



SRI VENKATESWARA COLLEGE
(University of Delhi)
Managed by Tirumala Tirupati Devasthanam (TTD)


NAAC Accredited "A+" Grade (2022)

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CRITERIA 1

Supporting Information

1.3.1 Integration of crosscutting issues related to Professional Ethics, Gender, Human Values, Environment and Sustainability in curriculum


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List of papers that integrates crosscutting issues relevant to Professional ethics, Gender, Human Values, Environment and sustainability into the curriculum

S.No.	Program name	Program code	Title of paper
1	B.Sc. (H) Biochemistry	22553	Public Health Biology
2	B.Sc. (H) Biochemistry	22553	Food Waste And Byproduct Utilization
3	B.Sc. (H) Botany	22556	Plant Diversity And Human Welfare
4	B.Sc. (H) Botany	556	Ethnobotany
5	B.Sc. (H) Botany	22556	Plant Physiology
6	B.Sc. (H) Botany	22556	Natural Resource Management
7	B.Sc. (H) Botany	556	Economic Botany And Biotechnology
8	B.Sc. (H) Botany	22556	Genetics And Plant Breeding
9	B.Sc. (H) Botany	22556	Biostatistics And Bioinformatics For Plant Sciences
10	B.Sc. (H) Botany	22556	Functional Ecology
11	B.Sc. (H) Botany	22556	Ecology
12	B.Sc. (H) Botany	556	Intellectual Property Rights
13	B.Sc. (H) Botany	22556	Biodiversity (Microbes, Fungi, Algae And Archegoniates)
14	B.Sc. (H) Chemistry	557	Green Chemistry
15	B. Com. (H)	22504	Management: Principles And Applications
16	B. Com. (H)	22504	Human Resource Management
17	B. Com. (H)	22504	Leadership & Team Development
18	B. Com. (H)	22504	Basics Of Organisation Behaviour
19	B. Com. (H)	22504	Collective Bargaining & Negotiation Skills
20	B. Com. (H)	22504	Auditing
21	B. Com.	22503	Auditing
22	B.A. (H) Economics	22510	Environmental Economics
23	B.A. (H) English	22511	European Classical Literature
24	B.A. (H) English	22511	Indian Classical Literature
25	B.A. (H) English	22511	18Th Century Literature
26	B.A. (H) English	22511	Contemporary India: Women And Empowerment
27	B.A. (H) English	22511	Romantic Literature
28	B.A. (H) English	22511	American Literature
29	B.A. (H) English	22511	Literatures Of The Indian Diaspora
30	B.A. (H) English	22511	Women’S Writing
31	B.A. (H) English	511	Popular Literature
32	B.A. (H) English	511	British Literature: 18Th Century
33	B.A. (H) English	511	British Romantic Literature
34	B.A. (H) English	511	British Literature: 19Th Century
35	B.A. (H) English	511	Women’S Writing
36	B.A. (H) English	511	British Literature: The Early 20Th Century
37	B.A. (H) English	511	Postcolonial Literatures
38	B.A. (H) History	22518	Prospecting E-Waste For Sustainability
39	B.A. (H) Sanskrit	529	Indian Social Institutions And Polity
40	B.A. (H) Sanskrit	529	Basic Principles Of Ayurveda
41	B.A. (H) Sociology	22530	Sociology Of Gender
42	B.A. (H) Sociology	22530	Sociology Of Climate Change
43	B.A. (H) Sociology	22530	Understanding Development

44	B.A. (H) Sociology	22530	Environmental Sociology
45	B.A. (H) Sociology	22530	Sociology And Social Policy
46	B.Sc. (H) Zoology	569	Wildlife Conservation And Management
47	B.Sc. (H) Zoology	22569	Wildlife Conservation And Management
48	B.Sc. (H) Zoology	22569	Concepts Of Ecology
49	Environmental Science	All Couses	Environmental Science: Theory Into Practice – I
50	Environmental Science	All Couses	Environmental Science: Theory Into Practice – II
51	Environmental Science	All Couses	Corporate, Social, And Environmental Responsibilities For Conservation And Sustainable Development
52	Environmental Science	All Couses	Human Wildlife Conflict And Management
53	VAC	All Couses	Ayurveda And Nutrition
54	VAC	All Couses	Constitutional Values And Fundamental Duties
55	VAC	All Couses	Culture And Communication
56	VAC	All Couses	Digital Empowerment
57	VAC	All Couses	Emotional Intelligence
58	VAC	All Couses	Ethics And Culture
59	VAC	All Couses	Financial Literacy
60	VAC	All Couses	Science And Society
61	VAC	All Couses	Social And Emotional Learning
62	VAC	All Couses	The Art Of Being Happy
63	VAC	All Couses	Yoga: Philosophy And Practice
64	VAC	All Couses	Bhartiya Bhakti Prampara Aur Manav Mulya
65	SEC	All Couses	Bioinoculants For Agriculture And Sustainable Development
66	SEC	All Couses	Healthy And Sustainable Food Choices
67	SEC	All Couses	Working With People
68	SEC	All Couses	Life Skill Education
69	SEC	All Couses	Innovation And Entrepreneurship
70	SEC	All Couses	Green Belt Development For Smart Cities
71	SEC	All Couses	Communication In Everyday Life
72	SEC	All Couses	Negotiation And Leadership
73	SEC	All Couses	Personal Financial Planning
74	SEC	All Couses	Personality Development And Communication
75	SEC	All Couses	Patkatha Lekhan
76	SEC	All Couses	Rachnatmak Lekhan

- 3) Plummer, D. T. (1998). An Introduction to Practical Biochemistry (3rd ed.), Tata McGraw Hill Education Pvt. Ltd. (New Delhi); ISBN: 13: 978-0-07-099487-4 / ISBN:10: 0-07-099487-0.

SUGGESTIVE READING:

- 1) Cooper, T.G. (2011). The Tools of Biochemistry (2nd ed.), Wiley-Interscience Publication (New Delhi); ISBN: 13:9788126530168.
- 2) Freifelder, D. (1982). Physical Biochemistry: Applications to Biochemistry and Molecular Biology, (2nd ed.), W.H. Freeman and Company (New York); ISBN:0-7167- 1315-2 / ISBN:0-7167-1444-2.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-3): PUBLIC HEALTH BIOLOGY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Public Health Biology	4	2	0	2	Open to All	NIL

GE 3

Learning Objectives

The present course attempts to provide an interdisciplinary understanding of public health issues in India with a more detailed understanding of the areas pertaining to biological science and epidemiology. Some overview of the social aspects that impact public health will also be discussed and the statistical analysis of public health data will be taught in the practical. The specific objectives of the course are to provide a basic understanding of the scope of public health issues, particularly related to policies on public health, public health nutrition, infectious biology and sanitation, social and preventive medicine, and the environmental issues that affect public health. The practical exercises aim to provide hands-on training in epidemiology and collection of primary and secondary data relevant to public health issues. It also hopes to

generate a discussion platform that would encourage a healthy inter- and multidisciplinary interaction amongst the students to get a holistic view of public health. A mini research project on any relevant topic related to public health will be taken up after completing the theory and practical components of the course. Being interdisciplinary in its nature and scope, the course will be equally engaging and beneficial for students of all subject streams. After completing the course, the students can also apply for some higher-level courses in different areas of public health as the course helps in building a basic understanding on different aspects related to public health.

Learning outcomes

On successful completion of the course

- Students will get a holistic overview of the interdisciplinary nature of Public Health
- They will understand public health issues in India particularly related to Malnutrition, sanitation issues and related burden of infectious disease, and the role of pollution as a public health concern.
- The students will also get an understanding of the public policies applicable and implemented in India.
- They will also be able to appreciate the social aspects that govern many public health issues and implementation of policies
- The students will get hands-on training in epidemiology, preparation of questionnaire and collection of primary and secondary data relevant to public health issues.
- They will also learn to present the relevant data after subjecting it to statistical analysis.

SYLLABUS OF GE – 3

THEORY

Unit – 1

(04 Hours)

Understanding public health issues: Conceptual understanding of public health, terminology, public health- multidimensional problem with Delhi as an example (air pollution, stress, sanitation, urbanization and socioeconomic inequalities) Policies on public health- factors affecting making and implementation of these policies.

Unit – 2

(10 Hours)

Public Health Nutrition: Characteristics of tertiary and quaternary structures. Structure function relationship in proteins. 3D structures of globular and fibrous proteins – myoglobin, hemoglobin, collagen and keratin. Protein folding - denaturation and renaturation (Ribonuclease A). Role of chaperones. Protein misfolding diseases - Alzheimer's and Cruetzfeldt-Jakob disease.

Unit – 3

(06 Hours)

Infectious biology and sanitation: Defining communicable diseases. Understanding the biology, socioeconomic factors and other environmental conditions that influence the transmission and infection by pathogenic (disease-causing) bacteria, viruses, parasites, and fungi. Precautions, prevention strategies and programs for control; sanitation, Swachh Bharat.

Unit – 4

(10 Hours)

Environmental Health & Community Health: Determinants of Environmental Health: factors that affect environmental health; Occupational environment and health concerns; Understanding effect of air, water and soil Pollution on health.

Understanding the definition of community health, Determinants of community health; Define and manage the health problems of the community, Plan, implement and evaluate various health programs of General Health, Reproductive health, Maternal health, Family Welfare and Disease control / eradication.

Lifestyle disease or non-communicable diseases- consequence of imbalanced nutrition, environmental and psychological stresses; Etiology and management of diseases like Obesity, Diabetes mellitus, Cardiovascular disorders, sleep disorders and psychological eating disorders. Preventive health checkups (PHC)- important parameters/biomarkers; relevance of PHC in health and disease prevention/early diagnosis

PRACTICAL

(60 Hours)

- 1) Assessment of nutritional status using anthropometric indices
- 2) Assessment of Nutritional status by a survey of clinical and non-invasive biochemical parameters.
- 3) To determine the potability of water using, pH, BOD, COD and MPN of the water sample from different sources.
- 4) Collecting secondary data on AQI from different areas and correlate with health indices in that area.
- 5) Understanding epidemiology: Collection, generation, and analysis of public health data. Application of statistical tools to analyze and present public health data.
- 6) Case study of a disease (Nutritional, infectious and lifestyle) along with the public health issues associated with that disease.
- 7) Field visits to nearby health care center to understand health checkups and collect some data on the rate of a particular disease over past few months or years.
- 8) Data collection from public domain with analysis.

ESSENTIAL/ RECOMMENDED READINGS

- 1) Aschengrau A, Seage G.R., (2013) Essentials of Epidemiology in Public Health Jones and Bartlett Publishers, Inc; 3rd edition
- 2) Bamji MS, Rao NP, Reddy V. (2017). Textbook of Human Nutrition. (4th ed). Delhi: Oxford and IBH Publishing Co. (P) Ltd.
- 3) Soil Microbiology by N.S. Subba Rao. 5th edition. Medtech, India. 2017.
- 4) Environmental Microbiology edited by I.L. Pepper, C.P. Gerba, T.J. Gentry. 3rd edition. Academic Press, USA. 2014.

