Panchakot Mahavidyalaya

Sarbari, Neturia, Purulia

NEP syllabus addressing Professional Ethics, Human Values, Gender, Environment and Sustainability

PROFESSIONAL ETHICS

Department: Philosophy
Course: Major
Paper Title: Indian and Western Philosophy-2
Paper Code: PHIMAJ2
Syllabus:

- Module-1: Nyāya Philosophy (Pratyakṣa), Vaiśeṣika Philosophy (Padārtha) (15 classes)
- Module-2: AdvaitaVedānta: (Brahman, Jiva, Jagat and Māyā) (15 classes)
- Module-3: Viśiṣṭādvaita: (Refutation of Māyāvāda, Brahma, Jiva, Jagat) (15 classes)
- Module-4: Locke (Refutation of Innate Ideas, Primary and Secondary qualities, Theory of Representative Realism) (10 classes)
- Module-5: Berkeley (Refutation of Matter, Esse est Percipi), Hume (Impression and Idea, Causality) (20 classes)
- Module-6: Kant: (Copernican Revolution, Critical Theory, Classification of Judgements (a-priori, a-posteriori, analytic, synthetic, synthetic a-priori), Central Problem) (15 classes)

Department: Philosophy
Course: Major
Paper Title: Ethics: Indian and Western
Paper Code: PHIMAJ3
Syllabus:

- Module-1: Concept of Duty, Puruṣārtha, Classification of Dharma (Sādhāraṇa Dharma, Varnāśrama Dharma) (15 classes)
- Module-2: Theory of Karma, Rebirth, Ethics of Bhagvadgītā (Niṣkāma Karma, Sakāma Karma (15 classes)
- Module-3: Buddhist Ethics: (Eightfold Path, Pancaśila), Jaina Ethics: (Triratna, Mahāvrata, Aṇuvrata) (12 classes)
- Module-4: Ethics (Definition, Nature and Scope, Voluntary and Non-Voluntary Action), The Concept of Good, Right, Justice, Duty and Obligation (18 classes)
- Module-5: Theories of Punishment; Capital Punishment (15 classes)
- Module-6: Utilitarianism (Bentham and Mill); Kant's Deontology (15 classes)

Department: Sanskrit
Course: Major
Paper Title: Classical Sanskrit Literature (Poetry)
Paper Code: BSNSMAJ03T
Syllabus:
Module-1:

- Raghu-vaṁśa: Canto-I

Module-2:

- Kirātārjunīya: Canto- I

Module-3:

- Nīti-śataka: (1-20 Verses, 1st two Paddhatis)

HUMAN VALUES

Department: History
Course: Major
Paper Title: Idea of Bharat and Its History up to 600 BC
Paper Code: BHISMAJ01T
Syllabus:

UNIT-I: Idea of Bharatvarsha

I. Understanding of Bharatvarsha

II. The glory of Indian Literature: Vedas, Vedanga, Upanishads, Epics, Jain and Buddhist Literature, Smriti, Puranas etc. - 10 classes

UNIT-II: Indian Philosophy, Science and Environment

I. Evolution of language and Scripts

II. Indian educational system

III. The ethics of Indian valor

IV. Science and Technology

V. Environmental conservation: Indian View

VI. Health consciousness of (Science of Life): Ayurveda Yoga and Naturopathy -10 classes

UNIT – III: Sources and Historiography

I. Sources and Historiographical trends of ancient Indian History up to 600 C.E.

III. The Indus Civilization, Debate on the relationship of Indus and Vedic civilization.

IV. Significant features of Indus, its continuity, fall and survival.-15 classes

UNIT – IV: Hunter-gatherers and the advent of food products

i. Paleolithic cultures- sequence and distribution; stone industries and other technological developments.
ii. Mesolithic cultures – regional and chronological distribution; new developments in technology and economy; rock art.
iii. Neolithic and Chalcolithic cultures: distribution and subsistence pattern- 10 Classes

UNIT – IV: Harappa and Vedic Civilization

I. Its origins and Phases of Harappan Civilization- settlement patterns and town planning system; General Features of the Civilization

II. Agrarian base; Industries and craft productions- pottery and trade; social and political organizations; religious beliefs and practices; famous Harappan Sites -the problem of urban decline - 20 Classes

III. Original home land of Aryans, Myths of Aryan Invasion: Various theories

IV. Vedic Cultures- Early Vedic and Post Vedic Literature and Vedic Polity, society and Economy - 15 classes

UNIT- V: India from Sixth Century BCE to Mauryan Age

I. Sources

II. India in sixth century BCE Mahajanpada, Republic and Growth of Urban Centers, Rise of Magadhan Imperialism.

III. Religious systems in 6th century BCE, Buddhism and Jainism.

IV. The Maurya Empire, Chandragupta Maurya, Mauryan administration, Ashok and Ashoka's Dhamma. Mauryan Society, Fall of Mauryan Empire. Greek Invasion and its Impact-10 Classes

UNIT-VI: Buddhism and Jainism

I. Doctrines of Buddhism-Buddhism and Brahmanism- Popularity of Buddhism-decline of Buddhsim-Buddhist Councils-Important Buddhist writers –Eight Great Bodhisattava/path-Vardhama Mahavira

II. Jainism: early jain Literature- Life of Vardhama Mahavira-doctrines of Jainism-Buddhism and Jainism-spread-and influence of Jainism- Different scholars of Jainism – Jain Councils -10 classes

Department: Bengali
Course: Major
Paper Title: বাংলা সাহিত্যের ইতিহাস (১০ম - ১৮শ শতাব্দী পর্যন্ত)
Paper Code: BBNGMAJ01T
Syllabus:

১. যুগবিভাগ – কালসীমা ও নিদর্শন। যুগবিভাগের তাৎপর্য। প্রাচীন যুগ – চর্যাগীতি : আবিষ্কার, ধর্মীয়, সামাজিক ও সাহিত্যগত ঐতিহাসিক প্রেক্ষিত (Class hours- 05)

২. আদি-মধ্যযুগ । (Class hours- 20)

বিশেষ গুরুত্ব : তুর্কি আক্রমণের প্রভাব । শ্রীকৃষ্ণকীর্তন কাব্য।

মঙ্গলকাব্যের উদ্ভব, লক্ষণ ও বৈশিষ্ট্য । মনসামঙ্গল - বিজয় গুপ্ত ।

অনুবাদ সাহিত্য- ভাগবত, রামায়ণ ও মহাভারত।

পদাবলী সাহিত্য – বিদ্যাপতি ও চণ্ডীদাস।

৩. অন্ত্য-মধ্যযুগ । (Class hours- 25)

বিশেষ গুরুত্ব : শ্রীচৈতন্য ও বাংলা সাহিত্য ; চৈতন্যজীবনীকাব্য ;

বৈষ্ণব পদাবলি সাহিত্য – জ্ঞানদাস , গোবিন্দদাস, বৃন্দাবনের ষড়গোস্বামী।

অনুবাদ সাহিত্য- কাশীরাম দাস ও তাঁর মহাভারত।

মনসামঙ্গল কাব্য ও কবি (কেতকাদাস), চন্ডীমঙ্গল কাব্য ও কবি (মুকুন্দ চক্রবর্তী), ধর্মমঙ্গল কাব্য ও কবি (ঘনরাম চক্রবর্তী)

ভারতচন্দ্র ও তাঁর অন্নদামঙ্গল কাব্য।

সপ্তদশ শতাব্দীর মুসলমান কবি ও কাব্য।

৪. প্রাক-আধুনিক পর্ব (১৭৬০- ১৮০০) । (Class hours- 10)

বিশেষ গুরুত্ব : মহারাষ্ট্র পুরাণ, বাউল গান, গাথা ও গীতিকা সাহিত্য, কবিগান ও কবিওয়ালা, টপ্পা, পাঁচালী ।

Department: Bengali
Course: Major
Paper Title: বাংলা নাটক ও প্রহসন
Paper Code: BBNGMAJ07T
Syllabus:

১ . মাইকেল মধুসূদন দত্ত – একেই কি বলে সভ্যতা (Class hours-12)
২ . গিরিশচন্দ্র ঘোষ – জনা (Class hours-15)
৩. দ্বিজেন্দ্রলাল রায়- সাজাহান (Class hours-18)
৪ . রবীন্দ্রনাথ ঠাকুর – অচলায়তন (Class hours-15)

Department: Bengali
Course: Major
Paper Title: বাংলা কথাসাহিত্য (পর্ব-১)
Paper Code: BBNGMAJ08T
Syllabus:

১. বঙ্কিমচন্দ্র চট্টোপাধ্যায়- কৃষ্ণকান্তের উইল (Class hours-15)

২. রবীন্দ্রনাথ ঠাকুর- চার অধ্যায় (Class hours-15)
৩. বিভূতিভূষণ বন্দ্যোপাধ্যায়- ইছামতি (Class hours-15)
৪. ছোটগল্প - (নির্বাচিত ৮টি) (Class hours-20)
রবীন্দ্রনাথ ঠাকুর- অতিথি, একরাত্রি, নিশীথে
পরশুরাম – বিরিঞ্চিবাবা
প্রভাতকুমার মুখোপাধ্যায় – দেবী
মানিক বন্দ্যোপাধ্যায় – হারানের নাতজামাই
শরৎচন্দ্র চট্টোপাধ্যায় - মহেশ
তারাশঙ্কর বন্দ্যোপাধ্যায় – জলসাঘর

Department: Political Science
Course: Major
Paper Title: Human Rights in India
Paper Code: BPLSMAJ17T
Syllabus:

- Human Rights and Duties: Concept, generational classification of human rights. Difference between rights and human rights.
- Institutional aspects of Human rights in India: National and State Human Rights Commission, Constitutional provisions of Human Rights.
- Human Rights & Women in contemporary society: Gender discrimination with special reference to female feticide, Domestic violence, Sexual harassment in workplace(with special reference to Bishaka guideline).
- Human Rights and children in contemporary Indian society: Child Labour, Child abuse inside and outside home and Child trafficking.
- Human rights and minority groups in India: LGBTQIA.
- Environmental rights in India: right to healthy environment, and principles of Sustainable Development.

