizational Behaviour: Scientific management & Human Relations Movement**;** Contemporary Trends and Challenges**;** Organizational Behavior: Challenges in the Indian Setting.

CO 2: **Individual level processes:** Employee attitudes: Job satisfaction, Organizational Commitment, Organizational Citizenship Behaviour**;** Work Motivation; Early theories: Maslow, McClelland, Two factor; Contemporary theories and applications: Goal setting & MBO, Equity, Expectancy, Job Characteristics Model & Job Redesign.

CO 3: **Dynamics of Organizational Behavior:** Organizational culture; Power and Politics: Influence, sexual harassment, organizational politics; Positive Organizational Behaviour: Optimism.

CO 4: **Leadership:** Basic approaches: Trait theories, Behavioral theories, Contingency theories; Contemporary Issues: Inspirational approaches to leadership, Challenges to the leadership construct; Indian perspective on leadership.

CO 5 Practicum: Any 2 practicum pertaining to CC-13

1. Emotional Intelligence:
Hyde, A., Pete, S. & Dear, U. (2002). Manual for Emotional Intelligence Scale (EIS). Vedanta Publication. Lucknow.

2. Intrinsic Extrinsic Motivation:
Agrawal, K.G. (1988). Manual for Work Motivation Questionnaire. Agra : National Psychological Corporation.

Contact Hours: 50 hours (per semester)

Practical : 4 hrs (per week)

14: COUNSELLING PSYCHOLOGY

CO 1: Introduction: Nature and Goals; Counselling as a profession: professional ethics (Latest version of American Counselling Association – ACA); The effective counsellor: personality characteristics; Counselling status of counselling psychology in India.

CO 2: Counselling Process: Building counselling relationships; Working in a counselling relationship; Closing counselling relationships.

CO3: Techniques of Counselling: Psychoanalytic techniques; Humanistic techniques; Behavioral

techniques; Cognitive techniques; Indian techniques: Yoga and Meditation**.**

4: Counselling Applications: Child Counselling; Family Counselling; Career Counselling; Crisis Intervention: suicide, grief, and sexual abuse **.**

CO 5 Practicum: Any 2 practicum pertaining to CC-14

1. Interest- Guilford, J.S. & Zimmerman, W. S. (1963, 1989,Copyright). Guilford- Zimmerman Interest Inventory. Consulting Psychologists Press Inc.3803 E. Bayshore Road. Palo Alto, CA 94303.

2. Dysfunctional Attitude Power, M.J. (1994, Copyright). Dysfunctional Attitude Scale. Reprinted by permission in *Cognitive Therapy for Chronic Pain* by Beverly E. Thorn. Copyright 2004 by The Guilford Press. Permission to photocopy this appendix is granted to purchasers of this book for personal use only (see copyright page for details).

Contact Hours: 50 hours (per semester)

Practical : 4 hrs (per week)

15 : BEHAVIOUR MODIFICATION

CO 1: Introduction-What is behaviour. What is behaviour modification. What is behaviour assessment.

CO 2: Classical conditioning theory, basic principles, cognitive perspective and applications. Operant conditioning theory, basic principles, punishment, negative reinforcement, schedules of reinforcement, cognitive perspective and applications.

CO : Techniques- Token Economy, Contingencies, Shaping, Premack Principle**.**

CO 4: Applications- School, Family, Work. Behavioural principles and procedures-a) Getting a behaviour to occur more often with positive reinforcement, b.) Developing and maintaining behaviour with conditioned reinforcement, c.) Decreasing a behaviour with extinction. Planning, applying and evaluating.

OR

COMMUNICATION

CO 1: Introduction: What is Communication. Definition, Nature, Types, Process and Functions

CO2: Nonverbal Communication and Interpersonal behaviour. Gender and Cultural issues with respect to Non Verbal Communication. Functions of Non Verbal communication. Interaction of verbal and Non Verbal behaviour in conversation. Pro-social, anti-social behaviour, prejudice, conflict, intergroup behaviour. 36

CO 3: Organizational Communication, Choice of Communication Channel, Persuasive Communications,

Barriers to Effective Communication.

CO 4: Applications : Family and Work.

Contact Hours: 50 hours (per semester)

16: EMOTIONAL INTELLIGENCE

CO 1: Introduction: Emotional Intelligence; Models of Emotional Intelligence; EQ competencies: selfawareness, self-regulation, motivation, empathy, and interpersonal skills; Importance of Emotional Intelligence

CO 2: Knowing One's And Others' Emotions: Levels of emotional awareness; Recognizing emotions in oneself; The universality of emotional expression; Perceiving emotions accurately in others

CO 3: Managing Emotions: The relationship between emotions, thought and behaviour; Techniques to manage emotions

CO 4: Applications: Workplace; Relationships; Conflict Management; Effective Leadership

OR

STRESS MANAGEMENT

CO 1: Stress: Introduction, Nature of stress, symptoms of stress

CO 2: Various sources of stress: environmental, social, physiological and psychological

CO 3: Stress and health: effects of stress on health, eustress

CO 4: Managing stress: Methods - yoga, meditation, relaxation techniques, Problem focused and emotion focused approaches.

Contact Hours: 50 hours (per semester)

17: POSITIVE PSYCHOLOGY

CO 1: Introduction:Positive Psychology: An Introduction, Perspectives on PositivePsychology: Western and Eastern, Character Strengths and virtues.

CO 2: Positive Emotional States and Processes: Happiness and Well being, Positive Affect and Positive Emotions, Emotional Intelligence, Resilience.

CO 3: Positive Cognitive States and Processes: Self-efficacy, Optimism, Hope, Wisdom, Flow, Mindfulness.

CO 4: Applications: Work, education, ageing, health

CO 5: Practicum: Students would be required to complete 2 practicum from any of the topics discussed in DSE-01

1. Well being: Verma, S.K., & Verma, A. (1989). Manual for PGI general well-being measure. Lucknow: Ankur Psychological Agency.

2. Resilience- To construct a Semi structured Interview and compare with **Annalakshmi's Scale**

Contact Hours: 50 hours (per semester)

Practical : 4 hrs (per week)

18: HUMAN RESOURCE MANAGEMENT

CO 1: Introduction to Human Resource Management (HRM): HRM and HRD, Context and issues in HRM.

CO 2: Human Resource Practices Job analysis; Recruitment and selection; Training; Performance Evaluation.

CO 3: International human resource management (IHRM) The context of Globalization, Role of culture in IHRM, Dimensions of Cultural difference (Hofsteade), Policies and practices in the multinational enterprise.

CO4: Organizational change and development: Organizational change: concepts, models (one model), techniques (one for individual and one for group), organizational development: concepts, models (one model), techniques (one for individual and one for group).