SUGGESTIVE READING:

- 1) Sullivan. L.M. (2017) Essentials of Biostatistics in Public Health. Jones and Bartlett Publishers, Inc; 3rd edition.
- 2) Gibney et al. (2004). Public health nutrition. Hoboken, NJ: Blackwell Publishing
- 3) N. Okafor. (2011) Environmental Microbiology of Aquatic and Waste Systems by Springer, USA.
- 4) Waste Water Microbiology by D.H. Bergey. 2nd Edition. Medtech, India. 2019.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Food Waste and By-product Utilisation

Credit Distribution, Eligibility and Pre-Requisites of The Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (If any)
		Lecture	Tutorial	Practical/ Practice		
Food Waste and By-product Utilisation	2	0	0	2	XII (PCM/PCB)	NIL

Learning Objectives

Environment sustainability is a key area of interest to government, scientist, environmentalist, researchers, and students. The present course is designed to address the issues of food waste and further their utilization into value added products. It's a multidisciplinary subject which can be taken by students of varied background. The objectives of the course are as follow:

- To improve students' understanding of basic food industry waste and by-product.
- To provide students an opportunity in understanding the significance of treating and utilizing food waste and by-products.
- To study effluent treatment plant.
- The practicals provide hands-on training in different type of food waste and by-products, further their utilization.
- After completion of course students can apply for courses specific to any category of food waste and further specialize in it.

Eligibility: Being interdisciplinary in its nature and scope, the course will be equally engaging and beneficial for students of all subject streams.

Learning Outcomes

After Studying this course, the student will be able to:

- Identify waste produced from different sectors of the food industry.
- Utilise waste from the food industry.
- Understand waste water treatment.

Skill Development and Job Opportunities:

- Students are eligible to handle the processing and operations at effluent treatment plant running in food and chemical-based industries.
- Students can provide consultancy to waste industries.
- Students can also start with hands-on training to students and industrialist on handling and utilizing the waste from industries.
- Students can work with Ministry of Agriculture to devise ways of utilizing the food waste.

- Students can start his/her own start-up by providing waste water treatment services to food industries.
- The course will provide basic training enabling students to apply to advanced food waste management courses.

Syllabus

Practical

60 hours

2. Identification of waste from agriculture and food processing (Dairy/ Meat/ Fruits Vegetables / Alcoholic beverages/ cereals)
3. Study and layout of waste water treatment system (ETP)
4. Identification of co-products from F&V industry, estimation and utilization to develop value added products (pectin, banana fibre, lycopene from tomato waste, watermelon/ pumpkin rind).
5. Identification of waste from animal industry and utilisation to develop value added products (gelatin, egg shell).
6. Identification of various co-products from dairy industry, estimation and utilization to develop value added products (utilisation of ghee residue, buttermilk beverage, whey).
7. Identification of co-products from cereal industry, estimation and utilization to develop value added products (cereal husk, wheat fibre).
8. Determination of physico-chemical properties of wastewater.
9. Production of alcohol/ acetic acid from waste material.

Essential readings

- Marriott, N. G., Gravani, R. B., & Schilling, M. W. (2006). Principles of food sanitation(Vol. 22). New York: Springer.
- Sadasivam, A, & Manickam, A. (2021). Biochemical Methods. New Age InternationalPublishers.
- Green, J. H., & Kramer, A. (1979). Food Processing. Waste Management. Avi PublishingCompany, 629.
- Herzka, A. and Booth, R.G. Food Industry and Trade: Recycling Waste. Applied SciencePublishers, 1981.
- Tegge, G., Green, J. H., and A. Kramer. Food Processing Waste Management; AVIPublishing, 1979

Examination scheme and mode:

Evaluation scheme and mode will be as per the guidelines notified by the University of Delhi.

GENERIC ELECTIVES (BOT-GE-1)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Plant Diversity and Human Welfare BOT-GE-1	4	2	0	2	-	Nil

Learning Objectives

Build awareness about the different groups of plants and their roles in supporting human life.

Learning outcomes

After studying this course, the student will gain knowledge about:

- the diversity of various groups of plants, their characteristics and identification.
- different phytogeographic zones in India.
- the basic principles of conservation of Biodiversity and Sustainable Development Goals (SDG).
- the role of plants in human welfare.

SYLLABUS OF BOT-GE-1

Unit 1: Understanding biodiversity

Weeks: 03

Understanding biodiversity - definition of key terms; plant diversity in India; assigning value to plant diversity; economic and ecological importance of Algae, Bryophytes, Pteridophytes and Gymnosperms; insights into flowering plant diversity with special focus on agrobiodiversity.

Unit 2: Crop diversity**Weeks: 04**

Crop diversity in various phytogeographic regions in India and their traditional importance as food (including cereals, pulses, oil crops, spices, beverages, fruits and nuts, vegetables, condiments), medicines (Ashwagandha and Sarpagandha) and adornments.

Unit 3: Role of forests**Weeks: 03**

Forests, woodlands, and vegetation stands: diversity and their importance in ecological, aesthetic, and overall well-being; social dimensions of plant diversity; commercial value and utilization of plant wealth.

Unit 4: Cash Crops**Weeks: 2.5**

Crops of high economic value (tobacco, sugarcane, cotton, basmati rice, sandalwood, saffron); Petro crops: the future industry (*Jatropha* sp., corn and sugarcane).

Unit 5: Conservation of biodiversity**Weeks: 1.5**

Conservation of biodiversity using community driven conservation strategies, sustainable utilization keeping Sustainable Development Goals (SDGs) in mind, Innovative approaches and traditional methods of biodiversity utilization and waste minimization during product formation.

Unit 6: Policy issues in conservation of Biodiversity**Week: 01**

National and International initiatives and programmes/schemes focusing on Plant Diversity and human welfare (Tribal Rights Bill, Convention on Biological Diversity (CBD), International Union for Conservation of Nature (IUCN), Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA).

Practicals:

1. To study local plant diversity (common Algae, Bryophytes, Pteridophytes, Gymnosperms (any two of each) in and around the campus; and understand their ecological and economic importance. **(Weeks: 02)**
2. Microchemical tests for carbohydrates, proteins and oils. **(Weeks: 02)**

3. To study (any three) commonly found tree species in the vicinity and understand their role in human welfare. **(Weeks: 02)**
4. To prepare an inventory of common medicinal plants in your campus (identify to the family level, list their uses in Indian System of Medicines) **(Weeks: 02)**
5. To visit the local parks and list the trees planted. Also assess some for their dust pollution mitigation capacity using standard procedures. **(Weeks: 02)**
6. Industrial visit to see how the drugs are extracted from plants (report to be submitted for evaluation). **(Weeks: 02)**

Essential/recommended readings:

- Bilgrami, K. S. (1998). Phytodiversification and Human Welfare: Dedicated to Late Prof. KS Bilgrami, FNA (1933-96). MD Publications Pvt. Ltd.
- Utting, P. (2013). Trees, People and Power. Routledge.
- Manoharachary, C., Nagaraju, D. (2016). Medicinal plants for human health and welfare. Ann. Phytomed, 5(1), 24-34.

Suggestive reading:

- Myers, N. (2019). A wealth of wild species: storehouse for human welfare. Routledge

COMMON POOL OF GENERIC ELECTIVES (BOT-GE)

GENERIC ELECTIVES (BOT-GE-6)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Ethnobotany BOT-GE-6	4	2	0	2	Nil	Nil

Learning Objective:

- To have the knowledge of the plants used by the local communities, tribals, ethnic groups, their nutritive and medicinal value.

Learning Outcomes:

- After studying this course the student will have an understanding of the value and usefulness of the natural products and their efficient use by the local communities as food and medicine and their conservation practices.

SYLLABUS OF BOT-GE-6

Unit 1: Introduction to Ethnobotany and Basic Taxonomy

Weeks: 03

Introduction, concept, scope and objectives; Ethnobotany as an interdisciplinary science; The relevance of ethnobotany in the present context; Major and minor ethnic groups or tribes of India, and their lifestyles; Plants used by the indigenous societies: a) Food plants, b) Medicinal plants, c) intoxicants and beverages, d) Resins and oils and miscellaneous uses.

Unit 2: Applied Ethnobotany

Weeks: 3.5

Role of ethnobotany in modern Medicine, Medico-ethnobotanical sources in India; Significance of the following plants in ethnobotanical practices (along with their habitat and morphology): a) *Azadirachta indica*, b) *Ocimum sanctum*, c) *Vitex negundo*, d) *Gloriosa superba*, e) *Tribulus terrestris*, f) *Pongamia pinnata*, g) *Cassia auriculata*, h) *Indigofera tinctoria*.

Unit 3: The Ecology of Ethnobotany

Weeks: 3.5

Ethnobotany—Spirits, Lore, Material Cultures, Folk Magic, Narcotics, Stimulants; Nutritional Ethnobotany – Agriculture, foraging and wild foods; Linguistic Ethnobotany—Botanical

Classification and Ethics; Medicinal Ethnobotany and Ethnopharmacology; Ethnoveterinary knowledge.

Unit 4: Research Methods in Ethnobotany

Weeks: 03

Etic and Emic Perspectives: a) Field work; b) Herbarium; c) Ancient Literature and oral traditions; d) Archaeological finding inferences; e) Religious and sacred places.

Unit 5: Protecting Knowledge

Weeks: 02

Ethnobotany and legal aspects, Ethnobotany as a tool to protect interests of ethnic groups, Sharing of wealth concept with few examples from India, Biopiracy, Intellectual Property Rights and Traditional Knowledge; databases and knowledge resource (Traditional Knowledge Digital Library); Case studies of traditional medicines leading to development of modern pharmaceutical products (use of *Trichopus zeylanicus* by Kani tribe and *Artemesia* sp. for malaria cure).

Practicals:

1. Collection, identification and preparation of herbarium of three ethno-botanically important plants with appropriate references. **(Week: 02)**
2. Preparation of crude extract of ethnobotanically important plants with appropriate references (any method to be used). **(Weeks: 04)**
3. Project work-documentation, literature survey, and collection of information on ethno-botanically useful plants from traditional healers). **(Weeks: 09)**

Suggested Readings:

1. Jain, S.K. (2010). Manual of Ethnobotany. Rajasthan: Scientific Publishers.
2. Martin, G.J. (1995). Ethnobotany: A Methods Manual. Chapman Hall
3. Cunningham, A.B. (2001). Applied Ethnobotany: People, Wild Plant Use and Conservation. Earthscan, London.
4. Young, K.J. (2007). Ethnobotany. Infobase Publishing, New York.
5. Schmidt, B.M., Cheng, D.M.K. (Eds.) (2017). Ethnobotany: A Phytochemical Perspective. John Wiley & Sons Ltd. Chichester, UK.
6. Research papers from various Scientific Journals for case studies.