Department: English
Course: Major
Paper Title: British Poetry and Drama: 14th to 17th Centuries
Paper Code: BENGMAJ2
Syllabus:
1. Geoffrey Chaucer: The Wife of Bath's Prologue from The Canterbury Tales (Nevill Coghill)
Philip Sydney: from Astrophel and Stella: Sonnet no 1
Edmund Spenser: from Amoretti: Sonnet LXXV 'One day I wrote her name...'
Shakespeare: Sonnet no. 64 & 130
2. William Shakespeare: Macbeth
3. William Shakespeare: As You Like It
4. Francis Bacon: "Of Studies", "Of Friendship"

Department: English
Course: Minor
Paper Title: Selections from English Prose and Poems
Paper Code: BENGMN101
Syllabus:
1.Katherine Mansfield: "A Cup of Tea"
2.William Shakespeare: *Julius Caesar*: The Forum Scene
3. Wilfred Owen: "The Send Off"
4.Nissim Ezekiel: "The Railway Clerk"
5.Maya Angelou: "Still the Caged Bird Sings"

Department: History

Course: Major
Paper Title: Cultural Transition in Ancient India: 600 BC-187 BC
Paper Code: BHISMAJ02T
Syllabus:
UNIT-I: Mauryan Arts and Architectures
I. Architecture- Palaces, Caves and StūpasSculpture- Aśoka's Pillars, cultural relations in Maurya states as reflected in art and architecture – 15 Classes
II.Cultural developments in post-Maurya age: art, architecture, sculpture with special reference to Mathura and Gandhara School of Arts- 15 classes
UNIT-II: Amaravati School of Arts
I. Historical Background, Major features and significance - 5 classes
UNIT-III: Sangam Age
I. Development of Literature, II. Polity- Economy, Arts -5 Classes
UNIT-IV: Mathura School of Arts
I.Early stone sculpture in Mathura and Mathura sculpture styles
II.Jain and Buddhist relives and its major features and significance - 10 classes
UNIT-V: Literary Development
I. Development of classical literatures of Maurya with special reference to Buddhist Literature– 10 Classes

Department: History
Course: Major
Paper Title: The Early Medieval History of India: C. 650-1206
Paper Code: BHISMAJ04T
Syllabus:
UNIT- I: Studying Early Medieval India
Studying early Medieval India: sources and approaches; debate on Indian Feudalism; Rajput states: rise and nature – 10 Classes
UNIT- II: Political Structures:
I. Evolution of political structures: Rashtrakutas, Palas, Senas, Pratiharas, Rajputs and Cholasand Chalukyas Chauhans-Chandellas- Paramars - Karkota-Utpal-Hindu Shahi Dynasty - Conflicts; administration, Economy-Society; and Chola's contact with South-East Asia and China-10
II. Arab conquest of Sindh : nature and impact of the new set-up; Ismaili Dawah
Cause and consequences of early Turkish invasions : Mamud of Ghazna; Shahab-ud-Din of Ghur-10
UNIT- III: Agrarian structure and social change:
I. Agricultural expansion with hydraulic structures
II. Settlements History
III.Peasantry and land lords during the period – 10 Classes
UNIT –IV: Trade and Commerce
I. Inter-regional trade
II. Maritime trade
III. Forms of exchange
IV. Process of urbanization
V. Merchant guilds of South India-10
UNIT-V: Religious and Cultural developments:
I. Bhakti, Tantrism, Puranic traditions; Buddhism and Jainism; Popular religious cults
II. Islamic intellectual traditions: Al-Biruni; Al-Hujwiri-10 classes

Department: History
Course: Major
Paper Title: Religion, Society and Culture in Medieval India
Paper Code: BHISMAJ05T
Syllabus:

UNIT: I: Development of Literature

I.Rise and growth of regional languages; culture in transition with special reference to art, architecture, painting and sculpture-10 classes

UNIT-II: Schools of Philosophy

I. Vaishnavite movements in Eastern India; Jagannath cult in Orissa; Warkari movement and Vithobamovement in Maharastra – 15 Classes

II. Sufism and Bhaktism: Its origin and development, doctrines, practices, relevance and its impact on society in North-East and South India – 15 Classes

I. Religious tolerance and Sulh-i-kul; cultural developments with special reference to language, literature, art and architecture – 10 Classes

UNIT –III: Economic Scenario

I. Agriculture, Economy and development of science and technology of the period – 10 classes

Department: History

Course: Minor

Paper Title: Idea of India and Its History up to 600 BC

Paper Code: BHISMEB12T

Syllabus:

UNIT-I: Concept of Bharatvarsha

I. Understanding of Bharatvarsha

II. The glory of Indian Literature: Ved, Vedanga, Upanishads, Epics, Jain and Buddhist Literature, Smriti, Puranas etc.

UNIT-II: Indian Philosophy, Science and Environment

I. Indian educational system

II. The ethics of Indian valor

III. Science and Technology

IV. Environmental conservation: Indian View

UNIT – III: Sources and Historiography

I. Sources and Historiographical trends of ancient Indian History up to 600 C.E.

III. The Indus Civilization, Debate on the relationship of Indus and Vedic civilization.

IV. Significant features of Indus, its continuity, fall and survival.

UNIT – IV: A Survey of Prehistoric India

I. Old Stone age /Paleolithic- Lower/ Middle/ Upper: Sequence and distribution; stone industries and other technological developments

II. Late Stone age/Mesolithic cultures- regional and chronological distribution; new developments in technology and economy; Rock Art

III. New Stone age/Neolithic Cultures- Beginning of agriculture, innovations in technology, Invention of pottery, development of technologies, and sites and importance– 15 Classes

UNIT – IV: Harappa and Vedic Civilization

I. Its origins and Phases of Harappan Civilization- settlement patterns and town planning system; General Features of the Civilization

II. Agrarian base; Industries and craft productions- pottery and trade; social and political organizations; religious beliefs and practices; famous Harappan Sites -the problem of urban decline - 20 Classes

III. Original home land of Aryans, Myths of Aryan Invasion: Various theories

IV. Vedic Cultures- Early Vedic and Post Vedic Literature and Vedic Polity, society and Economy

UNIT- V: India from Sixth Century BCE to Mauryan Age

I. Sources

II. India in sixth centuryBCE Mahajanpada, Republic and Growth of Urban centres, Rise of Magadhan Imperialism.

III. Religious systems in 6th century BCE, Buddhism and Jainism.

IV. The Maurya Empire, Chandragupta Maurya, Mauryan administration, Ashok and Ashoka's Dhamma. Mauryan Society, Fall of Mauryan Empire. Greek Invasion and its

Impact -25 Classes

Department: Philosophy
Course: Major
Paper Title: Western & Indian Ethics
Paper Code: PHIMAJ13
Syllabus:

- Module-1: Eudaemonism (Aristotle's Ethics), Naturalism, Intuitionism, Emotivism
- Module-2: Kant's Moral Theory
- Module-3: Prescriptivism
- Module-4: *Srimadbhāgvat Gitā* (Selected portions)2nd& 3rdChapter
- Module-5: *Nyāya Bhāsāpariccheda* (Selected portion) Cikīrṣa
- Module-6: Artha Saṁgraha (Selected portions) Dharma, Bhāvana, Vidhi, Niṣedha, Arthavāda

Department: Philosophy
Course: Major
Paper Title: Western & Indian Contemporary Philosophy
Paper Code: PHIMAJ15
Syllabus:

- Module-1: Husserl: Phenomenological Method, Intentionality and Philosophy of the life world
- Module-2: Heidegger: Heidegger's Phenomenology. The Question of Being, Dasein, Being and Time, Critique of Technological Civilization
- Module-3: Sartre: Nothingness, Being-for itself, Being-for others
- Module-4: J. Krishnamurthy: Freedom from the Known, Analysis of the Self
- Module-5: Maulana Abul Kalam Azad: Humanism
- Module-6: Deen Dayal Upadhyay: Integral Humanism

Department: Political Science
Course: Major
Paper Title: Constitution of India
Paper Code: BPLSMAJ02T
Syllabus:

- Philosophy of the Indian Constitution, Significance of the Preamble, Salient features of the Indian Constitution.
- Fundamental Rights and the Directive Principles of the State Policy.
- Nature of the Indian Federation, Recommendations of Sarkaria Commission and Venkat Chellaiah Commission.
- Union Executive and Legislature: President, Vice-President, Prime Minister, Parliament-Rajya Sabha and Lok Sabha, Procedure of Amendment.
- State Executive: Governor, Chief Minister
- Judiciary: Supreme Court, High Court and Public Interest Litigation.

Department: Political Science
Course: Major
Paper Title: Indian Political Thought
Paper Code: BPLSMAJ04T
Syllabus:

1. Ancient Indian Political Thought: Basic Features, Kautilya's Saptanga theory & Dandaniti.
2. Main features of Political thought of medieval India.
3. Raja Rammohun Roy—his social activism and liberal thought.
4. Swami Vivekananda: concept of nation-making & socialism.
5. Rabindra Nath Tagore: concept of Atmasakti & shift from nationalism to humanism.
6. Gandhi: Trusteeship and Sarvodaya, Ambedkar: social Justice.