CO 5: Practicum: Students would be required to complete 2 practicum from any of the topics discussed in DSE-02

1. Career Maturity:
a.) Crites, J.O. (1973a). Administration and Use Manual: Career Maturity Inventory. Monterey: McGraw- Hill
b.) Crites, J.O. (1973b). Theory and Research Handbook: Career Maturity Inventory. Monterey: McGraw- Hill

2. Entrepreneurship- Semi-structured Interview and compared with Entrepreneurship Scale
a.)Vijaya, V., & Kamalabhan, T.J. (1998). A scale to assess entrepreneurship motivation. The Journal of Entrepreneurship, VII-2

Contact Hours: 50 hours (per semester)

Practical : 4 hrs (per week)

19: HEALTH PSYCHOLOGY

CO 1: Introduction: Introduction to Health Psychology: components of health: social, emotional, cognitive and physical aspects, mind-body relationship, goals of health psychology, Bio-psychosocial model of health.

CO 2: Behavior and health: Characteristics of health behaviour; Barriers to health behaviour; Theories of health behaviour and their implications.

CO 3: Health Enhancing Behaviours: Exercise, nutrition, safety, pain, stress management.

CO 4: Health and Well-being: Happiness; Life satisfaction; Resilience; Optimism and Hope **.**

CO 5:Practicum: Students would be required to complete 2 practicum from any of the topics discussed in DSE-03

1. Hope: Adult Hope Scale- Synder, C.R., Harris, C., Anderson, J.R., Holleran, S.A., Irving, L.M., Sigmon, S.T. et. al (1991). The will and the ways: Development and validation of an individual differences measure of hope. Journal of Personality and Social Psychology, 60, 570-585.

2. Health Behaviour- To construct a Semi Structured Interview and compared with Cornell Medical Index

Contact Hours: 50 hours (per semester)

Practical : 4 hrs (per week)

20: COMMUNITY PSYCHOLOGY

CO 1: Introduction: Definition of community psychology; types of communities; models.

CO 2: Core values: Individual and family wellness; sense of community; respect for human diversity; social justice; empowerment and citizen participation.

CO3: Health promotion: process of community organization for health promotion, importance. Community program for: child and maternal health, physical challenged and old age in the Indian context.

4: Interventions: community development and empowerment; case studies in Indian context.

CO 5: Practicum: Students would be required to complete 2 practicum from any of the topics discussed in DSE-04

1. Family Environment:
Bhatia, H., & Chaddha, N.K. (1993). Manual for Family Environment Scale. Ankur Psychological Agency. Lucknow.
2. Women Empowerment- To construct a Semi Structured Interview.

Contact Hours: 50 hours (per semester)

Practical : 4 hrs (per week)

21: CULTURAL AND INDIGENOUS PSYCHOLOGY

CO 1: Cultural Processes: Cultures; Multiculturism and Cultural Relativity; Cultures and psychology: Perspectives of cross cultural psychology.

CO 2: Culture, Self and Others: Who am I and Who are They? Representation: Person, Other People, Self and of Groups, Acculturation & Enculturation: A Developmental Perspective: Family and children, models of the family, self-construal and developmental pathways.

CO 3: Intercultural Contacts: Nature, psychological benefits and costs, Migration, globalization and cultural diversity.

CO 4: Indigenous Psychology: Indian Psychology – Implications and applications; indigenization of psychology in India. Integration of modern psychology with Indian thought.

CO 5:Practicum: Students would be required to complete 2 practicum from any of the topics discussed in DSE-05

1. Semi structured interview of people from different ethnic background on gender role attitude.

2. Bogardus Social Distance Scale on Ethnic Issues

Contact Hours: 50 hours (per semester)

Practical : 4 hrs (per week)

22: PSYCHOLOGICAL PERSPECTIVES IN EDUCATION

CO 1: Education and Psychology: An Introduction: Education as a Discipline, Education & Schooling; Contributions of Psychology to Education**;** 'Child-centred' and 'progressive' education.

CO 2: Debates and Issues in Educational Psychology: Role of Play in Education**;** Role of a teacher.

CO 3: Classroom Management & Assessment: Issues related to Classroom Management, Discipline and Control: Behavioural objective myth, the law and order myth, the myth of irresponsible youth**;** Uses and abuses of psychological testing in education, The IQ controversy**.**

CO 4: Inclusive Education: Dealing with Classroom Diversity: Inclusive Education: Nature, Concept

& Importance; Addressing classroom diversity: Gender, Socio-Economic Status, Caste. Disability.
CO 5: Practicum: Students would be required to complete 2 practicum from any of the topics discussed in DSE-06

1. Standard Progressive Matrices /WASI II India
2. Temperament Scale / Bell Adjustment Scale

Contact Hours: 50 hours (per semester)

Practical : 4 hrs (per week)

DEPARTMENT OF SANSKRIT: COURSE OUTCOME/PROGRAMME OUTCOME/PROGRAMME-SPECIFIC OUTCOME

1. COURSE OUTCOME

SEMESTER-1

SANA

COURSE CODE- CC 1

SECTION-A

Kalidasa’s Raghuvamsam : Canto-1 (Verses: 1-25)

Section-b

Kalidasa’s Kumarasambhavam : Canto-5 (Verses: 1-30)

SECTION-C

Bharavi’s Kiratarjuniyam: Canto-1 (Verses: 1-25)

SECTION-D

Bhrartrihari’s Nitisatakam : Verses: 1-20

SECTION-E

Origin and Development of Gitikavya and Mahakavya

CONTACT HOURS: 5 HOURS/WEEK

TUTORIAL : 1 HOUR/WEEK

COURSE CODE- CC 2

Vedic Literature

Ramayana

Mahabharata

Puranas

General Introduction: Vyakarana Darsana Sahityasastra

CONTACT HOURS : 5 HOURS/WEEK

TUTORIAL : 1 HOUR/WEEK

SEMESTER-2

SANA

COURSE CODE- CC 3

SECTION-A

Sukanasopadesa/ Banabhatta

SECTION-B

Rajavahanacaritam/ Dandi

SECTION-C

Origin and Development of Prose, important Prose Romances and Fables

CONTACT HOURS : 5 HOURS/WEEK

TUTORIAL : 1 HOUR/WEEK

COURSE CODE- CC 4

Shrimadbhagabadgita

SECTION-A

Cognitive and Emotive Apparatus

a) Hierarchy of Indriya, Manas, Buddhi and Atman (3/42,15/7)
b) Role of Atman (15/7, 15/9)
c) Mind as a Product of Prakriti (7/4)

d) Properties of Three Gunas And Their Impact on The Mind (13/5-6,1458,14/11-13,14/17)

SECTION-B

Controlling The Mind

A. Nature of Conflict (1/1,4/16,1/45,2/6)
B. Casual Factors : Ignorance (2/41), Indriya (2/60), Mind (2/67), Rajoguna (3/36,16/21)

Means of Controlling The Mind:

Obstacles of Meditation (6/34-35)

Procedure (6/11-14)

Balanced Life (3/8)

Diet Control (17/8)

Physical and Mental Discipline (17/14)

Means of Conflict Resolution

Importance of Knowledge (2/52, 4/38)

Clarity of Buddhi (18/30)

Process of decision-making (18/63)

Control Over Senses (2/59)