DISCIPLINE SPECIFIC CORE COURSE – 15: Plant Physiology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Plant Physiology – DSC 15	4	2	0	2	Class XII pass with Biology/ Biotechnology	Nil

Learning objective:

7. To introduce the basic principles of plant structure and function and its application in related fields.

Learning outcomes: On completion of the course the students will be able to:

8. understand the structure and function of plants
9. comprehend and compare various tissue systems in plants and their role
10. realise the importance of water, soil and atmosphere in the life of organisms
11. appreciate the ability of plants to sense the environment and adapt
12. interpret and evaluate the significance of regulator molecules in controlling life forms
13. apply the principles of plant physiology to solve problems in related fields

Unit 1: Plant-water relations

04 Hours

Water potential and its components, water absorption by roots, water movement via symplast, apoplast and aquaporins, root pressure, guttation, ascent of sap, cohesion-tension theory, transpiration, factors affecting transpiration, anti-transpirants

Unit 2: Mineral nutrition

04 Hours

Essential and beneficial elements, macro- and micro-elements, criteria for essentiality, roles of essential elements, chelating agents, phytosiderophores, mineral nutrition in hydroponics and aeroponics.

Unit 3: Nutrient uptake

05 Hours

Transport of ions across cell membrane, passive absorption, simple and facilitated diffusion (carrier and channel proteins), Fick's law, active absorption, proton ATPase pump, electrochemical gradient, ion flux, uniport, co-transport (symport, antiport)

Unit 4: Translocation in the phloem

03 Hours

Composition of phloem sap, phloem loading and unloading, Pressure-Flow Model, source-sink relationship

Unit 5: Plant growth regulators**08 Hours**

Chemical nature (basic structure, precursor), physiological roles, bioassays and applications of Auxins, Gibberellins, Cytokinins, Abscissic Acid, Ethylene; Other growth regulators - Jasmonic Acid, Brassinosteroids, Nitric Oxide. Mechanism of action of Auxin. Introduction to interactions among plant growth regulators.

Unit 6: Physiology of photo-sensory molecules**03 Hours**

Discovery, chemical nature, mode of action and role of phytochrome, cryptochrome and phototropin in photomorphogenesis

Unit 7: Physiology of flowering**02 Hours**

Concept of florigen, photoperiodism, CO-FT Model of flowering, vernalization.

Unit 8: Seed dormancy**01 hour**

Seed dormancy -causes and methods to induce and/or overcome dormancy

Practicals**60 Hours**

9. Determination of osmotic potential of plant cell sap by plasmolytic method.
10. Determination of water potential of potato tuber cells by weight method.
11. Determination of water potential of potato tuber cells by falling drop method.
12. Study of effect of light on the rate of transpiration in excised leafy twig.
13. Calculation of stomatal index and stomatal frequency from the lower surface of leaves of a mesophyte and a xerophyte.
14. To calculate the area of an open stoma and percentage of leaf area open through stomata in a mesophyte and a xerophyte (lower surface).
15. To study the effect of different concentrations of ABA on stomatal closure.
16. To study the effect of light and dark on seed germination.
17. To study induction of amylase activity in germinating barley grains.
18. To study the effect of ethylene on fruit ripening.
19. To study the effect of auxin on rooting.

Suggested Readings:

6. Hopkins, W. G., Huner, N. P. A. (2009). Introduction to Plant Physiology, 4th edition. New Delhi, Delhi: Wiley India Pvt. Ltd.
7. Taiz, L., Zeiger, E., Moller, I. M., Murphy, A. (2018). Plant Physiology and Development, 6th edition. New York, NY: Oxford University Press, Sinauer Associates.
8. Kochhar, S.L., Gujral, S.K. (2020). Plant Physiology: Theory and Applications. New Delhi, Delhi: Foundation Books, 2ndEdn. Cambridge University Press India Pvt, Ltd.

Additional Resources:

- Bajracharya, D. (1999). Experiments in Plant Physiology: A Laboratory Manual. New Delhi, Delhi: Narosa Publishing House.
- Bhatla, S.C., Lal, M.A. (2018). Plant Physiology, Development and Metabolism. Singapore: Springer Nature, Singapore Pvt. Ltd.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVES (BOT-DSE-06)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Natural Resource Management BOT-DSE-06	4	2	0	2	Class XII pass with Biology/ Biotechnology	Nil

Learning Objectives:

- Natural Resources are materials from earth which support life and significantly meet the needs of people. The paper aims to describe the different types of natural resources and their management. Students will study about the importance of each natural resource and how and why they are threatened in current times. They will also be taught about sustainably using our resources

Learning outcomes: At the end of this course, students will be able to:

13. understand the different resources available in nature
14. learn the importance of each resource along with the threats to these resources
15. gain an in-depth understanding of management of these resources and also restoration of natural ecosystems
16. study the importance of sustainable practices
17. gain an insight into various initiatives taken the world over to save our natural resources.
18. understand the concept of clean energy and management of waste

Unit 1: Natural Resources

01 Hours

Definition, fundamental concepts and types

Unit 2: Sustainable Utilization

04 Hours

Concept, goals, approaches (economic, ecological, socio-cultural)

Unit 3: Land Resources

06 Hours

Forests (definition, threats, management); Agricultural practices and their impact; Soil degradation (causes, management and remediation/restoration strategies)

Unit 4: Water Resources

04 Hours

Freshwater, Marine, Estuarine, Wetlands – Threats and Management

Unit 5: Biological Resources

03 Hours

Biodiversity – Levels, Significance, Threats, Management

Unit 6: Energy

02 Hours

Clean energy strategies – Solar, Wind, Hydro, Tidal, Geo-thermal, Bio-energy

Unit 7: Climate Change

04 Hours

Impact, adaptation and mitigation (Land, Soil, Water, Biodiversity, Air)

Unit 8: Contemporary practices

04 Hours

EIA, GIS, Energy Audits, Waste Management, Ecosystem Restoration, Carbon footprint

Unit 9: National and International Initiatives

02 Hours

International Solar Alliance; Ramsar Convention; Basel Convention; Carbon Neutral Goals; Net-zero Coalition; Clean Development Mechanism; CAMPA (Compensatory Afforestation Fund Management and Planning Authority); Carbon Credits; REDD+ project, Renewable Energy Certificates

Practicals

60 hours

5. Comparison of pH (pH meter) and salinity (Electrical Conductivity) of various soil samples.
6. Comparison of field capacity of various soil samples.
7. Comparison of pH (pH meter) and TDS (TDS meter) of various water samples.
8. Comparison of salinity (titrimetric method) of various water samples.
9. Calculation and comparison of BOD and COD of various water samples from given data.
10. Comparison of species diversity in various communities by Shannon-Wiener Index.
11. Measurement of dominance of woody species by DBH method in the college campus.
12. Project (any one of the following):
 6. Rainwater harvesting (site visit)
 7. Ecological restoration (site visit)
 8. Energy audit
 9. Seed germination and seedling growth in garden and contaminated soils
 10. Composting
 11. Any other
13. Field visit/s to any degraded ecosystem (landfill, polluted water body, invaded forest) or any ongoing restoration project site.

Suggestive readings:

- Vasudevan, N. (2006). Essentials of Environmental Science. New Delhi, India: Narosa Publishing House.
- Singh, J. S., Singh, S.P. and Gupta, S.R. (2006). Ecology, Environment and Resource

Conservation. New Delhi, India: Anamaya Publications.

- Rogers, P.P., Jalal, K.F. and Boyd, J.A. (2008). An Introduction to Sustainable Development. New Delhi, India: Prentice Hall of India Private Limited.

Additional resource:

10. <https://moef.gov.in/en/division/forest-divisions-2/campa/compensatory-afforestation-fund-management-and-planning-authority-campa/>
11. <https://www.un.org/en/climatechange/net-zero-coalition>
12. <https://www.recregistryindia.nic.in/>
13. <https://static.investindia.gov.in/National%20Policy%20on%20Biofuels.pdf>
14. <https://cri.nccf.in/>
15. <https://www.investindia.gov.in/team-india-blogs/carbon-financing-india>
16. <https://www.un-redd.org/>
17. Ecosystem Restoration for People, Nature and Climate <https://wedocs.unep.org/bitstream/handle/20.500.11822/36251/ERPNC.pdf>
18. Managing Ecosystems In The Context Of Climate Change Mitigation: A review of current knowledge and recommendations to support ecosystem-based mitigation actions that look beyond terrestrial forests <https://www.cbd.int/doc/publications/cbd-ts-86-en.pdf>
19. Jordan III, W. R., Gilpin, M. E., Aber, J. D. (1987). Restoration Ecology: a synthetic approach to ecological research. Cambridge, Great Britain: Cambridge University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

Botany Courses for Undergraduate Programme of study with Botany as one of the Core Disciplines

DISCIPLINE SPECIFIC CORE COURSE (DSC-6.): Economic Botany and Biotechnology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Economic Botany and Biotechnology LS-DSC-BOT - 6	4	2	0	2	Class XII pass with Biology/ Biotechnology	Nil

Learning Objectives:

- To understand the economic importance of plants as cash crops - cereals, legumes, spices, non-alcoholic beverages, oils and fibres.
- To understand the concepts and applications of the techniques of Plant Tissue Culture and Recombinant DNA Technology in enhancing economic value of plants

Learning Outcomes: At the end of the course the students will have:

- knowledge of the nutritive and commercial / medicinal value of various plants and plant parts used as sources of carbohydrates, proteins, spices, oil and beverages.
- practice the methods / techniques of Plant Tissue Culture and apply tools of Biotechnology in improvement of crops for economic potential.

Unit 1: Origin of Cultivated Plants

02 hours

Concept of centres of origin, their importance with reference to Vavilov's work.

Unit 2: Cereals and millets

04 hours

Wheat, Rice and Maize: Origin, description of the part used, economic importance. Major and minor millets (Pearl millet, Sorghum, Kodo millet and Finger millet).

Unit 3: Pulse crops

02 Hours

General account and economic importance with special reference to chickpea and pigeon pea.

Unit 4: Spices

03 Hours

General account, part used and economic importance with special reference to cardamom, clove and black pepper.

Unit 5: Beverage

02 Hours

Tea; morphology, types, processing, uses.

Unit 6: Oils and Fats

02 Hours

General account; Classification, Difference between essential oils and fatty oils, uses (Sunflower, Soybean, Mint)

Unit 7: Fibre Yielding Plants

02 Hours

Classification of fibres. Cotton and Jute, description of part used and uses.

Unit 8: Plant Tissue Culture Technology

05 Hours

Introduction; nutrient media; aseptic and culture conditions, organogenesis (direct and indirect) and somatic embryogenesis; androgenesis, embryo culture, endosperm culture, protoplast culture Applications: micropropagation, generation of somaclonal variants, synthetic seeds and germplasm conservation.