Department: Sanskrit
Course: Major
Paper Title: A Brief Introduction to Sanskrit Literature
Paper Code: BSNSMAJ01T
Syllabus:

Module-1:

- Vedic Literature:
- time, subject matter, saṁhitā, brāhmaṇa, āraṇyaka, upaniṣad, vedāṅga

Module-2:

- Classical Literature:Rāmāyaṇa, Mahābhārata, Purāṇas, Dṛśya-kāvya & Śravya-kāvya
- Rāmāyaṇa :time, subject matter, literary, social & cultural importance
- Mahābhārata :time, subject matter, literary, social & cultural importance
- Purāṇas :time, subject matter, characteristics, literary, social & cultural importance
- Time, Texts& Authors:Bhāsa, Aśvaghoṣa, Kālidāsa, Bhāravi, Māgha, Bhaṭṭi, Harṣa, Śūdraka, Viśākhadatta, Bāṇabhaṭṭa, Daṇḍīn, Bhavabhūti, Bhaṭṭaṇārāyaṇa, Śrīharṣa, Ambikādattavyāsa, Revāprasāda Dvivedin, Prabhāśaṁkara Jośī, Haridāsa-siddhānta-vāgīśa, Sītānātha Ācārya, Śrījīva Nyāyatīrtha, Rādhāvallabha Tripāṭhin, Yatīndra-vimala Caudhurī, Vīrendra-kumāra Bhaṭṭācārya, Kālipada Tarkācārya

Module-3:

- Technical Literature: General Introduction to Vyākaraṇa, Darśana and Sāhitya-śāstra
- Time, Texts& Authors :Pre-Pāṇinian Grammarians, Kātantra-vyākaraṇa, Kalāpa-vyākaraṇa, Mugdhabodha-vyākaraṇa, Sārasvata-vyākaraṇa
- Time, Texts & Authors :Cārvāka,Bauddha, Jaina, Sāṁkhya, Nyāya, Vaiśeṣika
- Time, Texts & Authors :Bharata, Bhāmaha, Daṇḍin, Vāmana, Ānandavardhana, Kuntaka, Kṣemendra, Rājaśekhara, Mammaṭa, Rūyyaka, Jayadeva, Dhanañjaya, Viśvanātha, Jagannātha

Module-4:

- Scientific Literature:
- Maya-mata, Saṅgīta-ratnākara, Sūrya-siddhānta, Aṣṭāṅga-hṛdaya, Caraka-saṁhitā, Suśruta-saṁhitā

Department: Sanskrit
Course: Major
Paper Title: Dharma-śāstra
Paper Code: BSNSMAJ06T
Syllabus:

Module-1:

- Manu-saṁhitā (Rāja-dharma):
- rājotpotti, daṇḍa-nīti, dūrga, kara-nīti, byasana, ṣāḍ-guṇya & dūta
- Yājñavalkya-smṛti:
- Vyavahārādhyāya (up toṛṇādāna)

Module-2:

- Artha-śāstra (Vinayādhikārika):
- vidyā-samuddeśa, indriya-jaya, amātya-niyoga, gūḍha-puruṣa, dūta-praṇidhi, ātma-rakṣita & śāsanādhikāra

Department: Sanskrit
Course: Major
Paper Title: Khaṇḍa-kāvya & Vedānta Philosophy
Paper Code: BSNSMAJ13T
Syllabus:

Module-1:

- Megha-dūta

Module-2:

- Vedānta-sāra

Department: Sanskrit
Course: Major
Paper Title: Śāṁkhya&Yoga
Paper Code: BSNSMAJ15T
Syllabus:
Module-1:
- Śāṁkhya-kārikā

Module-2:
- Yoga-darśana:
- Samādhi-pāda

GENDER

Department: Bengali
Course: Major
Paper Title: মধ্যযুগের সাহিত্য
Paper Code: BBNGMAJ02T
Syllabus:

১. শ্রীকৃষ্ণকীর্তন কাব্য (বংশী খণ্ড ও রাধাবিরহ) (Class hours- 14)

২. বৈষ্ণব পদাবলি : (নির্বাচিত পদ- ৮টি) (Class hours- 16)

ক. আজু হাম কি পেখলুঁ নবদ্বীপ চন্দ।খ. নীরদ নয়নে নীর ঘন সিঞ্চনে। গ. আমার শপতি লাগে না ধাইও ধেনুর আগে।ঘ. ঘরের বাহিরে দণ্ডে শতবার।ঙ. মন্দির বাহির কঠিন কপাট। চ. কন্টক গাড়ি কমলসম পদতল। ছ. সুখের লাগিয়া এঘর বাঁধিনু। জ. এ সখি হামারি দুখের নাহি ওর।

ঝ. তাতল সৈকত বারি বিন্দু সম ।

৩. চণ্ডীমঙ্গল (আখেটিক খণ্ড): মুকুন্দ চক্রবর্তী (Class hours- 18)

৪. শাক্ত পদাবলি : (নির্বাচিত পদ- ৭ টি) (Class hours- 12)

ক. আমার উমা সামান্য মেয়ে নয়। খ. গিরি, এবার আমার উমা এলে, আর উমা পাঠাব না। গ. আমি কি হেরিলাম নিশি-স্বপনে। ঘ.ওরে নবমী-নিশি, না হইও রে অবসান। ঙ. যেয়ো না রজনী আজি লয়ে তারাদলে। চ. মা আমায় ঘুরাবে কত। ছ. মন রে কৃষি কাজ জান না।

Department: Bengali
Course: Major
Paper Title: উনিশ শতকের সাহিত্য
Paper Code: BBNGMAJ06T
Syllabus:

১. উনিশ শতকের নির্বাচিত কবিতা- (Class hours-20)

- সুরবালা- বিহারীলাল চক্রবর্তী
- বঙ্কিম বিদায়- গোবিন্দচন্দ্র দাস
- বেলাশেষে- মানকুমারী বসু
- মানব বন্দনা- অক্ষয়কুমার বড়াল
- নির্ঝরের স্বপ্নভঙ্গ – রবীন্দ্রনাথ ঠাকুর
- মেঘদূত - রবীন্দ্রনাথ ঠাকুর
- নিরুদ্দেশ যাত্রা - রবীন্দ্রনাথ ঠাকুর

২. বীরাঙ্গনা – মধুসূদন দত্ত (নির্বাচিত ৫টি পত্র) (Class hours-15)
শকুন্তলা, তারা, শূর্পনখা, কেকয়ী, জনা পত্রিকা
৩. হুতোম প্যাঁচার নকসা- (নির্বাচিত অংশ) - কালীপ্রসন্ন সিংহ
কলিকাতার বারোইয়ারি-পূজা, মিউটীনি, মরা-ফেরা, রমাপ্রসাদ রায়, দুর্গোৎসব (Class hours-15)
৪. পদ্মিনী উপাখ্যান –(নির্বাচিত অংশ) - রঙ্গলাল বন্দ্যোপাধ্যায়
(সৈন্য-সেনাপতি ও অন্যান্য ক্ষত্রিয় রাজাদের যুদ্ধে উৎসাহ দেবার জন্য ভীমসিংহের আহ্বান পর্যন্ত) (Class hours-20)

Department: Political Science
Course: Major
Paper Title: Human Rights in India
Paper Code: BPLSMAJ17T
Syllabus:

- Human Rights and Duties: Concept, generational classification of human rights. Difference between rights and human rights.
- Institutional aspects of Human rights in India: National and State Human Rights Commission, Constitutional provisions of Human Rights.
- Human Rights & Women in contemporary society: Gender discrimination with special reference to female feticide, Domestic violence, Sexual harassment in workplace(with special reference to Bishaka guideline).
- Human Rights and children in contemporary Indian society: Child Labour, Child abuse inside and outside home and Child trafficking.
- Human rights and minority groups in India: LGBTQIA.
- Environmental rights in India: right to healthy environment, and principles of Sustainable Development.

Department: Bengali
Course: Major
Paper Title: বিশ শতকের বাংলা কবিতা
Paper Code: BBNGMAJ10T
Syllabus:
দুই মহাযুদ্ধ মধ্যবর্তী কবিতা (১০টি) (Class hours- 30)
১. রবীন্দ্রনাথ ঠাকুর - পৃথিবী
২. কাজী নজরুল ইসলাম- নারী
৩. সত্যেন্দ্রনাথ দত্ত – চম্পা
৪. জীবনানন্দ দাশ – বোধ
৫. অমিয় চক্রবর্তী - সংগতি
৬. সুধীন্দ্রনাথ দত্ত – শাশ্বতী
৭. বিষ্ণু দে – তুমি শুধু পঁচিশে বৈশাখ
৮. সমর সেন – মহুয়ার দেশ
৯. প্রেমেন্দ্র মিত্র – বেনামী বন্দর
১০. অজিত দত্ত – প্রার্থনা
দ্বিতীয় মহাযুদ্ধের সমকালীন ও পরবর্তী কবিতা (১০টি) (Class hours-30)
১১. সুভাষ মুখোপাধ্যায় – ফুল ফুটুক না ফুটুক
১২. সুকান্ত ভট্টাচার্য – প্রিয়তমাসু
১৩. মঙ্গলাচরণ চট্টোপাধ্যায় – জননী যন্ত্রণা
১৪. বীরেন্দ্র চট্টোপাধ্যায় – অন্নদেবতা
১৫. নীরেন্দ্রনাথ চক্রবর্তী - উলঙ্গ রাজা

১৬. শক্তি চট্টোপাধ্যায় – যেতে পারি কিন্তু কেন যাব ?