Surrender of Kartribhava (18/13, 5/8)

Desirelessness (2/48)

Putting Others Before Self (3/25)

SECTION-C

Self Management Through Devotion

Surrender of Ego (2/7, 11/55)

Abandoning Frivolous Debates (7/21, 4/11)

Acquisition of Moral Qualities (12/2, 12/13)

CONTACT HOURS : 5 HOURS/WEEK

TUTORIAL : 1 HOUR/ WEEK

COURSE CODE- GE/CC 1

Raghuvamsam by Kalidasa : Canto-1

Sisupalabadham by Magha : Canto-1

Nitisatakam by Bhrartrihari

History of Sanskrit Literature

CONTACT HOURS : 6 HOURS/WEEK

COURSE CODE- GE/ CC 2

Sivaravijayam

Origin and Development of Prose Romance, Fables

CONTACT HOURS : 6 HOURS/WEEK

SEMESTER-3

COURSE CODE- CC 5

SECTION-A

Svapnavasadattam: Acts (I-VI)

SECTION-B

Abhijnanasakuntalam: Acts (I-IV)

SECTION-C

Abhijnanasakuntalam : Acts (V-VII)

SECTION-D

Critical Survey of Sanskrit Drama

CONTACT HOURS : 5 HOURS/ WEEK

TUTORIAL : 1 HOUR/ WEEK

COURSE CODE- CC 6

SECTION-A

Introduction to Sanskrit Poetics

SECTION-B

Forms of Kavya Literature

SECTION-C

Sabdasakti and Rasasutra

SECTION-D

Figures of Speech and Meter

CONTACT HOURS : 5 HOURS/ WEEK

TUTORIAL: 1 HOUR/ WEEK

COURSE CODE- CC 7

SECTION-A

Indian Social Institutions

SECTION-B

Structure of Society and Values of Life

SECTION-C

Indian Polity

SECTION-D

Cardinal Theories AND Thinkers of Indian Polity

CONTACT HOURS : 5 HOURS/ WEEK

TUTORIAL: 1 HOUR/ WEEK

COURSE CODE- SEC 1

Sanskrit Writing Skill

Essay-writing

Letter-writing etc.

SEMESTER-4

COURSE CODE- CC 8

SECTION-A

Epigraphy

SECTION-B

Palaegraphy

SECTION-C

Study of Selected Inscriptions

SECTION-D

Chronology

CONTACT HOURS : 5 HOURS/ WEEK

TUTORIAL: 1 HOUR/ WEEK

COURSE CODE- CC 9

SECTION-A

Mahakavya and Charitakavya

SECTION-B

Gadya and Rupaka

CONTACT HOURS : 5 HOURS/ WEEK

TUTORIAL: 1 HOUR/ WEEK

COURSE CODE- CC 10

SECTION-A

Sanskrit Studies In West

SECTION-B

Sanskrit Studies In East

SECTION-C

Sanskrit Fables in World Literature

SECTION-D

Ramayana and Mahabharata in South-Eastern Asia

SECTION-E

Kalidasa in The West

SECTION-F

Sanskrit Studies Across The World

CONTACT HOURS : 5 HOURS/ WEEK

TUTORIAL: 1 HOUR/ WEEK

COURSE CODE- GE/ CC 3

SECTION-A

Abhijnanasakuntalam : Acts (I-IV)

SECTION-B

Abhijnanasakuntalam : Acts (V-VII)

SECTION-C

Technical terms from Sanskrit Dramaturgy

SECTION-D

History of Sanskrit Drama

CONTACT HOURS : 6 HOURS/ WEEK

COURSE CODE- GE/ CC 4

SECTION-A

Laghusiddhantakaumudi

Sanjnaprakarana

Section-B

Laghusiddhantakaumudi

Sandhiprakarana

SECTION-C

Laghusiddhantakaumudi

Vibhaktyarthaprakarana

CONTACT HOURS : 6 HOURS/ WEEK

COURSE CODE- SEC 2

Spoken Sanskrit and Computer awareness for Sanskrit

SEMESTER-5

COURSE CODE-CC XI

SECTION-A

RgVeda, SuklayajurVeda, AtharvaVeda-Selected Suktas

SECTION-B

Vedic Grammar

SECTION-C

Brahmana and Upanisad

COURSE CODE- CC XII

SECTIONS-A, C & D

Sanskrit Grammar

SECTION-B

Introduction to Philology

COURSE CODE-DSE 1

Darsana

SECTION-A

Tarkabhasa

Saptapadarthi

SECTION-B

Vivekachudamani

COURSE CODE-DSE 2

Kavya

SECTION-A

Sahityadarpana-Chapter 1,2 & 3

SEMESTER-6

COURSE CODE-CC XIII

SECTION-A

Essentials of Indian Philosophy

SECTION-B

Ontology (From Tarkasamgrahah)

SECTION-C

Epistemology (From Tarkasamgrahah)

COURSE CODE-CC XIV

SECTION-A

Some Aspects of Laghusiddhantakaumudi

SECTION-B

Translation From Bengali To Sanskrit and Vice-Versa

SECTION-C

Essay writing

COURSE CODE-DSE 3

SECTIONS-A,B & C

Siddhantakaumudi

COURSE CODE-DSE 4

SECTION-A

Interpretation of Veda and Sunahsepopakhyana

SECTION-B

Taittiriyopanisad and Mundakopanisad

COURSE CODE : DSE 1A

SECTION-A

Dharma

Form of God, Ten fold Dharma

Section-B

Samskara and Purusartha

SECTION-C

Svadharma

Karmayoga, Sthitaprajna

COURSE CODE : DSE 2A

SECTION-A

Historical Perspective

SECTION-B

Concept of a Person

Section-c

Personality Types

SECTION-D

Measures For Behavioural improvement

COURSE CODE : DSE 1 B

SECTION-A

Kavyaprakasa

Kavyaprayojana

SECTION-B

Kavyaprakasa

Kavyakarna

SECTION-C

Kavyaprakasa

Kavyasvarupa

COURSE CODE : DSE 2B

SECTION-A

Concepts and basic features of Indian Nationalism

SECTION-B

Name of country, national symbols and rise of Nationalism

SECTION-C

Nationalistic thought and modern Sanskrit Literature

Department of Sociology

Course Outcome

New syllabus for CBCS (SOCA)

CORE COURSE (6 CREDITS PER CORE COURSE)

1) Introductory Sociology (CC-1)

CO- 1 Conceptualizing Sociology, Sociology and Commonsense.

CO- 2 Understanding, society, Community, Institution, Culture and Personality.

CO-3 Assessing the relationship between-Sociology and Social Anthropology

Sociology and Psychology, Sociology and History

CO-4 Classifying social process, Social Control, Social Change and Mobility.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

2) Sociology of India (CC-2)

CO-1 Analysing Colonial Discourse, Nationalist discourse,

Subaltern Critic.

CO-2 Conceptualizing Indian institution; Caste, Varna, Dominant Caste.