Unit 9: DNA Recombinant Technology

08 Hours

Introduction, Blotting techniques (Southern and Northern); PCR; Molecular DNA markers (RAPD, RFLP) and DNA fingerprinting in plants. Genetic Engineering Techniques: Gene cloning vectors (pUC18, Ti plasmid); enzymes (nuclease, polymerase, kinase, ligase); screening for gene of interest by DNA probe hybridisation, Insertion of genes into plant (*Agrobacterium* mediated, biolistics); selection of recombinants by selectable marker and reporter genes (GUS). Applications: Bt cotton, Golden rice, Flavr-Savr tomato, Edible vaccines.

Practicals:

60 Hours

- Study of economically important plants through: specimens (Millets, Pigeon pea, Chickpea, Tea, and Cotton), Sections (Wheat, Maize, Black pepper, Clove), Micro-chemical Tests (Wheat, Soybean, Groundnut and Cotton).
 - Principle and working of equipment used in Tissue culture: Laminar air flow cabinet, Autoclave.
 - Preparation of culture medium (MS medium), sterilisation and inoculation of explants (Demonstration)
 - Study of Micropropagation, Anther culture, Somatic embryogenesis, Endosperm and Embryo culture
 - Study of Molecular techniques: PCR, Blotting techniques
22. Extraction and separation of DNA.
23. Visit to any tissue culture/biotechnology laboratory

Suggested reading:

14. Bhojwani, S.S., Razdan, M.K. (1996). Plant Tissue Culture: Theory and Practice. Amsterdam, Netherlands: Elsevier Science.
15. Bhojwani, S. S. and Dantu, P. K. (2013). Plant Tissue Culture: An Introductory Text. Springer

16. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications. Washington, U.S.: ASM Press.
17. Kochhar, S.L. (2011). Economic Botany in the Tropics, 4th edition. New Delhi, Delhi: MacMillan Publishers India Ltd.
18. Newmann, Karl-Hermann (2020). Plant Cell and Tissue Culture: A Tool in Biotechnology, Springer
19. Wickens, G.E. (2012) Economic Botany: Principles and Practices. Springer

Additional Resources:

11. Park, S. (2021). Plant Tissue Culture: Techniques and Experiments, 4th Edition. Elsevier
12. Ranabhatt, H. and Kapur, R. (2018). Plant Biotechnology {Woodhead Publishing}
13. Razdan, M. K. (2019). Introduction to Plant Tissue Culture, 3rd Edition {CBS / Oxford & IBH}
14. Smith, R. H. (2013). Plant Tissue Culture: Techniques and Experiments, 3rd Edition {Elsevier}.
15. Stewart, C. Neal (2016). Plant Biotechnology and Genetics, 3rd Edition {Wiley-Blackwell}
16. Trigiano, R. N., Dannis, J. Gray (2019). Plant Tissue Culture, Development, and Biotechnology {CRC Press}

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE – 9: Genetics and Plant Breeding

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Genetics & Plant Breeding DSC-9	4	2	0	2	Class XII pass	Nil

Learning Objectives:

- To apprise students with the basic principles of Genetics
- To enhance the applications of genetics in plant breeding and agriculture.

Learning Outcomes:

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

- understand the fundamentals of Mendelian inheritance and its deviation in gene interactions.
- describe the concepts of linkage and crossing over and their usage in constructing gene maps.
- become familiar with pedigree analysis.
- learn about principles of population genetics
- gain knowledge about gene mutations and inherited disorders
- learn about various plant breeding techniques / methods

Unit 1. Mendelian Genetics

6 hours

Mendelism: History; Principles of inheritance, deviations (Incomplete dominance and co-dominance); Chromosome theory of inheritance; Multiple allelism; lethal alleles; Epistasis; Pleiotropy; Penetrance and expressivity; Polygenic inheritance; brief introduction to sex determination.

Unit 2. Extra-Nuclear Inheritance

4 hours

Chloroplast and mitochondrial genomes; Chloroplast Inheritance: Variegation in Four O'clock plant; Mitochondrial inheritance in yeast; Maternal effect (Shell coiling in Snails).

Unit 3. Linkage, crossing over and chromosome mapping

5 hours

Linkage and crossing over, Cytological basis of crossing over (Creighton and McClintock experiment in Maize); three factor crosses; interference and coincidence; Sex linkage (*Drosophila*)

Unit 4. Variation in Chromosome number and structure

4 hours

Deletion; Duplication; Inversion; Translocation; Euploidy and aneuploidy (In Brief).

Unit 5. Mutations**4 hours**

Mutation types; Muller's CIB method, Molecular basis of mutations; Chemical mutagens (Base analogs, deaminating, hydroxylating, alkylating and intercalating agents) and Physical mutagens (Ionising and Non ionising radiations); Transposable genetic elements and their significance (Basic concept).

Unit 6. Population and evolutionary genetics**3 hours**

Hardy Weinberg law (Allele frequencies, genotype frequencies); speciation (modes of speciation and genetics of speciation).

Unit 7. Plant Breeding**4 hours**

Plant breeding- Principle and Practices, domestication and plant introduction (primary and secondary introduction), selection and its types: pure line selection, mass selection and clonal selection; hybridizations (inter-specific and intra-specific), heterosis and its significance.

Practicals:**60 hours**

1. To study meiosis in *Allium cepa* through squash preparation of anthers.
2. To study mitosis in *Allium cepa* through squash preparation of root tips.
3. To understand the deviations of Mendelian dihybrid ratios (12:3:1, 9:3:4, 9:7, 15:1, 13:3, 9:6:1) involved using the seed mixture given. Genetic ratio to be calculated using Chi square analysis.
4. Human Genetics:
 - a) Study of autosomal & sex-linked dominant & recessive inheritance through pedigree analyses.
 - b) ABO blood group testing using kits,
 - c) To study the syndromes (Down's, Klinefelter's, Turner's, Edward's & Patau) through karyotypes
5. To calculate allelic and genotypic frequencies of human dominant and recessive traits using Hardy- Weinberg's principle.
6. To study Xeroderma pigmentosum, Sickle cell anaemia, albinism, haemophilia and colour blindness (Ishihara charts may be used to study colour blindness)
7. To study chromosomal aberrations:
 - a) Quadrivalents, lagging chromosomes, dicentric/inversion bridge through photographs/permanent slides
 - b) Reciprocal translocation through squash preparations of *Rhoeo* anthers.
8. Demonstration of basic methods of plant breeding (hybridizations): Emasculation, bagging and tagging using available plant material in pots/gardens/field.

Suggested Readings:

1. Gardner, E.J., Simmons, M.J., Snustad, D.P. (1991). Principles of Genetics, 8th edition. New Delhi, Delhi: John Wiley & sons.
2. Griffiths, A.J.F., Doebley, J., Peichel, C, Wassarman D (2020). Introduction to Genetic Analysis, 12th edition. New York, NY: W.H. Freeman and Co.
3. Klug, W.S., Cummings, M.R., Spencer, C.A. (2020). Concepts of Genetics, 12th edition. San Francisco, California: Benjamin Cummings.
4. Pierce, B. A. (2020). Genetics: A Conceptual Approach, 7th Edition, Macmillan

5. Campbell, N.A., Reece J.B., Urry L.A., Cain M.L., Wasserman S.A., Minorsky P.V., Jackson, R.B. (2020). Biology. San Francisco, SF: Pearson Benjamin Cummings.
6. Singh, B.D., (2022). Plant Breeding: Principles and Methods. New Delhi, Medtech Publishers

Additional Resources:

1. Russell, P. J. (2010). Genetics- A Molecular Approach. 3rd Edition. Benjamin Cummings
2. Snustad, D.P., Simmons, M.J. (2016). Principles of Genetics, 7th Edition. New Delhi, Delhi: John Wiley & sons
3. Hartl, D.L., Ruvolo, M. (2019). Genetics: Analysis of Genes and Genomes, 9th edition, Jones and Bartlett Learning.
4. Singh, B. D. (2023). Fundamentals of Genetics, 6th edition. MedTech.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE -2): Biostatistics & Bioinformatics for Plant Sciences

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical / Practice		
Biostatistics & Bioinformatics for Plant Sciences DSE-2	4	2	0	2	Class XII pass	Nil

Learning Objective:

- To train students in using computational and mathematical tools to solve biological problems.

Learning Outcomes:

At the end of this course students will be able to:

- use the various online databases and resources for accessing biological data.
- use the different methods of alignment of DNA, RNA and protein sequences and interpret the significance of the same.
- understand the descriptive and inferential statistical tests for interpretation of experimental data.

Unit 1- Introduction to Bioinformatics

3 hours

Historical background; Aims and scope; Bioinformatics in Genomics, Transcriptomics, Proteomics, Metabolomics; Applications of bioinformatics in crop improvement

Unit 2- Biological databases

4 hours

Introduction to biological databases - Primary, secondary and composite databases. Study of following databases: NCBI (GenBank, PubChem, PubMed and its tools (only BLAST)), introduction to UniProt, PDB, PlantPepDB.

Unit 3- Basic concepts of Sequence alignment

4 hours

Similarity, identity and homology. Concepts of alignment (gaps and penalty); Alignment – pairwise and multiple sequence alignments

Unit 4- Molecular Phylogeny

4 hours

Introduction, methods of construction of phylogenetic trees: maximum parsimony (MP), maximum likelihood (ML) and distance (Neighbour-joining) methods.

Unit 5- Introduction to Biostatistics

2 hours

Definition, Basics of descriptive and inferential statistics; Limitations and applications.

Unit 6- Data and sampling methods

3 hours

Primary and secondary data; Sampling methods (in brief); tabulation and presentation of data.

Unit 7- Measures and deviations of central tendencies**4 hours**

Dispersion - range, standard deviation, mean deviation, standard error, skewness and kurtosis, quartile deviation –merits and demerits; Coefficient of variation.

Unit 8-Correlation and Regression**3 hours**

Correlation - types and methods of correlation (I. E. Karl Pearson and Spearman Rank method), Introduction to simple regression equation; similarities and dissimilarities between correlation and regression.

Unit 9- Statistical tests**3 hours**

Statistical inference - hypothesis – (simple hypothesis), student's t test, chi-square test.