১৭. শঙ্খ ঘোষ – বাবরের প্রার্থনা

১৮. সুনীল গঙ্গোপাধ্যায়- উত্তরাধিকার

১৯. শামসুর রাহমান- রাজকাহিনী

২০. কবিতা সিংহ – হরিণা বৈরী

Department: English
Course: Minor
Paper Title: Selections from English Prose and Poems
Paper Code: BENGCCRT 201
Syllabus:

1.H.E. Bates: "The Ox"
2.Lady Gregory: *The Rising of the Moon*
3.William Shakespeare: Sonnet no. 18 ("Shall I compare thee)
4.Shelley: "To the Moon"
5. Lord Tennyson: "Crossing the Bar"
6.W.B. Yeats: "Wild Swans at Coole"
7. Rabindranath Tagore: "Leave this chanting and singing and telling…" (Gitanjali No. 11)
"When I leave, let these be my parting words" (Gitanjali No. 96)

ENVIRONMENT AND SUSTAINABILITY

Department: All
Course: Major
Paper Title: ENVIRONMENTAL STUDIES
Paper Code: BVACENV01T
Syllabus:

Unit 1: Basics of Environmental Studies: (05)
Definition, Nature, Scope and Importance; Components of environment: Environmental education
Unit 2: Natural Resources: Renewable and Nonrenewable Resources (10)
Nature and natural resources their conservation and associated problems:
Forest resources: Uses, types and importance, Joint Forest Management & Tribal population, Deforestation and its effects
Water resources: Distribution of water on Earth; Use, over exploitation of surface and ground water; Dams: Benefits and problems; Flood and Drought
Mineral resources: Mineral resources in India; Use and exploitation, Social impacts of mining
Food resources: World food problems and food insecurities.
Energy resources: Renewable and Nonrenewable energy sources; Use of alternate energy sources - Case studies
Land resources: Land as a resource; Land degradation, landslides, soil erosion, desertification
Use of resources for sustainable development
Unit 3: Ecology and Ecosystems (08)
Concept of ecology, Population ecology, Community ecology
Concept of an ecosystem, different types of ecosystem
Food chains, food weds and ecological succession
Energy flow in the ecosystem and energy flow models
Unit 4: Biodiversity and its conservation (08)
Biodiversity: Levels of biological diversity
Values of biodiversity

Hot-Spots of biodiversity, Mega-biodiversity countries
Threat to biodiversity
Threatened and endemic species of India
Conservation of biodiversity (*In- situ* and *Ex-situ)*
Ecosystem services: Ecological, Economic, Social, Ethical, Aesthetical and Informational values
Unit 5: Environmental Pollution and Management (08)
(a) Nature, Causes, Effects and Control measures of – Air pollution, Water pollution, Soil pollution, Noise pollution
(b) Solid waste management: Causes, effects and disposal methods; Management of biomedical and municipal solid wastes
Disaster management: Floods, Earthquake, Cyclone and Landslides
Unit 6: Environmental Policies and Practices (10) Constitutional Provisions for protecting environment- Article 48 (A), 51A (g)
Environmental Laws: The Environment (Protection) Act, 1986; The Air (Prevention and Control of Pollution) Act, 1981; The Water (Prevention and Control of Pollution) Act 1974; Forest (Conservation) Act, 1980
The wildlife Protection Act, 1972
Climate change, Global warming, ENSO, Acid rain, Ozone layer depletion; Montreal and Kyoto Protocols
Unit 7: Human Communities and Environment (06)
Human population growth; Impacts on environment
Environment and human health: Concept of health and disease; Common communicable and Non- communicable diseases; Public awareness
Environment movements in India: Chipko Movements, Silent Valley Movement, *Narmada Banchao Aandolan*.
Unit 8: Field Work Report/Project Report/Term paper (based on any one of the following topics and to be evaluated by internal teachers only) (05)
Environmental assets - River/Forest/Grassland/Hill/Mountain *etc*.
Environmental pollution - Urban/Rural/Industrial/Agricultural
Study of common Plants/Insect /Birds/Wild life *etc*.
Study of simple ecosystems: Pond/River/Hill slope *etc*.

Department: Botany
Course: Major
Paper Title: Plants and Microbial Diversity and its Evolution
Paper Code: BBOTMAJ01C
Syllabus:
Introduction to microbial diversity; Hierarchical organization and positions of microbes in the living world: Whittaker's five-kingdom system and Carl Richard Woese's three-domain system.
Viruses: characteristics; classification (Baltimore), idea about viroids and prions; detailed structure T4-phage and SARS-COV2, lytic and lysogenic cycle; Economic importance of viruses.
Bacteria general characteristics; Types-archaebacteria, eubacteria, wall-less forms (mycoplasma and spheroplasts); Bergey's classification, Cell structure; Nutritional types; vegetative and Reproductive structure - asexual and recombination (conjugation, transformation and transduction). Economic importance of bacteria with reference to their role in agriculture and industry (fermentation and medicine).
Algae General characteristics; Ecology and distribution; range of thallus organization; Cell structure and components; cell wall, pigment system, reserve food, flagella; methods of reproduction; Classification; criteria, system of Fritsch, and idea of different groups as per Lee; Morphology and reproduction and life cycles of *Nostoc*, *Oedogonium, Chara, Fucus* and *Polysiphonia*. Diatoms and their importance. Idea about cultivation of *Spirulina;* Economic importance of algae in- Food and Nutraceuticals, Feed stocks, food colorants; fertilizers, aquaculture feed; therapeutics and cosmetics; medicines; dietary fibres from algae. Algal blooms and toxins.
Introduction to fungi, General characteristics; Affinities with plants and animals; Thallus organization; Cell wall composition; Heterothallism and parasexuality. Classification Ainsworth (up to Order). Life cycles of *Synchitrium, Saccharomyces, Ascobolus*, *Agaricus*. Symbiotic associations: Lichen – Occurrence; General characteristics; Growth forms; Mycorrhiza-Ectomycorrhiza, Endomycorrhiza and their significance. Application of fungi.

Introduction to Archegoniate, Unifying features of archegoniates, Alternation of generations. Bryophytes: General characteristics; Adaptations to land habit; Range of thallus organization. Idea about different orders. Morphology, anatomy and reproduction of *Marchantia, Porella, Anthoceros, and Funaria*; Ecological and economic importance of bryophytes with special reference to *Sphagnum*.
Pteridophytes: General characteristics; Idea about different orders. Morphology, anatomy and reproduction of *Psilotum, Selaginella, Equisetum* and *Adiantum. H*eterospory and seed habit. Ecological and economic importance.
Gymnosperms: General characteristics, idea about different orders, morphology, anatomy and reproduction of *Cycas*, *Pinus* and *Gnetum*; Affinities and evolutionary significance of Gymnosperms Ecological and economic importance.
Palaeobotany: Plant life through ages with evolutionary significane, Geological time scale, Early land plant *(Cooksonia*). Types of plant fossils - impressions, compressions, incrustation, actual remains petrifaction. Factors for fossilization, Radiocarbon dating. Importance.

Department: Botany
Course: Major
Paper Title: Molecular Biology, Genetics and Plant Breeding
Paper Code: BBOTMAJ04C
Syllabus:
Nucleic acids: DNA as the carrier of genetic information (Griffith's, Hershey & Chase, McLeod & McCarty experiment).
The Structures of DNA and RNA/Genetic Material: DNA Structure: Miescher to Watson and Crick- historic perspective, DNA structure, Salient
features of double helix, Types of DNA, denaturation and renaturation, cot curves; Organization of DNA- Prokaryotes, Viruses, Eukaryotes. RNA
Structure. Organelle DNA -- mitochondria and chloroplast DNA. The Nucleosome. Chromatin structure- Euchromatin, Heterochromatin- Constitutive and Facultative heterochromatin.
The replication of DNA: Chemistry of DNA synthesis (Kornberg's discovery); General principles – bidirectional, semiconservative and semi discontinuous replication, RNA priming; rolling circle and θ (theta) mode of replication, replication of linear ds-DNA,
replication of the 5'end of linear chromosome; Enzymes involved in DNA replication.
Transcription: Transcription in prokaryotes and eukaryotes. Principles of transcriptional regulation; Prokaryotes: lac operon Eukaryotes: transcription factors, heat shock proteins, Gene silencing.
Processing and modification of RNA: Split genes-concept of introns and exons, spliceosome machinery, splicing pathways, group I and group II intron splicing, alternative splicing, eukaryotic mRNA processing (5' cap, 3' poly A tail); Ribozymes; RNA editing.
Central dogma and genetic code: Genetic code (deciphering & salient features).
Translation: Ribosome structure and assembly, mRNA; Charging of tRNA, aminoacyl tRNA synthetases; Various steps in protein synthesis, proteins involved in initiation, elongation and termination of polypeptides; Fidelity of translation; Inhibitors of protein synthesis.
Mendelian genetics and its extension:
Principles of inheritance; Chromosome theory of inheritance; Autosomes and sex chromosomes; Probability and pedigree analysis; Incomplete dominance and codominance; Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, Recessive and Dominant traits, Penetrance and Expressivity, Polygenic inheritance.
Extrachromosomal Inheritance: Chloroplast mutation: Variegation in Four o'clock plant; Mitochondrial mutations in yeast; Maternal effects-shell coiling in snail; Infective heredity- Kappa particles in Paramecium.
Linkage, crossing over and chromosome mapping: Linkage and crossing over-Cytological and molecular basis of crossing over; Recombination frequency, two
factor and three factor crosses; Interference and coincidence; Numericals based on gene mapping.
Variation in chromosome number and structure: Deletion, Duplication, Inversion, Translocation, Position effect, Euploidy and Aneuploidy.