CO-3 Classifying Agrarian Class and it's Nature.

CO-4 Defining Tribe and features, Regional Distribution.

CO-5 Explaining Village structure and Change.

CO-6 Kinship and religion .

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

3) Introductory Sociology (CC-3)

CO-1 Conceptualizing the plurality of Sociological perspective, functionalism of Parsons and Merton.

CO-2 Understanding Interpretative Sociology as Max Weber.

CO-3 Critically analyzing the Conflict perspective of Dahrendorf and Coser.

CO-4 Discussing the contribution of Levi-Strauss.

CO-5 Explaining Feminism Varieties of Feminist Sociology.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

4. **Sociology of India, (CC-4)**

CO-1 Analyzing the ideas of Gandhi and Ambedkar,

Indological and ethnographic Approach.

CO-2 Discussing Dalit politics, women movement

Peasant movement and ethnic movement.

CO-3 Critically analyzing the challenges of civilization ,State and Society.

CO-4 Signifying the concept of Communalism,

Secularism and Nationalism.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

5. Political Sociology (CC-5)

CO-1 conceptualizing the study of politics.

CO-2 Defining power and authority, distribution of power.

CO-3 Discuss about state, Governance and citizenship.

CO-4 Analyzing segmentary, totalitarian and democratic

system.

CO-5 Critically analyzing the local power structure of India as

class, caste and ethnicity.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

6. Sociology of Religion (CC-6)

CO-1 Conceptualizing the religion as a Sociological

Study, religious formulation.

CO-2 Describing Durkheim's concept of sacred and

Profane.

CO-3 Analyzing Marxists religion and religious ethics of Weber.

CO-4 Conceptualizing elements of religious practices as sacred,

myth and rituals.

CO-5 Defining fundamentalism, secularism and communalism.

C0-6 Diversity in religion and identity and religious pluralism.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

7. Sociology of Gender and sexuality (CC-7)

CO-1 Conceptualizing gendering Sociology and social construct.

CO-2 Defining Gender, Sex, Socialization and Gender Rule.

CO-3 Classifying Gender stratification and inequality, Gender discrimination.

CO-4 Conceptualizing class, caste, family, work, 3rd gender and sexual violence.

CO-5 Describing Gender, power and resistance.

CO-6 Discussing Chipko movement and Gulabi Gang.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

8. Economic Sociology (CC-8)

CO-1 Conceptualizing economic sociology, formalism and substantivism,

new economic sociology .

CO-2 Classifying the form of exchange as gift and money.

CO-3 Discussing the production and conjunction.

CO-4 Describing the hunting gathering and domestic mode of production.

CO-5 Conceptualizing land revenue system and land reforms.

CO-6 Critically Analyzing the contemporary issues in economic

Sociology as development and Globalization.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

9) Population studies (CC-9)

CO-1 Conceptualizing population studies.

CO-2 Defining population studies, nature and scope.

CO-3 Discussing relationship between demography and

sociology, Malthusian and Marxist Perspective.

CO-4 Analyzing the population size, growth, fertility

& mortality.

CO-5 Discussing about the population

gender and migration.

CO-6 Describing population and constrain and resource

development.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

10)Social Stratification (CC-10)

CO-1 Conceptualizing, meaning and forms of stratification.

CO-2 Critically analyzing the theories of stratification as Marxist

theory.

CO-3 Discussing about the Weberian theory if stratification as class status and

power.

CO-4 Describing functionalism as a theory of social stratification .

CO-5 Defining caste, rest ethnicity as gender stratification.

CO-6 Analyzing mobility and reproduction.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

11) CC-11 Sociological Thinker I

C0-1 Understanding the role of enlightenment in origin of sociology.

CO-2 Contributions of Montesquieu and St. Simon in development of sociology.

CO-3 Understanding Karl Marx's materialist conception of history and capitalist mode of production.

C0-4 Understanding social action, ideal types and religion and economy in Max Weber.

C0-5 Understanding Emile Durkheim's Social fact and Division of labor.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

12) CC-12 Research Methods-I

C0-1 Introducing social research, types of social research and relationship between theory and research.

CO-2 Conceptualizing and operationalizing social research.

C0-3 Learning about hypothesis.

C0-4 Understanding objectivity and reflexivity in social research.

C0-5 Understanding Positivist, Interpretative, Humanist and Feminist methods.

C0-6 Getting acquainted with steps of social research, primary and secondary data and tools and techniques of date collection

C0-7 Analyzing quantitative and qualitative data.

C0-8 Learning how to write a detailed research proposal.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

CC-13: Sociological Thinkers II

CO-1 Orientation to Post Classical Theories

CO-2 Talcott Parsons-Action System

CO-3 Claude Levi- Strauss-Structuralism

CO-4 G.H. Mead & Erving Goffman- Interactional Self and Dramaturgy

CO-5 Peter L. Berger and Thomas Luckmann

CO-6 Social Construction of Reality-An Overview

CO-7 Institutionalization & Socialization

CO-8 Max Horkheimar, T.W. Adorno, Herbert Mercuse

CO-9 Frankfurt School and Critical Tradition

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

CC14 - Research Methods - II

CO-1 Analysing the process of social research.

CO2- Classification of Research design into various types.

CO3-Describing the process,meaning, nature and types of sampling.

CO4- Evaluation of the methods of sampling.

CO5-Understanding of the problems and challenges in field research

CO6- Interpreting the levels of measurement.

CO7-Describing the process of grouping of data and the various techniques of calculating grouped data.

CO8-Explaining the meaning, nature, types and uses of graphic techniques.

CO9-Interpreting the measures of Central tendency.

CO10- Analysing the measures of dispersion.

CO11-Understanding the concept and the process of research Design.

CO12-Describing the methods of field work and report writing.

CO13- Learning the purpose and technique of bibliography and citation.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

SKILL ENHANCEMENT COURSE (2 CREDITS PER COURSE)

1) SecA(2) Gender Sensitization

CO-1 Conceptualizing gender, sex, sexuality, masculinity ,femininity, gender stereotype.

CO-2 Critically analysing the gender binary and LGBT.

CO-3 Discussing the child marriage, female infanticide.

CO-4. Over viewing Pasco Act and Awareness.

CO-5 Conceptualizing Eve-teasing, Rape, Domestic violence.

CO-6 Discussing sexual harassment at workplace.

Contact Hours: 2hrs/ week.

2) SEC- B(1)) Statistical Reasoning for Sociology

CO-1 Conceptualizing statistics in social research, Descriptive and inferential statistics.

CO-3 Defining the Statistics population variable.

CO-4 discussing the sampling and its type.

CO-5 analyzing the frequency distribution and graphical techniques.

CO-6 practicing mean median and mode.

Contact Hours: 2hrs/ week.

DISCIPLINE SPECIFIC ELECTIVE (6 CREDITS PER COURSE)

1)DSE—A-(1) Urban Sociology

C0-1 Emergence, development and importance of urban sociology.

C0-2 Overview of rural -urban continuum

C0-3 Understanding urban, urbanism and urbanity.