(Note: Numerical based questions of unit 7, 8 and 9 should be covered only in practical)

Practicals**60 hours**

1. Biological databases (NCBI, UniProt, PlantPepDB)
2. Literature retrieval from PubMed
3. Sequence retrieval (protein and gene) from NCBI (formats - FASTA, GenBank and GenPept formats)
4. Protein Structure retrieval from PDB (in pdb format) and visualization by viewing tools (Ras Mol/ J mol/Mol*/Swiss 3D Viewer/Pymol)
5. Multiple sequence alignment (MEGA/Clustal omega)
6. Construction of phylogenetic tree (PHYLP/ MEGA/ Clustal omega).
7. Calculation of standard deviation and coefficient of variation through manual calculation and using Microsoft Excel, using only ungrouped data)
8. Calculation of correlation coefficient values by Karl Pearson's /Spearman Rank methods (through manual calculation and using Microsoft Excel)
9. Student's t-test (using Microsoft Excel), chi square test (Manual and using Microsoft Excel)

Suggested Readings:

1. Ghosh, Z., Mallick, B. (2008). *Bioinformatics – Principles and Applications*, 1st edition. New Delhi, Delhi: Oxford University Press.
2. Baxevanis, A.D., Ouellette, B.F., John (2005). *Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins*, 3rd edition. New Jersey, U.S.: Wiley & Sons, Inc.
3. Roy, D. (2009). *Bioinformatics*, 1st edition. New Delhi, Delhi: Narosa Publishing House.
4. Zar, J.H. (2012). *Biostatistical Analysis*, 4th edition. London, London: Pearson Publication.
5. Campbell, R.C. (1998). *Statistics for Biologists*. Cambridge, U.S.A.: Cambridge University Press

Additional Resources:

1. Pevsner J. (2009). *Bioinformatics and Functional Genomics*, 2nd edition. New Jersey, U.S.: Wiley Blackwell.

2. Xiong J. (2006). Essential Bioinformatics, 1st edition. Cambridge, U.K.: Cambridge University Press.
3. Mount, D.W. (2004). Bioinformatics: Sequence and Genome analysis 2nd edition, Cold Spring Harbor Laboratory Press, USA.
4. Pandey, M. (2015). Biostatistics Basic and Advanced. New Delhi, Delhi: M V Learning.
5. Khan, I.A., Khanum, A., Khan S., (2020). Fundamentals of Biostatistics, 6th edition. Ukaaz Publications, Hyderabad, India.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category IV:

B.Sc. Biological Sciences (Hons) for Undergraduate Programme of study with Botany as a Single Core Discipline

DISCIPLINE SPECIFIC CORE COURSE –9 :

Course title & Code	Credits	Credit distribution of the core course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Functional Ecology (BS-DSC303)	4	2	-----	2	Class XII pass with Biology and chemistry, as one of the papers in Class XII	Nil

Learning Objectives

- To understand the basic concepts in ecology and levels of organization in an ecosystem
- Obtain a basic understanding of the various aspects of a 'population' and interactions among individuals of the same as well as different species.
- To understand the structure and functions of the community and its processes.
- To comprehend the components of an ecosystem, energy flow and nutrient cycling.
- To appreciate the applied aspects required in restoration of degraded ecosystems.
- To understand trade-offs in life history characteristics of organisms and various behaviors shown by organisms.

Learning outcomes

By the end of the course, the student will be able to:

- To comprehend the principles and applications of ecology and ecosystem.
- Know about the importance of ecosystem in general and the effects of changes in ecosystem.
- Understand the techniques used for the quantitative and qualitative estimation of biotic and abiotic components of an ecosystem.
- Gain knowledge about the density, frequency and diversity of species in an ecosystem.
- Understand about key interactions between organisms like competition, predation, parasitism etc.
- Participate in citizen science initiatives from an ecological perspective

DISCIPLINE SPECIFIC CORE COURSE –9 :26

SYLLABUS OF DSC-9

Theory

Unit 1: Introduction to Ecology

1.5 weeks

History of ecology, Autecology and synecology, levels of Organisation, Laws of limiting

factors (Liebig's law of minimum, Shelford's law of tolerance), ecological range (Eury and Steno).

Unit 2: Population Ecology

6 weeks

Population: Unitary and Modular populations; Metapopulation: Density, natality, mortality, life tables, fecundity tables, survivorship curves, sex ratio, age pyramids, dispersal and dispersion; carrying capacity, population dynamics (exponential and logistic growth equation and patterns), r and K selection, density-dependent and independent population regulation; Niche concept, Population interactions: Positive and negative interactions; Competition, Gause's Principle for competition with laboratory and field examples, Lotka-Volterra equation for predation.

Unit 3: Community Ecology

4 weeks

Community structure: Dominance, diversity, species richness, abundance, stratification; Diversity indices; Ecotone and edge effect; Community dynamics (succession): Primary and secondary succession, Succession on a bare rock. Climax: monoclinal and polyclinal concepts (preclimax, postclimax, disclimax etc.). Concept of keystone, indicator and flagship species with plant and animal examples.

Unit 4: Ecosystem Ecology

3.5 weeks

Concept, components, and types of ecosystems (example of Pond ecosystem in detail showing abiotic and biotic components), BOD, eutrophication. Energy flow (Grazing and Detritus food chain), linear and Y-shaped energy flow model, black box model, food web. Ecological pyramids and Ecological efficiencies.

PRACTICALS CREDITS: 2

Total weeks: 15

1. To understand the principle and working of ecological instruments such as Anemometer, Hygrometer, Luxmeter, Rain gauge, turbidity meter, pH meter, Soil thermometer, MinMax thermometer.
2. To study biotic interactions using specimens/ photographs/ permanent slides of Parasitic angiosperms, Saprophytic angiosperms, root nodules, velamen roots, lichens, corals.
3. To study plant-microbe interactions by preparing temporary stained mounts of VAM fungi / mycorrhizal roots/ root nodules.
4. Mark recapture method for determining population density of animals
5. To determine a minimal quadrat area for sampling
6. To determine density, frequency and abundance of herbaceous vegetation by quadrat method
7. To estimate dissolved oxygen content of a given water sample using Winkler's method.
8. Plotting of survivorship curves from hypothetical life table data.²⁷

REFERENCES

1. Barrick, M., Odum, E. P., Barrett, G. W., (2005) Fundamentals of Ecology. 5th Edition. Cengage Learning.
2. Smith, T. M. & Smith, R. L. (2012). Elements of Ecology 8th Edition. Pearson.
3. Ricklefs, R. E., & Miller, G. L., (2000) Ecology, 4th Edition W.H. Freeman.
4. Sharma, P. D. (2017). Ecology and Environment. 13th Edition. Meerut: Rastogi Publications.

MOOCs

1. 'Ecology: Ecosystem Dynamics and Conservation from American Museum of Natural History on Coursera <https://www.classcentral.com/course/coursera->

Ecology
(BHCC9)
Core Course - (CC) Credit:6

Course Objective (2-3)

To introduce the students with environmental factors affecting the plants, the basic principles of ecology and phytogeography. To make them understand complex community patterns and processes, and ecosystem functioning.

Course Learning Outcomes

It acquaint the students with complex interrelationship between organisms and environment; make them understand methods to studying vegetation, community patterns and processes, ecosystem functions, and principles of phytogeography. This knowledge is critical in evolving strategies for sustainable natural resource management and biodiversity conservation.

Unit 1

Introduction (4 lectures): Brief History, Basic concepts, Levels of organization, Inter-relationships between the living world and the environment, the components and dynamism, homeostasis (with reference to Ecosystem).

Unit 2

Soil (8 lectures): Importance; Origin; Formation; Composition: Physical, Chemical and Biological components; Soil profile; Role of climate in soil development.

Unit 3

Water (3 lectures): Importance; States of water in the environment; Atmospheric moisture; Precipitation types (rain, fog, snow, hail, dew); Hydrological Cycle; Water in soil; Water table.

Unit 4

Light, Temperature, Wind and Fire (6 lectures): Variations; adaptations of plants to their variation.

Unit 5

Biotic interactions (2 lectures): Definition; types of biotic interactions

Unit 6

Population ecology (4 lectures): Distribution and characteristics of populations; population growth; population dynamics; Ecological Speciation (Ecads, ecotypes, ecospecies, etc)

Unit 7

Plant communities (9 lectures): Concept of ecological amplitude; Habitat (types) and Ecological niche (types); Community characters (analytical and synthetic); Ecotone and edge effect; Methods to studying vegetation; Dynamics of communities; Succession: processes, types (Lithosere, Hydrosere); climax concepts.

Unit 8

Ecosystems (5 lectures): Structure; Types; Processes; Trophic organisation; Food chains and Food webs; Ecological pyramids.

Unit 9

Functional aspects of ecosystem (9 lectures): Principles and models of energy flow; Production and productivity; Measurement of productivity; Ecological efficiencies; Biogeochemical cycles; Cycling of Carbon, Nitrogen and Phosphorus.

Unit 10

Phytogeography (10 lectures): Principles; Continental drift; Theory of tolerance; Endemism; Brief description of major terrestrial biomes (one each from tropical, temperate & tundra); Phytogeographical division of India; Vegetation of Delhi.

Practical

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/Lövi bond 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. Determination of organic matter of different soil samples by Walkley & Black rapid titration method.
5. Comparison of bulk density, porosity and rate of infiltration of water in soils of three habitats.
6. Determination of dissolved oxygen of water samples from polluted and unpolluted sources.
7. (a). Study of morphological adaptations of hydrophytes and xerophytes (four each).
(b). Study of biotic interactions of the following: Stem parasite (*Cuscuta*), Root parasite (Orobanch), 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. Quantitative analysis of herbaceous vegetation for density and abundance in the college campus.
11. Field visit to familiarize students with ecology of different sites.

References

1. Odum, E.P. (2005). *Fundamentals of Ecology*. New Delhi, India: Cengage Learning India Pvt. Ltd., 5th edition. (Chapter 3, 4 for Unit 8; Chapter 6 for Unit 6; Chapter 7 for Unit 7; Chapter 10 for Unit 10)
2. Singh, J.S., Singh, S.P., Gupta, S.R. (2014). *Ecology, Environmental Science and Conservation*. New Delhi, India: S. Chand. (Chapter 4 for Unit 2; Chapter 5 for Unit 4; Chapter 8 for Unit 6; Chapter 9 for Unit 5; Chapter 10, 11, 12 for Unit 7; Chapter 13 for Unit 8; Chapter 15, 16 for Unit 9; Chapter 18 for Unit 10)
3. Sharma, P.D. (2015-16). *Ecology and Environment*. Meerut, India: Rastogi Publications. 12th edition.(Chapter 2 for Unit 4; Chapter 3 for Unit 2; Chapter 5 for Unit 5; Chapter 7 for Unit 6; Chapter 8 for Unit 7; Chapter 9 for Unit 8; Chapter 19 for Unit 10)
4. Kormondy, E.J. (2017). *Concepts of Ecology*. India:Pearson India Education Services Pvt. Ltd. 4th edition.(Chapter 7, 8 for Unit 8; Chapter 10, 11 for Unit 6; Chapter 12 for Unit 7; Chapter 14 for Unit 10)

Additional Resources:

1. Ambasht, R.S. and Ambasht, N.K. (2008). *A text book of Plant Ecology*, CBS Publishers & Distributors PVT. LTD. 14th Edition (Chapter 2 for Unit 8; Chapter 3, 7 for Unit 4; Chapter 9 for Unit 6; Chapter 10 for Unit 7; Chapter 11, 17, 18 for Unit 10)
 2. Majumdar, R and Kashyap, R (2019). *Practical Manual of Ecology and Environmental Science*, New Delhi, India: Prestige Publishers (chapters 1-11 For Practicals 1 to 10)
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Teaching Learning Process

The Class room teaching is integrated with practical classes, and field visit to impart a sound understanding of the course. The theory topics are covered in lectures with the help of blackboard teaching and PowerPoint presentations. When the entire syllabus is completed, a few lectures are devoted to discuss the previous years' question papers.