Gene mutations: Types of mutations; Molecular basis of Mutations; Mutagens – physical and chemical (Base analogs, deaminating, and intercalating agents); Role of Transposons in mutation.DNA repair mechanisms.
Fine structure of gene: Classical vs molecular concepts of gene; Cis-Trans complementation test for functional allelism; Structure of Phage T4, rII Locus.
Population and Evolutionary Genetics: Allele frequencies, Genotype frequencies, Hardy-Weinberg Law, role of natural selection, mutation, genetic drift.
Plant Breeding: Introduction and objectives. Modes of reproduction in crop plants. Methods of crop improvement: Acclimatization; Selection methods: For self-pollinated, cross pollinated and vegetatively propagated plants; Hybridization: For self, cross and vegetatively propagated plants – Procedure, advantages and limitations. Role of mutations; Polyploidy; Distant hybridization; Heterosis: Theories and Applications.
Practical (Credits -2, 60 Hrs)

1. Study of DNA replication mechanisms through photographs (Rolling circle, Theta replication and semi-discontinuous replication).
2. Study of structures of prokaryotic RNA polymerase and eukaryotic RNA polymerase II through photographs.
3. Photographs establishing nucleic acid as genetic material (Messelson and Stahl's, Avery et al, Griffith's, Hershey & Chase's and Fraenkel & Conrat's experiments).
4. Study of the following through photographs: Assembly of Spliceosome machinery; Splicing mechanism in group I & group II introns; Ribozyme and Alternative splicing.
5. Isolation of genomic DNA from plant sample (demonstration through youtube video).
6. Meiosis through temporary squash preparation with special reference to *Allium sp*.
7. Mendel's laws through seed ratios. Laboratory exercises in probability and chi-square.
8. Chromosome mapping using point test cross data.
9. Idea about pre-treatment, fixation, staining and smear preparation.
10. Incomplete dominance and gene interaction through seed ratios (9:7, 9:6:1, 13:3, 15:1, 12:3:1, 9:3:4).
11. Photograhs/Permanent Slides showing Translocation Ring, Laggards and Inversion Bridge.

Department: Botany
Course: Major
Paper Title: Economic Botany, Pharmacognosy and Natural Resource Management
Paper Code: BBOTMAJ05C
Syllabus:
Natural resources Definition and types
Sustainable utilization Concept approaches (economic, ecological and socio-cultural).
Land Utilization (agricultural, pastoral, horticultural, silvicultural); Soil degradation and management.
Water Fresh water (rivers, lakes, groundwater, aquifers, watershed); Marine; Estuarine; Wetlands; Threats and management strategies.
Biological Resources Biodiversity-definition and types; Significance; Threats; Management strategies; Bioprospecting; IPR; CBD; National Biodiversity Action Plan).
Energy Renewable and non-renewable sources of energy.
Contemporary practices in resource management EIA, GIS, Participatory Resource Appraisal, Ecological Footprint with emphasis on carbon footprint, Resource Accounting; Waste management.
National and international efforts in resource management and conservation.
Origin of cultivated plants: Concepts of centres of origin and their importance with reference to Vavilov's work with special reference to Rice, Legumes and Beverages.
Study of the following economically important plants (Scientific names, families, parts used and importance Spices, Ginger, cumin, Beverages- Tea, coffee, Medicinal plants-, neem, Vasaka, Vegetables- Potato, radish, bottle, Fibre yielding plants- jute, Timber yielding plants- Sal, Lac Culture, Fruits- Mango, Sugar yielding plant- Sugarcane.
Sources of oils and fats General description, classification, their uses and health implications groundnut, coconut, linseed, soybean, mustard and coconut (Botanical name, family & uses). Essential Oils: General account, comparison with fatty oils & their uses.

Medicinal botany: History, scope and importance of medicinal plant, a brief idea about indigenous medicinal sciences- ayurveda, siddha and unani. Polyherbal formulations.
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.
Secondary metabolites: 3.1 Definition of secondary metabolites and difference with primary metabolites, 3.2 Interrelationship of basic metabolic pathways with secondary metabolite biosynthesis (outlines only), 3.3 Major types–terpenoids, phenolics, flavonoids, alkaloids and their protective action against pathogenic microbes and herbivores.
Pharmacologically active constituents: Source plants (one example) parts used and uses of: 1 Steroids (Solasodin, Diosgenin, Digitoxin), Tannin (Catechin), Resins (Gingerol, Curcuminoids), Alkaloids (Quinine, Atropine. Pilocarpine, Strychnine, Reserpine, Vinblastine), Phenols (Sennocide and Capsaicin).

Practical (Credits -2, 60 Hrs)
1. Estimation of solid waste generated by a domestic system (biodegradable and nonbiodegradable) 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
7. 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.
8. Study of local economically important plants and submission of report with photographs
9. Chemical tests for (a) Tannin (Camellia sinensis / Terminalia chebula), (b) Alkaloid (*Catharanthus roseus*)
10. Powder microscopy – *Zingiber* and *Holarrhena*.
11. Histochemical tests of (a) Curcumin (*Curcuma longa*), (b) Starch in non-lignified vessel (*Zingiber*), (c) Alkaloid (stem of *Catharanthus* and bark of *Holarrhena*).

Department: Botany
Course: Major
Paper Title: `Ecology, Phytogeography and Sustainable Biology
Paper Code: BBOTMAJ06C
Syllabus:
Introduction: Basic concepts; Levels of organization. Inter-relationships between the living world and the environment, the components and dynamism, homeostasis.
Edaphic factors: Soil Importance; Origin; Formation; Composition; Physical; Chemical and Biological components; Soil profile; Role of climate in soil development; Water ; States of water in the environment; Atmospheric moisture; Precipitation types (rain, fog, snow, hail, dew); Hydrological Cycle; Water in soil; Water table.: Light, temperature, wind and fire.
Ecosystems: Structure; Processes; Trophic organisation; Food chains and Food webs; Ecological pyramids.
Population ecology: Characteristics and Dynamics, Ecological Speciation
Plant communities: Concept of ecological amplitude; Habitat and niche; Characters: analytical and synthetic; Ecotone and edge effect; Dynamics: succession – processes, types; climax concepts.
Biotic interactions: Trophic organization, basic source of energy, autotrophy, heterotrophy; symbiosis, commensalism, parasitism; food chains and webs; ecological pyramids; biomass, standing crop.
Functional aspects of ecosystem: Principles and models of energy flow; Production and productivity; Ecological efficiencies; Biogeochemical cycles; Cycling of Carbon, Nitrogen and Phosphorus.
Phytogeography: Principles; Continental drift; Theory of tolerance; Endemism; Brief description of major terrestrial biomes (one each from tropical, temperate & tundra); Phytogeographical division of India; Local Vegetation.

Sustainable Biology- Definitions, Scope and its different attributes; principles of Sustainability: Scope of sustainability; Need of Sustainability in agriculture, Environment & man made different ecosystems.
Carrying capacity, Sustainable development and Environmental impact assessment. Earth summits, SDGs 17; Different environmental movement like Chipco, Silent valley; Different conferences for sustainable development and the conservation of biotic resources; Laws & regulations
Sustainability, global environmental challenges with special references to global warming & vulnerable ecosystems in Purulia.
Practical (Credits -2, 60 Hrs)
1. Study of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter.
2. Determination of pH of various soil and water samples (pH meter, universal indicator/Lovibond comparator and pH paper)
3. Analysis for carbonates, chlorides, nitrates, sulphates, organic matter and base deficiency from two soil samples by rapid field tests.
4. Comparison of bulk density, porosity and rate of infiltration of water in soils of three habitats.
5. Determination of dissolved oxygen of water samples from polluted and unpolluted sources.
6. (a). Study of morphological adaptations of hydrophytes and xerophytes (four each). (b). Study of biotic interactions of the following: Stem parasite (*Cuscuta*), Root parasite (*Orobanche*) Epiphytes, Predation (Insectivorous plants).
8. Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus, by species area curve method (species to be listed).
9. Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law.
10. Field visit to familiarise students with ecology & Sustainability of different sites.

Department: Botany
Course: Major
Paper Title: Plant Health Science and Technology
Paper Code: BBOTMAJ09C
Syllabus:
Introduction to Plant Health Science–Definition and Importance of plant health science; Factors affecting plant health – edaphic factors and biotic factors; Basic principles of plant pathology, entomology and nematology; Plant health in response to plant stress physiology
Plant Pathogens and Diseases - Types of plant pathogens (viruses, bacteria, fungi, nematodes); Life cycle of pathogens; Mode of transmission; Plant-pathogen interactions- pathogenicity factors; Phytoalexins in defence mechanism; Systemic and Local acquired resistance; Common plant diseases and their symptoms- Late blight of potato, Black stem rust of wheat, Stem rot of jute, Brown spot of rice; Epidemiology of plant diseases; Disease development and progression; Symptomology; Symptoms variability; Disease diagnosis methods for biotic factors (visual, laboratory tests- PCR, ELISA, BIOLOG test) and abiotic factors; Impact of disease on plant growth and yield.
Plant Disease and Health Management - Principles of integrated pest management; Cultural practices of disease prevention, biological and chemical control methods; Resistance breeding; Soil fertility management; Weed management.
Plant Health in Agriculture–Disease management in agricultural system; Role of plant health in sustainable agriculture; Food safety and plant health.
Plant Health and the Environment–Impacts of plant health in ecosystems; Plant health and climate change; Bio-security and plant health; Plant quarantine
Technological advances in Plant health sciences–Genetic engineering and biotechnology for improvement of plant health; Precision agriculture; Remote Sensing and GIS uses in agriculture; Sensor-based plant protection techniques; Automation of irrigation systems; Drone usages in agriculture, Role of bioinformatics in plant disease management– Whole Genome Sequencing and Microarray Genomics in disease diagnosis; detection of various pathogenicity factors; Role of bioinformatics in raising disease resistance cultivars.

Intellectual Property Rights– Functions of IPR, Various forms of IPR, Importance of IPR in plant health, Plant Variety Protection (PVP) rights, Plant Breeder's rights.