C0-4 Process and patterns of urbanization.

C0-5 Understanding ecological, political economy, network perspectives in Urban sociology.

CO-6 Understanding city as culture.

C0-7 Discussing various types of urban settlements and in particular city and its types.

C0-8 Engaging with problems specific to urban spaces in India in particular poverty, housing ,slum and beggary, crime and juvenile delinquency .

2) DSE- A (3) Environmental Sociology

CO-1 Envisioning environmental sociology – its origin and new direction.

CO-2 Getting acquainted with the realistic- constructionist Debate

CO-3 Understanding development, displacement and rehabilitation.

CO-4 Approaches—Human Ecology- New Environmental Paradigm.

CO-5 Treadmill of production, ecological modernization and eco-feminism .

CO-6 Political ecology and ecological Marxism.

CO-7 Convergence of different approaches: Sustainable Development.

CO-8 Environmental movement in India: Chipko, Narmada and Silent Valley Movement.

CO-9 Major issues in global environmental policies.

CC-10 Major issues in climate change.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

3)DSE-B(1) Indian Sociological Traditions

C0-1 Understanding Ghurye's concept of caste, race, city and civilization.

C0-2 Understanding Radhakamal Mukherjee's personality, society and values.

CO-3 Getting acquainted with DP Mukherji's concept of tradition, modernity and middle class.

C0-4 Understanding Verrier Elwin's notion of tribes.

C0-5 Understanding Srinivas's social change.

C0-6 Understanding Iravati Karve's understanding of gender and kinship.

C0-7 Acquainting oneself with Leela Dube's notion of caste and gender.

4) DSE-B(4) Project: Fieldwork And Dissertation

C0-1 Dissertation is a research project that is done by the students as part of an undergraduate course in Sociology. This course DSE B (4) gives opportunities to the students to do a research project on any social issue or any social aspect with the help of field work.

C0-2 By doing the field work the students will learn to study reality of society in an in-depth manner and ultimately gain practical experience of doing field work through effective management of challenges of field work. Hence, the skills and knowledge of research methods acquired by the students from their previous courses will be practically applied in this course.

Course Outcome

New syllabus for CBCS (SOCG)

1. GE/CC-1 Introduction to Sociology

CO-1 Explaining nature and scope of Sociology and perspective- functional & structural.

CO-2 Discussing the scientific nature of Sociology & common sense of Sociology.

CO-3 Evaluating the relationship between Sociology and social anthropology, Sociology and Psychology and Sociology and history.

CO-4 Conceptualizing individual group association culture and society.

CO-5 Defining social change and it's effect.

Contact Hours: 6hrs/ week.

2) GE/CC-2 Sociology of India

CO-1 Conceptualizing unity & diversity in India and problems of national unity.

CO-2 Defining caste sanskritization and changing aspect.

CO-3 Discussing the features of tribes in India.

CO-4 Contrasting rural class and urban class.

CO-5 Conceptualizing self-sufficient village economy.

CO-6 Evaluating the family and kinship in India.

CO-7 Critically studying dailt movement and women movement.

CO-8 Describing the Communalism & secularism.

Contact Hours: 6hrs/ week.

3) GE/CC-3 Sociological theories

CO-1 Conceptualizing the emergence of Sociology.

CO-2 Conceptualizing Marxist theories.

CO-3 Discussing Durkheimian theory of social fact and solidarity.

CO-4 Conceptualizing ideal type and social action of Max Weber.

Contact Hours: 6hrs/ week.

4) GE/CC-4 Methods of Sociological enquiry

CO-1 Defining concept variable and propositions.

CO-2 Formulating and verifying hypothesis.

CO-3 Classifying research design explanatory, exploratory and descriptive.

CO-4 Classifying sampling probability and non-probability.

CO-5 Evaluating perspectives-positivist, interpretative, comparative and ethnographic.

CO-6 Contrasting theory and research - quantitative and qualitative.

Contact Hours: 6hrs/ week.

SKILL ENHANCEMENT COURSE (2 CREDITS PER COURSE)

1. SEC-A-(2) Gender sensitization

CO-1 Defining Gender, sex, sexuality, masculinity and

feminist.

CO-2 Discussing the gender construction and gender binary and LGBT.

CO-3 Discussing gender inequality, female infanticide, child marriage, eve-teasing, rape & domestic violence .

CO-4 Conceptualizing sexual harassment of women at work place.

Contact Hours: 2hrs/ week.

2. SECB-(2) Applications of statistics for sociology

CO-1 Basic concepts: statistics, population, parameter, statistics, sample and variable.

CO-2 Definition of social statistics and use of statistics in Social Research.

CO-3 Understanding of the Frequency Distribution.

CO-4 Analysing the graphical presentation of Data.

Contact Hours: 2hrs/ week.

DISCIPLINE SPECIFIC ELECTIVE (6 CREDITS PER COURSE)

1. DSE- A (1) Religion and Society

CO-1 Understanding meaning and scope of sociology of religion.

C0-2 Engaging with Emile Durkehim's concept of sacred and profane.

C0-3 Understanding Max Weber's religious ethics and economy

C0-4 Analysing religions in India- Hinduism, Islam, Christianity, Sikhism and Buddhism.

C0-5 Understanding meaning, characteristics and factors of secularism and communalism.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

2. DSE- B (1) Social Stratification

C0-1 Defining concept and understanding approaches to social stratification with particular reference to Marx and Weber,

C0-2 Engaging with various forms of social stratification; race and ethnicity, caste and class, gender, poverty and social exclusion.

C0-3 Understanding concepts, factors and types of social mobility.

Contact hours: Theory -5 hrs/ week & tutorial 1hr/ week.

ZOOLOGY HONOURS

PART I: SEMESTER 1

COURSE OUTCOME 1

CORE COURSE 1. Non-Chordates I: Protists to Pseudocoelomates

ZOOA-CC1-1-TH

Unit 1: Basics of Animal Classification: Understanding basic concepts Classification, Taxonomy and Systematics. Explaining different concept of classification.

Unit 2: Protista and Metazoa: Describing the general features and classification of the phylum Protozoa and understanding lifecycle and pathogenicity of some common Protozoans. Beside this, it is explaining the evolution of symmetry and segmentation of Metazoa.

Unit 3: Porifera: Explaining the general features and classification scheme and canal system in sponges.

Unit 4: Cnidaria: Explaining the general features and classification scheme and metagenesis and polymorphism in Cnidaria. In addition to that it is explaining the process of formation of corals and types. Explaining the effect of climate change on coral reef.

Unit 5: Ctenophora: Describing the general features of ctenophore.

Unit 6: Platyhelminthes: Describing the general features and classification of the phylum and understanding lifecycle and pathogenicity of two common disease causing species.

Unit 7: Nematoda: Describing the general features and classification of the phylum and understanding lifecycle and pathogenicity of two common disease causing species. And in addition to that it also explains the parasitic adaptations in helminthes.