Every practical session begins with detailed instructions, followed by students conducting the experiment/s in the laboratory/college campus. When all the students have collected the data, the observations are discussed. Any deviation from the expected trend in results is explained. The students are encouraged to graphically represent the data and record the experiment during class hours. The students are asked to submit their record notebooks to the teacher/s for checking.

College teachers can also form a group and prepare e-contents for theory as well as for practicals. Field visit is also be organised to familiarise the students with local plant species, and to understand community pattern and processes.

Teaching Learning Plan:

- Week 1: Unit I
- Week 2: Unit II
- Week 3: Unit II
- Week 4: Unit III
- Week 5: Unit IV
- Week 6: Unit V

Week 7: Unit VI
 Week 8: Unit VII
 Week 9: Unit VII
 Week 10: Mid semester Exam
 Week 11: Mid Semester Break
 Week 12: Unit VIII
 Week 13: Unit IX
 Week 14: Unit IX, Unit X
 Week 15: Unit X

Assessment Methods

Theory: The students are continuously evaluated based on assignments/presentation and class test. After marking, the answer scripts of the test are returned to the students.

In fact, presentations by students improve their reasoning and communication skills. The presentations of students are evaluated by the teacher based on the content, effectiveness of the presentation, whether any new information has been added, and lastly on the answers given by students to the questions posed by the teacher. An assignment can be given in place of the presentation.

The Internal Assessment has a break-up as 10 marks for the test, 10 marks for the presentation/assignment and 5 marks for the attendance, and comprises 25 % of the total marks.

Practicals: For continuous evaluation, 10 marks are allotted for test, 10 marks for record /field report, and 5 marks for attendance. The Internal Assessment for practicals comprises 50 % of the total marks.

Assessment method

Unit No	Course learning Outcome	Teaching and Learning Activity	Assessment Task
I	Introduction	Class room lectures and Practical demonstration, experiments	Hands on exercises, PPT, assignments, tests
II	Soil	Class room lectures and Practical demonstration, experiments	Hands on exercises, PPT, assignments, tests
III	Water	Class room lectures and Practical demonstration, experiments	Hands on exercises, PPT, assignments, tests
IV	Light, Temperature, Wind and Fire	Class room lectures and Practical demonstration, experiments	Hands on exercises, PPT, assignments, tests
V	Biotic Interactions	Class room lectures	Hands on exercises, PPT,

**Intellectual Property Rights
(BHSE2)
Skill-Enhancement Elective Course - (SEC) Credit:4**

Course Objective (2-3)

To have knowledge of roles regulations, laws and processes of patents, copyright trade marks and concepts of traditional knowledge and protection of plant varieties .

Course Learning Outcomes

Students would have deep understanding of patents copyrights, their importance. They can think about the importance of traditional knowledge, bio-prospecting, biopiracy. They would gain the knowledge of farmers rights and the importance on indigenous plant varieties, concept of novelty and biotechnological inventions

Unit 1

Introduction to intellectual property right (IPR) (2 lectures)

Concept and kinds. Economic importance. IPR in India and world: Genesis and scope, some important examples. IPR and WTO (TRIPS, WIPO).

Unit 2

Patents (3 Lectures)

Objectives, Rights, Patent Act 1970 and its amendments. Procedure of obtaining patents, Working of patents. Infringement.

Unit 3

Copyrights (3 Lectures)

Introduction, Works protected under copyright law, Rights, Transfer of Copyright, Infringement

Unit 4

Trademarks (3 Lectures)

Objectives, Types, Rights, Protection of goodwill, Infringement, Passing off, Defences, Domain name

Unit 5

Geographical Indications (3 Lectures)

Objectives, Justification, International Position, Multilateral Treaties, National Level, Indian Position

Unit 6

Protection of Traditional Knowledge (4 Lectures)

Objective, Concept of Traditional Knowledge, Holders, Issues concerning, Bio-Prospecting and Bio-Piracy, Alternative ways, Protectability, need for a Sui-Generis regime, Traditional Knowledge on the International Arena, at WTO, at National level, Traditional Knowledge Digital Library.

Unit 7

Industrial Designs (2 Lectures)

Objectives, Rights, Assignments, Infringements, Defences of Design Infringement

Unit 8

Protection of Plant Varieties (2 Lectures)

Plant Varieties Protection- Objectives, Justification, International Position, Plant varieties protection in India. Rights of Objective, Applications, Concept of Novelty, Concept of inventive step, Microorganisms, Moral Issues farmers, Breeders and Researchers. National gene bank, Benefit sharing. Protection of Plant Varieties and Farmers' Rights Act, 2001.

Unit 9

Information Technology Related Intellectual Property Rights (4 Lectures)

Computer Software and Intellectual Property, Database and Data Protection, Protection of Semiconductor chips, Domain Name Protection Unit 10: Biotechnology and Intellectual Property Rights. (4 Lectures) Patenting Biotech Inventions

Practical

1. Patent search
2. Trademark search
3. copyright infringement (Plagiorism check by Urkund and other available software,
4. Geographical Indicators (i) food- Malabar pepper, Basmati rice, Darjeeling Tea, and Requefort cheese, handlooms, (Kota Doria, , Banarasi Sari, , Muga Silk, Kanchipuram), II- Industry (Mysore agarbatti, Feni Goa, Champagne, (France). IV. Natural resources- (Makrana marbles Two example of each category
5. Biopiracy-neem , turmeric
6. Industrial designs- Jewellery design, chair design, car design, Bottle design, Aircraft design,
7. IPR e diary

References

1. Gupta, R., (2011) , Plant Taxonomy past Present and Future . TERI Press (Chapter 7 for Unit 6)

- 2.. Gupta , R., Rajpal , T., (2012) ConciseR.,(2011) , Plant Taxonomy past Present and Future . TERI Press (Chapter 7 for Unit 6)
3. Gupta , R., Rajpal , T., (2012) Concise Notes on Biotechnology. Delhi: Mc Graw Hill Publication (chapter 14 for Unit 1)
4. N.K., Acharya.(2001).Text Book on Intellectual Property Rights: (Copyright, Trademark, Patent Design, Geographical Indications, Protection of New Plant Varieties & Farmers Rights and Protection of Biodiversity) . (chapters 1 to 8 for Units 1 to 9)

Additional Resources

1. Gogia, SP. *On Intellectual Property Rights (IPR)*. Hyderabad: Asia Law House.(chapter 1- 6 for Unit 1,6 and 9)
 2. Bhandari, M.K. (2017). *Law Relating to Intellectual Property Rights (IPR)*. Allahabad: U.P.: Central Law Publications. (Chapters 1-5 for Unit 1-8)
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Teaching Learning Process

Theory: The theory topics are covered in lectures with the help of PowerPoint presentations and the chalkboard. Students are encouraged to ask questions. The reading list has been suitably upgraded.

When the entire syllabus is completed, a few lectures are devoted to discuss the previous years' question papers, thus preparing the students for the examination.

Practicals: Every practical session begins with detailed instructions, followed by students conducting the experiment/s. When all the students have collected the data, the observations are discussed. Any deviation from the expected trend in results is explained. The students are encouraged to graphically represent the data and record the experiment during class hours.

The students are asked to submit their record notebooks to the teacher/s for checking

Week 2: Unit II

Week 3: Unit III

Week 4: Unit IV

Week 5: Unit V

Week 6: Unit VI

Week 7: Unit VI

Week 8: Unit VII

Week 9: Unit VIII

Week 10: Mid semester Exam

Week 11: Mid Semester Break

Week 12: Unit VIII

Week 13: Unit IX

Week 14: Unit IX

Week 15: Unit X

Biodiversity (Microbes, Fungi, Algae and Archegoniates)
(BHGE1)

Generic Elective - (GE) Credit:6

Course Objective (2-3)

Biodiversity generally refers to the variety and variability of life on earth. Plants are relevant to humans as they provide us with food, shelter, clothing, energy, health, aesthetic beauty, environment and even economy. This paper is relevant to ALL students.

1. Introduction to Biodiversity ranging from Microbes (Viruses and Bacteria), to Fungi, to various plant groups (Algae and Archegoniates-Bryophytes, Pteridophytes and Gymnosperms).
2. Information on the Ecological and Economic Importance of Microbes, Fungi and various plant groups to enable students understand and appreciate relevance of Microbes and Plants to environment and human well-being.
3. Insight into the line of Plant Evolution on Earth and the consequent Biodiversity is instrumental in creating Awareness on the threats to biodiversity and sensitize young minds towards the Biodiversity Conservation for sustainable development.

Course Learning Outcomes

1. Combination of Theoretical and Practical components will provide comprehensive information and insight into the fascinating world of Microbes and Plants.
2. Hands on Training will help students learn use of microscope, mounting, section-cutting and staining techniques for the study of plant materials.
3. Making Drawings in Practical Records will enhance understanding morphological and structural details and related functional aspects in diverse plant groups.
4. Use of Illustrations, Photographs, Charts, Permanent Slides, Museum and Herbarium Specimens along with ICT Methods will provide an interesting insight into the beautiful world of microbes and plants.
5. Scope of Biodiversity includes Medicinal field, Industry, Agriculture, Research and Study, Job Opportunities and Environmental Conservation. This paper is both informative and interesting and will enable students to learn about Biodiversity not only as a plant or nature lover, but also for higher academic pursuits, particularly in the field of Biological Sciences, Environment and Biodiversity Conservation.

Unit 1

MICROBES (14 Lectures)

- a) **Viruses** – Discovery; General Structure- RNA virus (TMV) and DNA virus (T-phage); Replication-Lytic and Lysogenic Cycle; Economic Importance.
- b) **Bacteria** – Discovery; General Characteristics and Cell Structure; Reproduction-Vegetative, Asexual and Genetic Recombination (Conjugation, Transformation and Transduction); Economic Importance.

Unit 2

FUNGI (8 Lectures)

General Characteristics; Outline Classification (Webster); Economic Importance; Thallus Organization and Reproduction in *Rhizopus*, *Penicillium*, *Alternaria* and *Puccinia*.

Unit 3

ALGAE (8 Lectures)

General Characteristics; Outline Classification (Fritsch); Economic Importance; Thallus Organization and Reproduction in *Nostoc*, *Chlamydomonas*, *Vaucheria* and *Ectocarpus*.

Unit 4

ARCHEGONIATAE(30 Lectures)

a) **Bryophytes (10 Lectures)**

General Characteristics; Outline Classification; Ecological and Economic Importance; Morphology, Structure and Reproduction in *Marchantia*, *Anthoceros* and *Funaria*.

b) **Pteridophytes (10 Lectures)**

General Characteristics; Outline Classification; Economic Importance; Morphology, Structure and Reproduction in *Selaginella*, *Equisetum* and *Pteris*.

c) **Gymnosperms (10 Lectures)**

General Characteristics; Outline Classification; Economic Importance; Morphology, Structure and Reproduction in *Cycas* and *Pinus*.