Practical (Credits -2, 60 Hrs)

1. Visual diagnosis of common diseased plant symptoms and signs–Fungal leaf spots, Bacterial leaf spots, Vein banding, Mosaic and ring spot, Leaf distortion, Powdery mildew, Leaf tip death, Cankers, Fruit discoloration, Wilts, Blights, Damping off.
2. Laboratory testing of plant pathogen by microscopy and pathogen-selective media plates.
3. A field visit and assessment of plant disease incidence and severity.

Department: Botany
Course: Major
Paper Title: Elements of Forestry
Paper Code: BBOTMAJ17C
Syllabus:

Forestry: Definition, Scope; Forest as natural Resources; Man and forestry; Sustainability & forestry; Importance of Forest in sustainable ecology and Green house controlling

Forest resources, Forest classification, Farm Forestry, Social Forestry & Agro-forestry; Different Forest related products- Major & Minor; Forest as a source of sustainable economy; Indian Forest & Forestry: Regional and Local Forest resources; Social forestry

Silviculture: Definition, scope & objective. Factors of locality: climatic (Light, temperature & Frost). Topographic (Affect of Altitude, Aspect & Exposure. Edaphic: General, Parental rock influence on vegetation, Pan formation. Biotic: Influence of plants, insects, wild animals, man and his animals; Concept of regeneration of forest.

Mensuration: definition, object and scope; Measurement of diameter and girth; Breast height – Rules of diameter measurement, diameter and girth class. Measurement of height of tree: Principles of height measurement (similar triangle, trigonometric). Volume: Measurement of volume of standing and felled trees, volume table.

Silviculture & forest Management; Classification and objective, Clear felling system: clear strip and alternate strip system. Regeneration by Taungya and /or departmental plantation, Uniform system: Shelter wood system, kinds and pattern of felling, Periodic Block, Indian Irregular shelter wood system, Selection system, Coppice – System: Simple, Coppice with Standard

Principles and objective of Forest conservation and management; Reserve, Protected and un-classed forest. Management classification: Sustained yield and progressive yield, CAI, MAI, sustainable forest, Joint Forest Management: Concept, working and sustainability; Role of JFM in the environmental restoration and biodiversity conservation.

Forest of Purulia; Forest products, Livelihood of Forest dwellers; Role of Forest in eco-tourism in Purulia; Forest & future, NTFP

Department: Botany
Course: Minor
Paper Title: Plant Science I
Paper Code: BBOTMEA35C
Syllabus:

Microbes: General characteristics and economic importance of bacteria and viruses.
Algae: General characteristics; range of thallus, reproduction and economic importance
Fungi: General characteristics, reproduction, ecology and significance.
Bryophytes: General characteristics, adaptations to land habit, reproduction and economic importance of bryophytes.
Pteridophytes: General characteristics, ecological and economic importance of Pteridophytes.
Gymnosperms: General characteristics, ecological and economic importance.
Introduction to plant taxonomy: Identification, classification, nomenclature, functions of herbarium, important herbaria and botanical gardens of the world and India.

Department: Geography

Course: Major
Paper Title: Introduction to Physical Geography & Elementary Practicals in Geography
Paper Code: BGEOMAJ01C
Syllabus:

Unit I: Our Earth and the Physical Environment [26 Hours]

1.1 Interior of the Earth; Earth's tectonic and structural evolution through Geological Time Scale (6 lectures)

1.2 Earth's atmosphere: Insolation; Pressure Belts; Planetary wind System; Greenhouse Effect and Global Warming. (8)

1.3 Earth's hydrosphere: Global hydrological cycle; Ocean circulation – major ocean currents. (4 lectures)

1.4 Earth's Biosphere: Biogeographical realms of the world; Soils – Zonal, Azonal and Intrazonal; Classification of forest (Champion). (8 lectures)

Unit II: Landforms and Landscape [26 Hours]

2.1 Landforms: Types & Order. Concept & Theory of Isostasy (Airy & Pratt). Geomorphic Processes (6 lectures)

2.2 Landforms due to Endogenic forces: Plate Tectonics and associated Landforms; Seismicity & Vulcanicity; Landform evolution in Uniclinal, Folded and Faulted structure (8 lecture)

2.3 Landforms due to Exogenic Processes: Weathering & Mass Movement (4 lectures)

2.4 Fluvial, Glacial, Aeolian, Coastal and Karst landscapes; Landscape evolution models: Davis, Penck and Hack (8 lectures)

Unit I: Scale, Minerals and Rocks [22 Hours]

1.1 Concept and classification of Map Scales

1.2 Construction and use of scales: Simple linear, Comparative linear, Diagonal and Vernier

1.3 Megascopic identification of Mineral samples: Bauxite, Calcite, Chalcopyrite, Feldspar, Galena, Gypsum, Hematite, Magnetite, Mica, Quartz, Talc, Tourmaline

1.4 Megascopic identification of Rock samples: Granite, Basalt, Dolerite, Laterite, Limestone, Shale, Sandstone, Conglomerate, Slate, Phyllite, Schist, Gneiss, Quartzite, Marble.

Unit II: Interpretation of Geological Map [30 Hours]

2.1 Basic ideas and conventional symbols. Choice of section line; series and unconformity; strike and dip; topography; rules of three-point problems for measuring dip.

2.2 Drawing of geological section - Horizontal, Uniclinal with unconformity, and Simple folded structure.

2.3 Interpretation of geological section based on a) topography; b) sequence of beds; c) attitude of beds d) structure of beds e) correlation between structure and topography; f) geological history

Project File

a) Construction of Scales: Simple linear, Comparative scale, Diagonal & Vernier.
b) Identification of Minerals and Rocks.
c) Drawing and interpretation of geological section - Horizontal, Uniclinal with unconformity, & Simple folded structure.

Department: Geography
Course: Major
Paper Title: Introduction to Climate, Soil and Biogeography & Geographical Survey through Instruments
Paper Code: BGEOMAJ03C
Syllabus:

Unit I: Introduction to Climatology [26 Hours]

1.1 Concept of atmospheric sciences; Composition and Structure of the Atmosphere; Forms of Energy in the Atmosphere. (5 lectures)

1.2 Insolation and its influencing factors; Global Heat Budget; Horizontal and Vertical distribution of Temperature. (5 lectures)

1.3 Concept of Atmospheric Pressure; Pressure belts; factors influencing Air Motion; General Wind Circulation of the atmosphere with reference to Tri-cellular model and Jet stream.

1.4 Condensation, Precipitation, classification of climate (Koppen & Thornthwaite) (8 lectures)

Unit II: Introduction to Soil and Bio Geography [26 Hours]
2.1 Soil as a natural body; Physical and chemical properties of soils; Soil forming factors; Profile development (6 lectures)
2.2 Development of Soils: Laterite, Podzol, and Chernozem soil. Soil classification: genetic and USDA. Soil degradation and management. .(6 lectures)
2.3 Concepts and principles of ecology. Components of ecosystem; Ecosystem Hierarchy: individual, population, species, community. Concept and type of Trophic structure; food chain, food web; energy flow models in ecosystem. (7 lectures)
2.4 Biomes: Tropical Rain Forest, Grassland and Taiga. Bio-geochemical cycles: oxygen, carbon and nitrogen. Biodiversity: types, significance, threats and conservation (7 lectures)
Unit I: Weather Instruments and Soil-Water Analysis [20 Hours]
1.1 Six's Maximum & Minimum Thermometer, Barometer and Hygrometer. (5 lectures)
1.2 Climograph (After G. Talyor), Identification of Continental-Maritime Climate from Climatic data/ Graph, Synoptic Chart. (5 lectures)
1.3 Collection of soil samples from field and develop Soil Nutrient Map. (5 lectures)
1.4 Collection of water samples from field and develop Water Quality Map. (5 lectures)
Unit II: Relief and Height Determination [32 Hours]
2.1 Definition scope and type of surveying, Survey instrument to measure angle direction, area and distance of object on ground. Measurement and mapping of a plot by Chain Survey (6 lectures)
2.2 Prismatic compass: The instrument; Method of taking reading; correction of data observed; Open traverse; plotting; closed traverse; plotting; correction of plotting error (Bowditch's
correction); interior angles and whole circle bearing; calculation of area of closed traverse; advantages and disadvantages. (8 lectures)
2.3 Leveling: definition; instrument used; dumpy level; the staff; taking reading through a dumpy level, determination of reduced level by rise and fall method and by collimation
method; checking of data; plotting of data; drawing of profile. Contouring: contouring by radial lines; contouring by cross sections. (10 lectures)
2.4 Theodolite: components; measurement of article angles; measurement of horizontal angle (only for traversing); Measurement of high transistence-1. Base accessible. 2. Base
inaccessible – (a) same vertical plan and (b) oblique plan methods (8 lectures)
Project File
a) Recording and tabulation of data on atmospheric temperature, pressure and humidity. Construction and interpretation of Climograph. Preparation of synoptic chart.
b) Preparation of soil nutrient map and water quality map based on primary data collection.
c) Mapping a Closed Traverse by Prismatic Compass, Profile and Contouring by Dumpy Level Survey.
d) Determination of Height of an Object by Theodolite survey.

Department: Geography
Course: Major
Paper Title: Resource and Population & Thematic and Cadastral Mapping
Paper Code: BGEOMAJ04C
Syllabus:
Unit I: Resource and Economic Activities [24 Hours]
1.1 Concept and classification of resources; Functional theory of resource; Conservation and management of resources; Classification of economic activities (6 lectures)
1.2 Primary activities: Agriculture (subsistence and commercial agriculture), Forestry, Fishing and Mining. Von Thunen's Model of Agriculture Location. (6 lectures)
1.3 Secondary activities: Manufacturing (Cotton textile, Iron and Steel, Petrochemical), SEZ, Theory of Industrial Location (Weber). (6 lectures)
1.4 Tertiary activities: Transport and trade; Role of WTO, IMF and World Bank (6 lectures)
Unit II: Population Geography [28 Hours]
2.1 Concept and scope of population geography; Determinants and factors of population growth and distribution.