ZOOA-CC-1-1-P

Identification of organisms from each phylum and staining of protozoa or helminth from gut of *Periplaneta* sp

COURSE OUTCOME 2

CORE COURSE 2. Molecular Biology

ZOOA-CC1-2-TH

Unit 1: Nucleic Acids: Describing structure and features of DNA and RNA with types, their properties.

Unit 2: DNA replication: Describing the processes of copying the genetic materials i.e the DNA in prokaryotic as well as eukaryotic systems. To understand the details process we have to know the major enzymes that regulate the process of replication in a semi-conservative manner. After primer removal how telomerase enzyme solves the end replication problem.

Unit 3: Transcription: The process and mechanism of transcription in both prokaryotes and eukaryotes, detailed idea about transcription factors.

Unit4: Translation: Describing the process of translation in prokaryotes, detailed idea on genetic code, wobble hypothesis.

Unit 5: Post Transcriptional Modifications And Processing Of Eukaryotic RNA: Detailed idea about 5'capping, splicing, polyadenylation and editing of eukaryotic RNA. Special emphasys on splicing, RNA editing.

Unit 6: Gene Regulation: This topic includes lactose and tryptophan operon. The role of activator, enhancers, silencer, repressor, siRNA and miRNA mediated gene silencing and DNA methylations etc.

Unit 7: DNA Repair Mechanism: Detailed study about the DNA repair mechanisms tounderstand how a cell identifies and corrects damage to the DNA molecules that encode its genome. DNA repair ensures the survival of a species by enabling parental DNA to be inherited as faithfully as possible by offspring. Various mechanisms are involved regarding this process.

Unit 8: Molecular Techniques: Understanding various functions i.e separation of DNA or protein their interactions etc. Our syllabus includes PCR and Blotting techniques.

ZOOA-CC1-2-P

Genomic DNA isolation, agarose gel elewctrophoresis, demonstration of polytene and lampbrush chromosomes and histogical staining of DNA, RNA.

PART II: SEMESTER III

COURSE OUTCOME 1
CORE COURSE 5. Chordata
ZOOA-CC3-5-TH

Unit 1: Introduction to Chordates: Explaining general characteristics and outline classification of Phylum Chordata.
Unit 2: Protochordata: Explaining general characteristics and classification of urochordata and cephalochordate.
Unit 3: Agnatha: Explaining general characteristics and classification of cyclostomes up to order.
Unit 4: Pisces: Describing general characteristics and classification up to living sub classes and in addition to that accessory respiratory organ, Migration in fishes; Parental care in fishes; Swim bladder in fishes.
Unit 5: Amphibia: Describing general characteristics and classification up to living Orders Metamorphosis, Paedomorphosis, Parental care in Amphibia.
Unit 6: Reptilia: Explaining general characteristics and classification upto living Orders. Poison apparatus and Biting mechanism in Snake. Poisonous & Non-poisonous snake.
Unit 7: Aves Explaining general characteristics and classification up to living Sub-Classes, Exoskeleton and migration in Birds; Principles and aerodynamics of flight.
Unit 8: Mammals Describing general characters and classification. It explains exoskeleton derivatives of mammals and adaptive radiation in mammals. Beside this, it describe the Echolocation in Micro chiropterans.

ZOOA-CC-3-5-P
Chordata Identification of organisms from each group of Chordata and Dissection of brain and pituitary – ex situ, digestive and Urino-genital system of Tilapia Pecten from Fowl head. This portion helps to know different organisms.

COURSE OUTCOME 2

CORE COURSE 6. Animal Physiology: Controlling and Co-ordinating System

ZOOA-CC3-6-TH

Unit 1: Tissues: Detailed explanation on structure, location and functions of different types of tissues (epithelial, connective, muscular and nervous)

Unit 2: Bone and cartilage: Analysis of types of bones and cartilages along with ossification process.

Unit 3: Nervous system: Explanation on neuron structure, action potential and its propagation, synapse, synaptic transmission and neuromuscular junction.

Unit 4: Muscular system: Histological study on muscle, its ultra-structure, characters, muscle fiber and an elaborative study on muscle contraction.

Unit 5: Reproductive system: Histological study of mammalian testis and ovary and detailed mechanism of menstrual and oestrous cycle.

Unit 6: Endocrine system: Histological study and function of mammalian thyroid, pancreas, pituitary and adrenal. Detailed study on hormones along with classification and their mechanism of action.

ZOOA-CC3-6-P

Study of muscle twitching with electrical stimulation, temporary mount preparation of slides, study of histological section of mammalian tissues, microtomy technique and permanent slide preparation of mammalian tissues

COURSE OUTCOME 3

CORE COURSE 7. Fundamentals of Biochemistry

ZOOA-CC3-7-TH

Unit 1: Carbohydrates: Detailed study about monosaccharides, disaccharides, polysaccharides; derivatives of monosaccharides; Study on carbohydrate metabolism: Glycolysis, Citric acid cycle, Pentose phosphate pathway, Gluconeogenesis. Through this

course the students are exposed to importance of carbohydrate as biological molecules. Gather basic concepts of Cells along with various cellular functions.

Unit 2: Lipids: Studyingstructure and significance: Physiologically important saturated and unsaturated fatty acids, Triacylglycerols, Phospholipids, Sphingolipid, Glycolipids, Steroids, Eicosanoids and terpinoids. Lipid metabolism: β-oxidation of fatty acids - a. Palmitic acid {saturated (C 16:0)}, b. Linoleic acid {unsaturated (C 18:2)}; Fatty acid biosynthesis. Acquiring knowledge about physiological significance of lipids in biological system.

Unit 3: Proteins: Analysing amino acids: Structure, Classification, General and Electro chemical properties of α-amino acids; Physiological importance of essential and non-essential amino acids, Proteins Bonds stabilizing protein structure; Levels of organization; Protein metabolism: Transamination, Deamination, Urea cycle, Fate of C-skeleton of Glucogenic and Ketogenic amino acids. Studying the influence and role of proteins in the process of biological regulation.

Unit 4: Nucleic acids: Students are expected to learn Structure of purines, pyrimidines, nucleosides and nucleotides; nucleic acid metabolism: Catabolism of adenosine, guanosine, cytosine and thymine.Understanding role of nucleic acids and basic concepts of molecular Biology along with functions of DNA and RNA.

Unit 5: Enzymes: Detailed structure ofnomenclature and classification of enzymes; Cofactors; Specificity of enzyme action; Isozymes; Mechanism of enzyme action; Enzyme kinetics; Derivation of Michaelis-Menten equation, Lineweaver-Burk plot; Factors affecting rate of enzyme-catalyzed reactions; Enzyme inhibition.It is importantto acquire knowledge of function and significance of enzymes in biological process.

Unit 6: Oxidative phosphorylation: Understanding mechanism of the metabolic pathway used to produce energy through ATP inside cells.Students are expected to know Redox systems; Mitochondrial respiratory chain, Inhibitors and un-couplers of Electron Transport System

ZOOA-CC3-7-P

Qualitative tests for carbohydrates, proteins, lipids, urea, uric acid. Quantitative estimation of protein and paper chromatography of amino acids.