Practical

1. **Viruses**- Structure of TMV and T-Phage (EMs/ Models/ Photographs); Lytic and Lysogenic Cycle (Line Drawings/ Photographs).
2. **Bacteria**-Types and Structure (Permanent Slides/ Photographs); EM Bacterium; Binary Fission and Conjugation (Photographs).
3. ***Rhizopus*, *Penicillium* and *Alternaria***- Asexual Stage from Temporary/ Tease Mounts, ***Puccinia***-Black Stem Rust of Wheat and Infected Barberry Leaves (Herbarium Specimens/ Photographs), Tease Mounts of Spores on Wheat, Section of infected portion of Wheat and Barberry (Permanent Slides).
4. ***Chlamydomonas***-E.M., ***Nostoc*, *Vaucheria* and *Ectocarpus***- Study of Vegetative and Reproductive Structures through Temporary Preparations and Permanent Slides.
5. **Bryophytes** :***Marchantia***-Morphology of Thallus, W.M. Rhizoids, V.S. Thallus through Gemma Cup, W.M. Gemma (all Temporary Slides), L.S. Sporophyte (Permanent slide).

Anthoceros- Morphology of Thallus, W.M. Rhizoids, L.S./ T.S. Capsule, W.M. Spores, W.M. Pseudoelaters, (all Temporary Slides), L.S. Sporophyte (Permanent slide). **Funaria**- Morphology of Gametophyte bearing Sporophyte, W.M. Rhizoids, W.M. Leaf, W.M. Operculum, W.M. Peristome, W.M. Spores (all Temporary Slides), L.S. Capsule (Permanent Slide).

6. **Pteridophytes: Selaginella**- Morphology, T.S. Stem, W.M. Strobilus, W.M. Microsporophyll and Megasporophyll (all Temporary Slides), L.S. Strobilus (Permanent Slide).

Equisetum- Morphology, T.S. Stem (Internode), L.S./ T.S. Strobilus, W.M. Sporangiphore, W.M. Spores (Wet and Dry) (all Temporary Slides).

Pteris- Morphology, V.S. Sporophyll, W.M. Sporangium, W.M. Spores (all Temporary Slides), W.M. Prothallus with Sex Organs (Permanent Slide).

7. **Gymnosperms: Cycas**- Morphology (Coralloid Roots, Leaf, Microsporophyll, Megasporophyll), T.S. Coralloid Root (Permanent Slide), V.S. Leaflet, V.S. Microsporophyll, W.M. Spores (all Temporary Slides), L.S. Ovule (Permanent Slide). **Pinus**- Morphology (Long and Dwarf Shoots, Male and Female Cones), W.M. Dwarf Shoot, T.S. Needle, L.S/ T.S. Male Cone, W.M. Microsporophyll, W.M. Microspores (all Temporary Slides), L.S Female Cone (Permanent Slide).

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1. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). *Introductory Mycology*. Singapore, Singapore: John Wiley and Sons (Asia). (Chapters 1,4,9,13,18,20 for Unit 2)
 2. Kumar, H.D. (1999). *Introductory Phycology*. New Delhi, Delhi: Affiliated East-West. Press Pvt. Ltd. (Chapters 1,3,10,11,12,14 for Unit 3)
 3. Kaur, I.D., Uniyal, P.L. (2019). *Text Book of Gymnosperms*. New Delhi, ND: Daya Publishing House, (Chapters 1,2,5, 6 for 4)
 4. Parihar, N.S. (1972). *An Introduction to Embryophyta. Vol. II: Pteridophyta*. Allahabad, UP: Central Book depot. Chapters 1, 4, 5,9,for Unit 4)

Additional Resources:

1. Bhatnagar, S.P., Moitra, A. (1996). *Gymnosperms*. New Delhi, ND: New Age International (P) Ltd Publishers. (Chapters 1,6,13 for Unit 4)
2. Reece J.B., Urry L.A., Cain M.L., Wasserman S.A., Minorsky P.V., Jackson, R.B. (2011). *Biology 9th edition*. San Francisco, SF: Pearson Benjamin Cummings. (Chapters 19,27 for Unit 1, Chapter 31 for Unit 2; Chapter for Unit 3)))
3. Parihar, N.S. (1991). *An Introduction to Embryophyta. Vol. I. Bryophyta*. Allahabad, UP: Central Book Depot. (Chapters 1,3,6,9 for Unit 4)
4. Puri, P. (1985) *Bryophytes*. New Delhi, Delhi. Atma Ram and Sons, Delhi (Chapters 1,5,7,10 for Unit 4)
5. Tortora, G.J., Funke, B.R., Case, C.L. (2010). *Microbiology: An Introduction*. San Francisco, SF: Pearson Benjamin Cummings. (Chapters 13, 14 For Unit 1)

6. Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). *Botany For Degree Students Pteridophyta*. New Delhi, Delhi: S. Chand Publication. (Chapters 1,4, 6, 9 for unit 4)
 7. Vashishta, B.R., Sinha, A.K., Kumar, A. (2011). *Botany For Degree Students, Bryophyta*. New Delhi, Delhi: S Chand Publication.(Chapters 1,5,14, 18 for Unit 4)
 8. Webster, J. and Weber, R. (2007). *Introduction to Fungi*. Cambridge, Cambridge University Press. Chapters 1,5, 7,22 Unit 2)
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Teaching Learning Process

THEORY:

1. The theory topics are covered in lectures with the help of both conventional (chalk board) and modern (ICT) methods, including use of Charts.
2. Emphasis is on interactive class room environment so as to encourage students ask questions/ doubts/ queries for clarification/explanation and discussion.
3. Students are encouraged to refer to reference books in library to inculcate reading habit for better grasp and understanding on the subject.
4. Emphasis is given to illustrations- neat, well-labelled outline and cellular diagrams/ flowcharts for improving creative skills and to substantiate the text content.
5. On completion of theory syllabus, previous years' question papers are discussed so as to apprise students about the general format of semester exam question papers.
6. Assignment (10), Test (10) and Theory Attendance (5) are components of Internal Assessment Scheme for compilation of Internal Assessment Score of each student out of 25 marks.

PRACTICAL:

1. Every practical session begins with instructions, followed by students doing table work for detailed microscopic plant study.
2. Plant study is done using fixed plant materials, museum and herbarium specimens, photographs and permanent slides.
3. The students are instructed about maintaining practical records, which includes comments and diagrams.
4. Students are asked to submit practical records regularly, on a continuous basis, for checking.
5. On completion of practical syllabus, Practical Exam Guidelines are discussed to apprise students about the format of Practical exam.
6. As part of Continuous Evaluation guidelines, total score for each student is calculated out of 25 marks, taking into consideration Practical Records (10), Practical Test/ Assessment (10) and Practical Attendance (5)Teaching Learning Plan

Week 1: Unit I

Week 2: Unit I

Week 3: Unit I

Week 4: Unit I

Week 5: Unit II

Week 6: Unit II
Week 7: Unit III
Week 8: Unit III
Week 9: Unit IV
Week 10: Mid semester Exam
Week 11: Mid Semester Break
Week 12: Unit IV
Week 13: Unit IV
Week 14: Unit IV
Week 15: Unit IV
Week 16: Unit IV

Assessment Methods

THEORY:

1. Emphasis is given for an interactive classroom environment, with at least few minutes for question-answer session.
2. Assignment topics are given to students for submission of hand written assignments.
3. Test is taken, with both objective and descriptive questions, from a defined portion of syllabus.
4. Assignment (10), Test (10) and Theory Attendance (5) are components of Internal Assessment Scheme for compilation of Internal Assessment Score of each student out of 25 marks.

PRACTICAL:

1. Students are monitored in the practical class w.r.t their performance in table work for detailed plant study.
2. Students are asked to submit practical records regularly, on a continuous basis, for checking.
3. Emphasis is given on neat, labelled diagrams and proper, concise comments in practical records, with properly maintained Index page regularly signed by the teacher.
4. Practical Test/ Assessment is taken to evaluate students performance as per guidelines framed for Continuous Evaluation under C.B.C.S.
5. As part of Continuous Evaluation guidelines, total score for each student is calculated out of 25 marks, taking into consideration Practical Records (10), Practical Test/ Assessment (10) and Practical Attendance (5).

Assessment Method

Unit No	Teaching and Learning Activity	Assessment Task
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I	<p>a) Vruses – Discovery; General Structure- RNA virus (TMV) and DNA virus (T-phage); Replication-Lytic and Lysogenic Cycle; Economic Importance.</p> <p>b) Bacteria – Discovery; General Characteristics and Cell Structure; Reproduction- Vegetative, Asexual and Genetic Recombination (Conjugation, Transformation and Transduction); Economic Importance.</p>	<p>Class room Lectures and Practical demonstration, Photographs, Class room Lectures and Practical demonstration, Photographs, Experiments</p>	<p>Hands on excercises, Assignments, Tests, Hands on excercises, Assignments, Tests</p>
II	<p>FUNGI: General Characteristics; Outline Classification (Webster); Economic Importance; Thallus Organization and Reproduction in <i>Rhizopus</i>, <i>Penicillium</i>, <i>Alternaria</i> and <i>Puccinia</i>.</p>	<p>Class room Lectures and Practical demonstration, Type Study</p>	<p>Hands on excercises, Assignments, Tests</p>
III	<p>ALGAE: General Characteristics; Outline Classification (Fritsch); Economic Importance; Thallus Organization and Reproduction in <i>Nostoc</i>, <i>Chlamydomonas</i>, <i>Vaucheria</i> and <i>Ectocarpus</i>.</p>	<p>Class room Lectures and Practical demonstration, Type Study</p>	<p>Hands on excercises, Assignments, Tests</p>
IV	<p>a) Bryophytes: General Characteristics; Outline Classification; Ecological and Economic Importance; Morphology, Structure and Reproduction in <i>Marchantia</i>, <i>Anthoceros</i> and <i>Funaria</i>.</p> <p>b) Pteridophytes: General Characteristics; Outline Classification; Economic Importance; Morphology, Structure and Reproduction in <i>Selaginella</i>, <i>Equisetum</i> and <i>Pteris</i>.</p> <p>c) Gymnosperms :General Characteristics; Outline Classification; Economic Importance; Morphology, Structure and Reproduction in <i>Cycas</i> and <i>Pinus</i>.</p>	<p>Class room Lectures and Practical demonstration, Type Study</p>	<p>Hands on excercises, Assignments, Tests</p>

Keywords

Biodiversity; Microbes; Viruses; Bacteria; Fungi; Algae; Archegoniates; Bryophytes; Pteridophytes; Gymnosperms

4. Levie, R. de.(2001),**How to use Excel in analytical chemistry and in general scientific data analysis**, Cambridge University Press.
5. Le, C.T.; Eberly,L.E. (2016),**Introductory Biostatistics**, Wiley.