(6 lectures)
2.2 Trend of population growth in the world and India; Concept of fertility, mortality and migration. (8 lectures)
2.3 Theories of population growth: Malthus, Marx and Demographic Transition Model. (8 lectures)
2.4 Population policies in developing counties with special references to India. (6 lectures)
Unit I: Thematic Mapping: Fundamental Concept [20 Hours]
1.1 Concepts of rounding, scientific notation, logarithm and anti-logarithm, natural and log scales. (5 lectures)
1.2 Cartography: meaning, rules and methods of geographical data representation. (5 lectures)
1.3 Types of diagrams, graph, distribution maps and cartogram. (5 letures)
1.4 Concept of Large-scale thematic maps (5 lectures)
Unit II: Thematic Mapping: Database Application [32 Hours]
2.1 Point and Line Symbol: Size of Dots, Flow Map (6 lectures)
2.2 Area Symbol: Pie Diagram (6 lectures)
2.3 Volume Symbol: Sphere Map (6 lectures)
2.4 Geomorphological maps from Toposheet and Cadastral map: Identification of plots and verification in the field (14 lectures)
Project File
a) Preparation of Dot map (Population Size) and Flow Diagram (Traffic/ Goods Flow)
b) Develop Comparative Pie Diagram (Area related issues) and Sphere Map (Urban Population).
c) Mapping Geomorphological maps from Toposheet
d) Cadastral map: Identification of plots and verification in the field.

Department: Geography
Course: Major
Paper Title: Hydrology and Oceanography
Paper Code: BGEOMAJ06T
Syllabus:
Unit I: Fundamentals of Hydrology [26 Hours]
1.1 Definition, scope, content and evolution of hydrology. (4 lectures)
1.2 Surface and sub-surface hydrology: Interception, depression storage, infiltration and runoff -controlling factors; Runoff cycle. (8 lectures)
1.3 Drainage basin as a hydrological unit; Inter-basin water transfer. (6 lectures)
1.4 Groundwater: Occurrence, storage and movement; factors controlling recharge and discharge; aquifer properties (8 lectures)
Unit II: Applied Hydrology [26 Hours]
2.1 Concept and types of water harvesting. 6 lectures
2.2 Groundwater contamination and management. 6 lectures
2.3 Principles of micro-watershed management. 6 lectures
2.4 Water resource crisis, conflict and management. 8 lectures
Unit II: Fundamentals of Oceanography [26 Hours]
3.1 Major relief features of the ocean floor; Origin of oceans: seafloor spreading and plate tectonics. (6 lectures)
3.2 Physical and chemical properties of ocean water. Movements of ocean water: waves and tides (6 lectures)
3.3 Marine resources: Classification and sustainable utilization. Marine pollution: Causes, types & mitigation. (6 lectures)
3.4 Coral reefs: Theories of formation (Darwin and Daly), classification and threats. (8 lectures)

Department: Geography
Course: Major
Paper Title: Field Report
Paper Code: BGEOMAJ07S
Syllabus:
a. The work is to be based mainly on processing of primary data collected from field with the help of appropriate schedules for physical and socio-economic survey, stressing on any local problem or any contemporary issue.

b. The following are to be taken as base maps, subject to availability: Cadastral map/ City Ward Boundary map.
c. Interrelations between physical, social, economic, cultural aspects of the study should be the focus of the Field Report.
d. Text of the Report should not exceed 3,000 words and should ideally be divided into the following sections: Introduction, Statement of problem(s) and Objectives, Materials and methods, Results & Discussions, Conclusion, References / Bibliography and Appendices (if any).
e. Maps, diagrams and sketches, excluding photographs, should not exceed 30 pages of A4 size paper.
f. Handwritten Report duly signed endorsed by the Faculty(s) and endorsed by the HOD is to be produced individually by the students. Photocopying and computer typing are strictly restricted.

Department: Geography
Course: Major
Paper Title: Geography of India
Paper Code: BGEOMAJ10T
Syllabus:

Unit I: Geography of India [30 Hours]
1.1 Physical divisions of India: physiography, drainage, soil and vegetation. (8 lectures)
1.2 Indian Monsoon – theories on origin; characteristics and impact. (6 lectures)
1.3 Economy: Agriculture – major crops (Rice, Wheat) & role of Green Revolution; Industry - Cotton textile, Petrochemicals and Tourism. (8 lectures)
1.4 Population: growth, composition (age-sex, caste & tribe), migration and urbanization. (8 lectures)

Unit II: Regional Perspectives of India [24 Hours]
2.1 Concept and types of regions. Regionalization: Basis and techniques of delineation. (6 lectures)
2.2 Regional perspective: physical (Thar), ethnicity (North-East); planning (DVC) (6 lectures)
2.3 Regional problems and Regionalism. (6 lectures)
2.4 Regional disparity; Regional development: Five Year Plan; NITI Aayog (6 lectures)

Unit II: Regional Perspectives of West Bengal [24 Hours]
3.1 Physical regions with special reference to Rarh and Barendrabhumi (6 lectures)
3.2 Socio-economic regions: Hooghly Industrial Region; Tea plantation area (6 lectures)
3.3 Regional perspective & problems: Sundarban & Manbhum (6 lectures)
3.4 Regional Development Authority: Gorkhaland Territorial Administration and Paschimanchal Unnyayan Parshad (6 lectures)

Department: Geography
Course: Minor
Paper Title: Climate Change
Paper Code: BGEOMEB12T
Syllabus:

Unit I: Climate and Climate Change: Basic Concepts [26 Hours]
1.1 Weather and Climate, Determinants of Climate, Factors Affecting Climate. (6 lectures)
1.2 Global Climate system, Variations of Atmospheric Composition, Temperature and Pressure. (8 lectures)
1.3 Scientific Evidence about Past Climates. (6 lectures)
1.4 Natural Climate Change in Earth's History. (6 lectures)

Unit II: Climate Change: Adaptation and Mitigation [26 Hours]
2.1 Importance of Climate Change Adaptation, Vulnerability Assessment-IPCC Framework (AR5 and AR6). (6 lectures)
2.2 Identifying and Selecting Adaptation Option, Linking Adaptation and Development Planning. (6lectures)
2.3 Climate Change Mitigation and Low Carbon Development, Policy Approaches for Mitigation and Low Carbon Development. (6 lectures)
2.4 Climate Change Finance: National and International Approach, Role of National and Sectoral Institutions in Climate Change Planning. (8 lectures)

Department: Geography
Course: Minor
Paper Title: Geography of India and West Bengal
Paper Code: BGEOME23T
Syllabus:

Unit I: Geography of India Concepts [26 Hours]
1.1 Broad physiographic divisions and river systems. (6 lectures)
1.2 Climate, soil and vegetation. (8 lectures)
1.3 Population Characteristics, growth, composition and policies.(6 lectures)
1.4 Distribution of different types of renewable and non-renewable resources in India; Agricultural regions, Green revolution and Land-reforms. (6 lectures)
Unit II: Geography of West Bengal [26 Hours]
2.1 Natural regions: physiography, climate, soil and water resources. (6 lectures)
2.2 Population density and growth; urbanization and migration. (6 lectures)
2.3 Rarh Bengal and Junglemahal: Physico-cultural aspects. (6 lectures)
2.4 Regional issues: Landslide of Hill Region and coastal hazards of Sundarban. (8 lectures)

Department: Geography
Course: Minor
Paper Title: Rural Development
Paper Code: BGEOME36T
Syllabus:

Unit I: Approaches to Rural Development [26 Hours]
1.1 Rural Development: Concept, basic elements, measuring the level of rural development. (6 lectures)
1.2 Paradigms of rural development: Marxian approach and Gandhian approach to rural development. (8 lectures)
1.3 Rural Economic Base: Agriculture and Allied Sectors, Seasonality and Need for expanding Non-Farm Activities,Rural Co-operatives and agricultural marketing; Concept of PURA. (6 lectures)
1.4 Rural Governance: Panchayati Raj system – structure, functions & problems. Rural financial institutions: NABARD, SHGs – structure & functions. (6 lectures)
Unit II: Rural Development Programmes [26 Hours]
2.1 Area Based Approach: DPAP, TADP. (6 lecture)
2.2 Target Group Approach: MNREGA, SGSY. (6 lecture)
2.3 Rural Infrastructural Development : Rural Electrification - DDUGJY, Housing – PMAYG, Transport & connectivity – PMGSY. (6 lecture)
2.4 Provision of Services – physical and socio-economic access to elementary education – SSA, Primary Health Care – NRHM. (8 lecture)

Department: History
Course: Minor
Paper Title: Idea of India and Its History up to 600 BC
Paper Code: BHISMEB12T
Syllabus:

UNIT-I: Concept of Bharatvarsha
I. Understanding of Bharatvarsha
II. The glory of Indian Literature: Ved, Vedanga, Upanishads, Epics, Jain and Buddhist Literature, Smriti, Puranas etc.
UNIT-II: Indian Philosophy, Science and Environment
I. Indian educational system
II. The ethics of Indian valor
III. Science and Technology
IV. Environmental conservation: Indian View