COURSE OUTCOME 4

Skill Enhancement courses (SEC)

SEC-1 Apiculture ZOOA-SEC(A)-3-1-TH

Unit 1: Biology of Bees: Describing*Apis*and Non-*Apis*Bee species and their identification.General Morphology of *Apis*Honey Bees .Social Organization of Bee Colony

Unit 2: Rearing of Bees: Explaining bee rearing modern techniques and associated modern bee keeping equipment and methods of Extraction of Honey.

Unit 3: Diseases and Enemies: Describing disease and enemies of bee and control measures

Unit 4: Bee Economy: Explaining products of apiculture industry like Honey, Bees Wax, Propolis, Pollen etc. and uses

Unit 5: Entrepreneurship in Apiculture: Describing the recent scenario of Bee Keeping Industry and Modern Methodsin employing artificial Beehives for cross pollination in horticultural gardens

PART III: SEMESTER V

COURSE OUTCOME 1

CORE COURSE 11. Ecology

ZOOA-CC5-11-TH

Unit 1: Introduction to Ecology: Notes onautecology and synecology, Levels of organization, Laws of limiting factors, Study of Physical factors, The Biosphere.

Unit 2: Population: Unitary and Modular populations Unique and group attributes of population: Demographic factors, life tables, fecundity tables, survivorship curves, dispersal and dispersion. Geometric, exponential and logistic growth, equation and patterns, r and K strategies Population regulation – densitydependentand independent factors, Population Interactions, Gause's Principle with laboratory and field examples, Lotka-Volterra equation for competition.

Unit 3: Community: Study of community characteristics: species diversity, abundance, dominance, richness, Vertical stratification, Ecotone and edge effect; Ecological succession with one example.

Unit 4: Ecosystem: Types of ecosystem with an example in detail, Food chain: Detritus and grazing food chains,Linear and Y-shaped food chains, Food web, Energy flow, Ecological pyramids and Ecologicalefficiencies; Nitrogen cycle.

Unit 5: Applied Ecology: Types & level of biodiversity, Mega-diversity countries, biodiversity hot spot, Flagship species, Keystone species, Wildlife Conservation (*in situ* and *ex situ* conservation), concept of protected areas. red data book, Indian wild life act & Schedule. Concept of corridor, advantages and problem of corridor. Study on the threats to survival conservation strategies for Tiger, Olive ridley, White Rumped Vulture.

ZOOA-CC5-11-P

1. Determination of population density in a natural/hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index for the same community
2. Study of an aquatic ecosystem: Phytoplankton and zooplankton, Measurement of area, temperature, salinity, determination of pH, and Dissolved Oxygen content (Winkler's method), Chemical Oxygen Demand and free CO2
3. Report on a visit to National Park/Biodiversity Park/Wild life sanctuary/ any place of ecological interest/ ecological uniqueness/ Zoological garden

COURSE OUTCOME 2

CORE COURSE 12. Principle of genetics

ZOOA-CC5-12-TH

Unit 1: Mendelian Genetics and its Extension: Principles of inheritance, Incomplete dominance and co-dominance, Concept of epistasis, Multiple alleles, Isoallele (White eye mutations), Pseudoallele (Lozenge Locus) & Cis-trans test for allelism, lethal alleles, pleiotropy, penetrance & expressivity

Unit 2: Linkage, Crossing Over and Linkage Mapping: Linkage and Crossing, Complete & Incomplete Linkage, measuring recombination frequency . Linkage map construction using three factor crosses, Interference and coincidence. Study of sex linkage in *Drosophila* (White eye locus) & Human (Haemophilia).

Unit 3: Mutations: Types of gene mutations (Classification), Types of chromosomal aberrations, variation in chromosome number; Notes on nondisjunction of X chromosome in *Drosophila*; Non-disjunction of Human Chromosome 21. Detailed study on molecular basis

of mutations in relation to UV light and chemical mutagens. Mutation detection in *Drosophila* by attached X method. Biochemical mutation detection in *Neurospora*.

Unit 4: Sex Determination: Mechanisms of sex determination in *Drosophila* and in man; Dosage compensation study in *Drosophila* & Human.

Unit 5: Extra-chromosomal Inheritance: Kappa particle in *Paramoecium,* Shell spiralling in snail.

Unit 6: Genetic Fine Structure: Complementation test in Bacteriophage (Benzer's experiment on rII locus)

Unit 7: Transposable Genetic Elements: Study of IS element in bacteria, Ac-Ds elements in maize and P elements in *Drosophila*, LINE, SINE, Aluelements in humans.

ZOOA-CC5-12-P

1. Chi-square analyses for genetic ratio test
2. Identification of chromosomal aberration in *Drosophila* and man from photograph
3. Pedigree analysis of some inherited traits in animals.

COURSE OUTCOME 3

Discipline Specific Elective

DSE 1. Parasitology

ZOOA-DSE(A)-5-1-TH

Unit 1: Introduction to Parasitology: Brief introduction of Parasitism, Parasite, Parasitoid and Vectors (mechanical and biological vector); Host parasite relationship.

Unit 2: Parasitic Protists: Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Giardia intestinalis*, *Trypanosoma gambiense, Leishmania donovani.*

Unit 3: Parasitic Platyhelminthes: Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Schistosoma haematobium*, *Taenia solium.*

Unit 4: Parasitic Nematodes: Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of *Ascaris lumbricoides*, *Ancylostoma duodenale, Wuchereriabancrofti*, Study of nematode plant interaction.

Unit 5: Parasitic Arthropods: Biology, importance and control of ticks: Soft tick (*Ornithodoros)*, Hard tick (*Ixodes*), mites (*Sarcoptes*), Lice (*Pediculus*), Flea (*Xenopsylla*) and Bug (*Cimex*). Parasitoid.

Unit 6: Parasite Vertebrates: Study oncookicutter Shark, Hood Mocking bird, Vampire bats their parasitic behaviour and effect on host.

ZOOA-DSE(A)-5-1-P

1. Study of life stages of *Giardia intestinalis*, *Trypanosoma gambiense, Leishmaniadonovani, Plasmodium vivax, Plasmodium falciparum* through permanent slides/micro photographs
2. Study of adult and life stages of *Schistosoma haematobium*, *Taeniasolium*through permanent
slides/micro photographs
3. Study of adult and life stages of *Ancylostomaduodenale*through permanent slides/micro photographs.
4. Study of monogenea from the gills of fresh/marine fish.
5. Study of nematode/cestode parasites from the intestines of Poultry bird.
6. Submission of a brief report on parasitic vertebrates

COURSE OUTCOME 4

DSE 1. Endocrinology

ZOOA-DSE(B)-5-1-TH

Unit 1: Introduction to Endocrinology: Brief idea of Endocrine systems, Classification, Characteristic and Transport of Hormones,Neuro-secretions and Neuro-hormones: Examples and Functions.

Unit 2: Hypothalamo-Hypophyseal Axis: Structure and functions of hypothalamus and hypothalamic nuclei, regulation of neuroendocrine glands, feedback mechanisms, Hypothalamo-Hypophyseal-Gonadal Axis. Structure of pituitary gland, Hormones and their functions, Hypothalamo-hypophyseal portal system.

Unit 3: Peripheral Endocrine Glands: Structure, hormones and functions of thyroid gland, parathyroid, adrenal, pancreas, ovary and testis. Disorders of endocrine glands (*Diabetes mellitus* type I& Type II; Graves' Disease).

Unit 4: Regulation of Hormone Action: Mechanism of action of steroidal, non-steroidal hormones with receptors (cAMP, IP3-DAG), Studying calcium and glucose homeostasis in mammals. Bioassays of hormones using RIA & ELISA, estrous cycle in rat and menstrual cycle in human.

Unit 5. Non Mammalian Vertebrate Hormone: Functions of prolactin in fishes, amphibia& birds. Function of Melanotropin in teleost fishes, amphibians and reptiles.

ZOOA-DSE(B)-5-1-P

1. Dissection and display of endocrine glands in laboratory bred rat.
2. Study of the permanent slides of all the endocrine glands.
3. Tissue fixation, embedding in paraffin, microtomy and slide preparation of any endocrine gland.
4. H-E staining of Histological slides.

ZOOLOGY GENERAL

PART I: SEMESTER 1

COURSE OUTCOME 1

CORE COURSE1. Animal Diversity

ZOOG-CC1-1-TH

Unit 1: Kingdom Protista: Describing the general feature of protozoa and it's classification up to phylum. Understand the locomotion in *Amoeba* and *Paramecium.*

Unit 2: Phylum Porifera: Describing the general feature of porifera and it's classification up to classes. To understand the canal system in *Sycon.*

Unit 3: Phylum Cnidaria: Describing the general feature of cnidaria and it,s classification up to classes. To understand the process of metagenesis in *Obelia*.

Unit 4: Phylum Platyhelminthes: Explianing the general characteristics and classification up to classes in platyhelminthes. To understand the life cycle of *Taenia solium*.

Unit 5: Phylum Nemathelminthes: Describing the general feature and classification up to classes in nematode. From here the life cycle and parasitic adaptations in *Ascaris lumbricoides* are described.

Unit 6: Phylum Annelida: Describing the general characters and classification up to classes and explaining the metamerism in annelids.

Unit 7: Phylum Arthropoda: Explaining the genral features and classification up to classes. In addition with this, it also explaining eye in cockroaches and metamorphosis in Lepidoptera.

Unit 8: Phylum Mollusca: Describing the general characteristics and classification up to classes and the mode of respiration in *Pila* .

Unit 9: Phylum Echinodermata: Explianing the genral features and classification up to classes. With this the Water vascular system in Asteridea.

Unit 10: Protochordates: Describing the general characteristics. With this the general structure of pharynx and the feeding mechanism in *Amphioxus*.

Unit 11: Agnatha: Describing the general features of Agnatha and classification of cyclostomes up to classes.

Unit 12: Pisces: Explianing the general features and classification up to orders. With this the mechanism of osmoregulation in fishes.

Unit 13: Amphibia: Describing the general features and classification up to orders. With this the process of parental care.

Unit 14: Reptiles: Describing the general features and classification up to orders. Make the differentiation between poisonous and non-poisonous snakes and the process of biting mechanism in poisonous snake.

Unit 15: AveS: Describing the general features and classification up to orders with this describing the flight adaptations in birds.

Unit 16: Mammals: Describing the classification up to orders. Also describing the structure and function of horn, hair, antler, nail and claw.

ZOOG-CC1-1-P

Identifiction with reasons of various specimens of invertebrates and vertebrates.

Identify with reasons the poisonous and non-poisonous snakes.

Dissecting the digestive, mouth parts, salivary gland of cockroach and study their female reproductive system.

PART II: SEMESTER 3

COURSE OUTCOME 1

CORE COURSE 3. Physiology and Biochemistry

ZOOG-CC3-3-TH

Unit 1: Nerve And Muscle: Detailed structure of a neuron, with this the membrane potentials, origin of nerve impulse. Beside this the detailed ultra structure of skeletal muscle and their molecular and chemical basis of contraction.
Unit 2: Digestion: Explaining the physiology of digestion and the absorption mechanism.
Unit 3: Respiration: Study the pulmonary ventilation and transportation of gases.
Unit 4: Cardio-Vascular System: Study the composition of blood, detailed structure of heart, cardiac impulse and cardiac cycle.
Unit 5: Excretion: Basic structure of nephron, detailed mechanism of urine formation and counter current mechanism.
Unit 6: Reproduction And Endocrine Glands: Brief physiology of male and female reproduction, detailed histology of testis and ovary, hormonal control in hypothalamo-hypophyseal gonadal axis,with this the structure and function of few endocrine glands.
Unit 7: Carbohydrate Metabolism: Detailed pathway of carbohydrate metabolism.
Unit 8: Lipid Metabolism: Detailed pathway of beta oxidation.
Unit 9: Protein Metabolism: Explained the process of transamination and deamination. With these the process of urea cycle.
Unit 10: Enzymes: Types of classification, their action, inhibition.

ZOOG-CC3-3-P:

Study of histological slides of pituitary, thyroid, pancreas, adrenal glands.
Study of histological slides of duodenum, liver, lung, kidney.
Qualitative test for carbohydrate.

PART III: SEMESTER 5

COURSE OUTCOME 1

DISCIPLINE SPECIFIC COURSES: ELECTIVE COURSE

ZOOG-DSE-A-5-1-TH: Applied Zoology

Unit 1: Host & Parasitic Relationship: Different types of hosts and their interactions.

Unit 2: Epidemology Of Diseases: Studied transmission, preventive measures and control of tuberculosis and typhoid.

Unit 3: Parasitic Protozoa: Life history, pathogenesis and control of various parasitic protozoans like *Entamoeba*, *Plasmodium* and *Trypanosoma*.

Unit 4: Parasitic Helminthes: Life history, pathogenesis and control of parasitic helminth like *Ancylostoma*, *wuchereria*.

Unit 5: Insect Of Economic Importance: Studied biology, control and damage caused by various insects.

Unit 6: Insect Of Medical Importance: Several medical importance and control of *Anopheles*.

Unit 7: Animal Husbandry: Study the process of artificial insemination in cattle, the preservation method, with this the induction of early puberty and synchronization of estrus in cattle.

Unit 8: Poultry Farming: Study different types of poultry bird with their characters, management of breeding stock & broilers, processing and preservation of their eggs.

Unit 9: Fish Technology: Study the genetic improvements in aquaculture industry, process of induced breeding and transportation of fish seed.

ZOOG-DSE-A-5-1-P:

Study of various protozoans and parasites from the permanent slides.

Study of arthropod vectors which are associated with human diseases.

Sudy of insect pest.

Identifying feature and economic importance of various pests.