UNIT – III: Sources and Historiography
I. Sources and Historiographical trends of ancient Indian History up to 600 C.E.
III. The Indus Civilization, Debate on the relationship of Indus and Vedic civilization.
IV. Significant features of Indus, its continuity, fall and survival.
UNIT – IV: A Survey of Prehistoric India
I. Old Stone age /Paleolithic- Lower/ Middle/ Upper: Sequence and distribution; stone industries and other technological developments
II. Late Stone age/Mesolithic cultures- regional and chronological distribution; new developments in technology and economy; Rock Art
III. New Stone age/Neolithic Cultures- Beginning of agriculture, innovations in technology, Invention of pottery, development of technologies, and sites and importance– 15 Classes
UNIT – IV: Harappa and Vedic Civilization
I. Its origins and Phases of Harappan Civilization- settlement patterns and town planning system; General Features of the Civilization
II. Agrarian base; Industries and craft productions- pottery and trade; social and political organizations; religious beliefs and practices; famous Harappan Sites -the problem of urban decline - 20 Classes
III. Original home land of Aryans, Myths of Aryan Invasion: Various theories
IV. Vedic Cultures- Early Vedic and Post Vedic Literature and Vedic Polity, society and Economy
UNIT- V: India from Sixth Century BCE to Mauryan Age
I. Sources
II. India in sixth centuryBCE Mahajanpada, Republic and Growth of Urban centres, Rise of Magadhan Imperialism.
III. Religious systems in 6th century BCE, Buddhism and Jainism.
IV. The Maurya Empire, Chandragupta Maurya, Mauryan administration, Ashok and Ashoka's Dhamma. Mauryan Society, Fall of Mauryan Empire. Greek Invasion and its Impact -25 Classes

Department: Political Science
Course: Major
Paper Title: International Organizations and Issues
Paper Code: BPLSMAJ13T
Syllabus:

- UN: General Assembly, Security Council, Secretary General.
- World Bank, IMF, WTO.
- Regional organizations: EU, SAARC, ASEAN, OPEC.
- Environment and Climate change.
- International migration in Globalizing World.
- Terrorism and humanitarian interventions in post-globalization period.

Department: Political Science
Course: Major
Paper Title: Human Rights in India
Paper Code: BPLSMAJ17T
Syllabus:

- Human Rights and Duties: Concept, generational classification of human rights. Difference between rights and human rights.
- Institutional aspects of Human rights in India: National and State Human Rights Commission, Constitutional provisions of Human Rights.
- Human Rights & Women in contemporary society: Gender discrimination with special reference to female feticide, Domestic violence, Sexual harassment in workplace(with special reference to Bishaka guideline).
- Human Rights and children in contemporary Indian society: Child Labour, Child abuse inside and outside home and Child trafficking.

- Human rights and minority groups in India: LGBTQIA.
- Environmental rights in India: right to healthy environment, and principles of Sustainable Development.

Department: Zoology
Course: Major
Paper Title: Ecology and Evolution
Paper Code: BZOOMAJ03C
Syllabus:
Theory

- Concept of ecosystem – Structure and function.
  Autecology and synecology, levels of organization, laws of limiting factors.
  Linear and Y-shaped food chains, food web, energy flow, ecological pyramids and ecological efficiencies.
- Population attributes – Demographic factors.
  Life tables, fecundity tables.
  Survivorship curves.
  Dispersal and dispersion.
  Age distribution.
- Population growth models – Natality and mortality.
  Geometric, exponential and logistic growth, equation, deduction and patterns.
  r and K strategies.
  Density dependent and independent factors.
- Population interactions – Emergence of competition by Tansley, Gause and Park.
  Competition exclusion principle.
  Intraspecific and interspecific competition.
  Lotka-Volterra model.
- Community characteristics and resource partitioning.
  Species diversity, abundance, dominance, richness, ecotone and edge effect.
- Ecological succession – Types of ecological succession with examples.
  Concept of climax.
  Connell and Slatyer model of succession.
  Tilman's resource ratio hypothesis.
- Types of ecosystem with an example (in detail) – Freshwater and tropical rainforest.
- Resource utilization – Coupled oscillation of predator and prey population modeling.
- Life's beginnings – RNA world hypothesis.
  Origin of life (Chemical origin only).
- Historical review of Evolutionary concepts – Lamarkism, Darwinism and Neo Darwinism, Neutral theory of molecular evolution, punctuated equilibrium.
- Natural selection – concept of fitness, types of selection, selection coefficient, mode of selection heterozygous superiority.
  Synthetic theory.
  Concept of selection: stabilizing, directional and disruptive with example.
- Population genetics – Hardy-Weinberg law, statement and derivation of equation, application of law to biallelic population.
  Calculating allele and genotype frequency.
  Evolutionary forces upsetting H-W equilibrium.
  Mathematical calculation of frequency changes in mutation, and migration.
  LOD score
- Genetic drift mechanism – founder's effect and population bottleneck phenomenon.
- Species concept – Isolating mechanisms, modes of speciation.
- Zoogeographical realms – names and animal distribution according to Wallace scheme, Avian and Mammalian faunal distribution in different realms.
- Colouration and mimicry (Batesian and Müllerian mimicry).

- Adaptation – Fossorial, cursorial, scansorial and arboreal.
- Adaptive radiation/macroevolution of beak of Galapagos finches.
- Geological time scale and Zoogeographical realms.
  Molecular clock.
  Fossil records of hominids (from *Australopithecus* to *Homo sapiens*), molecular analysis of human origin.
- Phylogenetic trees – Construction and interpretation of phylogenetic tree using parsimony.
  Convergent and divergent evolution.
  Practical - 2 credits

Ecology and Evolution

- Study of life tables and plotting of survivorship curves of different types from the hypothetical / real data provided.
- Determination of population density in a natural / hypothetical community by quadrat method and calculation of Shannon-Wiener diversity index for the same community.
- Study of an aquatic ecosystem - Quantitative and qualitative estimation of freshwater zooplankton, Measurement of Temperature, Transparency of light by Secchi disc, Determination of pH, and Dissolved O_2 content (Winkler's method), Chemical oxygen demand (COD) and free CO_2.
- Report on a visit to National Park / Biodiversity Park / Wild life sanctuary / Sea coast.
- Study of fossils from models / pictures.
- Study of homology and analogy from suitable specimens.
- Study and verification of Hardy-Weinberg Law by chi square analysis.
- Graphical representation and interpretation of data of height / weight of a sample of minimum 100 humans in relation to their age and sex.

Department: Zoology
Course: Major
Paper Title: Ecosystem Structure and Function
Paper Code: BZOOMAJ13C
Syllabus:

Theories on relation between biodiversity and ecosystem function.

1. Species complementarity
2. Sampling effect
3. Redundancy
   Population growth models.
4. Population regulations.
5. Metapopulation and Metacommunity concept.
6. Resource - consumer interactions.
7. Modelling species interactions – apparent competition, intraguild predation, succession, bipartite network and application.
   Natural resources and sustainable development – principles and models.
8. Environmental world views.
9. Wildlife resources, aquatic living resources, forest resources, Ecosystem services valuation, links with biodiversity.
10. Ecological footprint analysis; ecosystem health.
11. EIA and EPA
12. Ecological processes in wetland and mangrove ecosystem.
13. Decline of global biodiversity and loss of ecosystem function.
14. Functional diversity and ecosystem functioning.
15. Insurance hypothesis and habitat fragmentation and dispersal on ecosystem functioning.
16. Ecosystem services, biodiversity and ecological economics.

Practical 2Credits

1. Study of an aquatic ecosystem: Determination of Conductivity, Biochemical oxygen demand, Primary productivity (light bottle-dark bottle method), Chlorinity, Salinity, Alkalinity, and Total hardness.
2. Study of an terrestrial ecosystem: Determination of pH, Organic Carbon and Organic Matter.

3. Qualitative analysis of sampled terrestrial community.
4. Quantitative and qualitative estimation of zooplankton communities.

Department: Zoology
Course: Major
Paper Title: Biodiversity; Wild life Management & Conservation
Paper Code: BZOOMAJ14C
Syllabus:

Theory

1. Introduction to Biodiversity:

- Concept and types of biodiversity
- Biodiversity and human welfare
- Convention on Biological Diversity (CBD)
- Megadiversity countries
- Biodiversity hotspots with special reference to India.

2. Types of conservation:

- In-situ conservation- conserving ecosystem function and management.
- Protected area -Sanctuary, National Park, Biosphere reserve, Ramsar site and World heritage site in India with special reference to West Bengal.
- Concept of Core Zone, Buffer Zone.
- Exsitu conservation of animals (captive breeding; species reintroduction, species translocation; population reinforcement).
- Bioindicators for biodiversity monitoring.

3. Concept of wildlife:

- Definition of wildlife, keystone, flagship and umbrella species
- Wildlife in India; reasons for wildlife depletion and their conservation strategies; Wildlife Protection Act, 1972
- Concept of threatened fauna, Red data book, and IUCN categories
- Joint Forest Management (JFM) model for conservation.
- Tiger reserves in India, Management challenges in Tiger reserve.

4. Tools and techniques for wildlife census and survey:

- Technologies for Wildlife Research and Management
- Faecal analysis of ungulates and carnivores
- Pug marks and census method
- Basic idea of GIS and GPS and their application in habitat & wildlife conservation.

5. Management planning of wild life in protected areas:

- Estimation of carrying capacity
- Eco tourism / wild life tourism in forests
- Concept of climax persistence
- Ecology of perturbance

Practical 2 credits

Determination of requisite size of quadrat by species area curve method.

Demonstration of basic equipment needed in wildlife studies use, care and maintenance (Compass, Binoculars, Spotting scope, Range Finders, Global Positioning System, Various types of Cameras and lenses)

Visit to Wild life Sanctuary/Biodiversity Park/National Park/ reserves of the biosphere/ Sea cost to study behavioural activities of animals and prepare a short report.