Additional Resources:

1. **Chemical safety matters IUPAC – IPCS**, Cambridge University Press, 1992.
2. **OSU safety manual 1.01**.

Teaching Learning Process

Lecture with conventional teaching aids, presentations, invited talks on thrusting areas, group discussions, literature survey and lab visit.

Assessment Methods

- Internal assessment through assignments and class test.
- Writing review on identified research problem
- Poster presentation
- End semester university examination

Keywords

Review of research papers, writing research papers, citation, and Laboratory safety.

Course Code: CHEMISTRY –DSE-8

Course Title: Green Chemistry

Total Credits: 06

(Credits: Theory-04, Practical-02)

(Total Lectures: Theory- 60, Practical-60)

Objectives:

Today's society is moving towards becoming more and more environmentally conscious. There is rising concern of environmental pollution, depleting resources, climate change, ozone depletion, heaps and heaps of landfills piling up, legislation which is getting stringent with strict environmental laws, rising cost of waste deposits and so on. We are faced with a challenge to work towards sustainable practices. Green chemistry has arisen from these concerns. It is not a new branch of chemistry but the way chemistry should be practiced. Innovations and applications of green chemistry in education has helped companies not only gain environmental benefits but at the same time achieve economic and societal goals also. This is possible because these undergraduate students are ultimate scientific community of tomorrow.

Learning Outcomes:

By the end of this course, students will be able to:

- Understand the twelve principles of green chemistry and will build the basic understanding of toxicity, hazard and risk of chemical substances.
- Understand stoichiometric calculations and relate them to green chemistry metrics. They will learn about atom economy and how it is different from percentage yield.
- Learn to design safer chemical products and processes that are less toxic than current alternatives. Hence, they will understand the meaning of inherently safer design for accident prevention and the principle "what you don't have can't harm you"
- Understand benefits of use of catalyst and bio catalyst, use of renewable feed stock which helps in energy efficiency and protection of the environment, renewable energy sources, importance of reactions in various green solvents.
- Appreciate the use of green chemistry in problem solving skills, critical thinking and valuable skills to innovate and find out solution to environmental problems. Thus the students are able to realise that chemistry can be used to solve rather than cause environmental problems.
- Green chemistry is a way to boost profits, increase productivity and ensure sustainability with absolute zero waste. Success stories and real world cases also motivate them to practice green chemistry. These days customers are demanding to know about a product: Is it green? Does it contribute to global warming? Was it made from non depletable resources? Students have many career opportunities as "green" is the path to success.

Unit 1:

Introduction to Green Chemistry

What is Green Chemistry? Some important environmental laws, pollution prevention Act of 1990, emergence of green chemistry, Need for Green Chemistry. Goals of Green Chemistry. Limitations/ Obstacles in the pursuit of the goals of Green Chemistry

(Lectures:5)

Unit 2:

Principles of Green Chemistry and Designing a Chemical synthesis

Twelve principles of Green Chemistry and their explanation with examples

Special emphasis on the following:

- Prevention of Waste/ by products; maximum incorporation of the materials used in the process into the final products, Environmental impact factor, waste or pollution prevention hierarchy
- Green metrics to assess greenness of a reaction, e.g. Atom Economy, calculation of atom economy of the rearrangement, addition, substitution and elimination reactions.
- Prevention/ minimization of hazardous/ toxic products reducing toxicity
- Risk = (function) hazard x exposure
- Designing safer chemicals with minimum toxicity yet has the ability to perform the desired functions
- Green solvents: super critical fluids with special reference to carbon dioxide, water as a solvent for organic reactions, ionic liquids, fluorous biphasic solvent, PEG, solventless processes, solvents obtained from renewable resources and how to compare greenness of solvents
- Energy requirements for reactions – alternative sources of energy: use of microwaves, ultrasonic energy and photochemical energy
- Selection of starting materials; should be renewable rather than depleting, Illustrate with few examples such as biodiesel and polymers from renewable resources (such as green plastic)
- Avoidance of unnecessary derivatization – careful use of blocking/protecting groups
- Use of catalytic reagents (wherever possible) in preference to stoichiometric reagents; catalysis and green chemistry, comparison of heterogeneous and homogeneous catalysis, biocatalysis, asymmetric catalysis and photocatalysis.

- Design for degradation: A product should not persist after the commercial function is over e.g. soaps and detergents, pesticides and polymers
- Strengthening/ development of analytical techniques to prevent and minimize the generation of hazardous substances in chemical processes.
- Prevention of chemical accidents designing greener processes, inherent safer design, principle of ISD "What you don't have cannot harm you", greener alternative to Bhopal Gas Tragedy (safer route to carcarbaryl) and Flixiborough accident (safer route to cyclohexanol) subdivision of ISD, minimization, simplification, substitution, moderation and limitation.

(Lectures:25)

Unit 3:

Examples of Green Synthesis/ Reactions

- Green Synthesis of the following compounds: adipic acid, catechol, disodium iminodiacetate (alternative to Strecker synthesis).
- Green Reagents: Non-phosgene Isocyanate Synthesis, Selective Methylation using dimethylcarbonate.
- Microwave assisted solvent free synthesis of copper phthalocyanine
- Microwave assisted reactions in water: Hofmann Elimination, methyl benzoate to benzoic acid and Decarboxylation reaction
- Ultrasound assisted reactions: sonochemical Simmons-Smith Reaction (Ultrasonic alternative to Iodine)

(Lectures:10)

Unit 4:

Real world case studies based on the Presidential green chemistry awards of EPA

- Surfactants for Carbon Dioxide – replacing smog producing and ozone depleting solvents with CO₂ for precision cleaning and dry cleaning of garments.
- A new generation of environmentally advanced wood preservatives: Getting the chromium and Arsenic out of pressure treated wood.
- An efficient, green synthesis of a compostable and widely applicable plastic (polylactic acid) made from corn.
- Healthier Fats and oils by Green Chemistry: Enzymatic Inter esterification for production of No Trans-Fats and Oils.
- Development of Fully Recyclable Carpet: Cradle to Cradle Carpeting.
- Using a naturally occurring protein to stimulate plant growth, improve crop quality, increase yields, and suppress disease.

(Lectures:10)

Unit 5:

Future Trends in Green Chemistry

Oxidation reagents and catalysts; Biomimcry and green chemistry, Biomimetic, Multifunctional Reagents; mechanochemical and solvent free synthesis of inorganic complexes; co crystal controlled solid state synthesis (C²S³); Green chemistry in sustainable development.

(Lectures:10)

Practical:

(Credits: 2, Laboratory periods: 60)

Chemistry Lab- Green chemistry

Characterization by m. pt., U.V.-Visible spectroscopy, IR spectroscopy, and any other specific method should be done (wherever applicable).

Safer starting materials

1. Preparation and characterization of nanoparticles of gold using tea leaves/silver nanoparticles using plant extracts.

Using renewable resources

2. Preparation of biodiesel from waste cooking oil and characterization (TLC, pH, Solubility, Combustion Test, Density, Viscosity, Gel Formation at Low Temperature and IR can be provided).

Use of enzymes as catalysts

3. Benzoin condensation using Thiamine Hydrochloride as a catalyst instead of cyanide.

Alternative green solvents

4. Extraction of D-limonene from orange peel using liquid CO₂ prepared from dry ice.
5. Mechanochemical solvent free, solid-solid synthesis of azomethine using p- toluidine and o-vanillin/p-vanillin (various other combinations of primary amine and aldehyde can also be tried).

Alternative sources of energy

6. Solvent free, microwave assisted one pot synthesis of phthalocyanine complex of copper(II).
7. Photoreduction of benzophenone to benzopinacol in the presence of sunlight.

Reducing waste

8. Designing and conducting an experiment by utilizing the products and by products obtained in above preparations which become waste otherwise if not used. This is done by critical thinking and literature survey.

Some representative examples:

- Use of nanoparticles as catalyst for a reaction
- Benzoin converted into Benzil and Benzil into Benzilic acid by a green method
- Use of azomethine for complex formation
- Rearrangement reaction from Benzopinacol to Benzopinacolone
- Conversion of byproduct of biodiesel to a useful product
- Students should be taught to do spot tests for qualitative inorganic analysis for cations and anions, and qualitative organic analysis for preliminary test and functional group analysis.

References:

Theory:

1. Anastas, P.T.; Warner, J.C.(1998),**Green Chemistry, Theory and Practice**, Oxford University Press.
2. Lancaster, M.(2016),**Green Chemistry An Introductory Text**.2nd Edition, RSC Publishing.
3. Cann , M. C. ;Connely,M. E.(2000), **Real-World cases in Green Chemistry**, American Chemical Society, Washington.
4. Matlack, A.S.(2001),**Introduction to Green Chemistry**, Marcel Dekker.
5. Alhuwalia,V. K.; Kidwai, M.R.(2005),**New Trends in Green chemistry**, Anamalaya Publishers.

Practical:

1. Kirchoff, M.; Ryan, M.A. (2002), **Greener approaches to undergraduate chemistry experiment**. American Chemical Society, Washington DC.
2. Sharma, R.K.; Sidhwani, I.T.; Chaudhari, M.K.(2013), **Green Chemistry Experiments: A monograph**, I.K. International Publishing House Pvt Ltd. New Delhi.
3. Pavia,D.L.; Lamponam, G.H.; Kriz, G.S.W. B.(2006),**Introduction to organic Laboratory Technique- A Microscale approach**,4th Edition, Brrooks-Cole Laboratory Series for Organic chemistry.
4. Wealth from Waste: A green method to produce biodiesel from waste cooking oil and generation of useful products from waste further generated. Indu Tucker Sidhwani et al. University of Delhi, Journal of Undergraduate Research and Innovation, Volume 1, Issue 1,February 2015, ISSN: 2395-2334.
5. Sidhwani, Tucker I.; Chowdhury, S. Greener alternatives to Qualitative Analysis for Cations without H₂S and other sulfur containing compounds, J. Chem. Educ. 2008, 85, 1099.
6. Sidhwani, Tucker I.; Chowdhury, S. et al., DU Journal of Undergraduate Research and Innovation, 2016, Volume 2, Issue 2, 70-79.
7. Dhingra, S., ;Angrish, C. Qualitative organic analysis: An efficient, safer, and economical approach to preliminary tests and functional group analysis. *Journal of Chemical Education*, 2011, 88(5), 649-651.

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1. Cann , M. C.; Umile, T.P. (2008), **Real world cases in Green chemistry** Vol 11, American chemical Society,Washington.
2. Benyus,J. (1997),**Innovations Inspired by nature**,Harper collins.
3. Garay,A. L; Pichon, A.; James,S.L. Chem Soc Rev, 2007, 36,846-855.

Teaching Learning Process:

- Conventional chalk and board teaching
- Power point presentations
- Interactive sessions
- Literature survey and critical thinking to design to improve a traditional reaction and problem solving
- Visit to a green chemistry lab
- Some motivating short movies in green chemistry especially in bio mimicry

Assessment Methods:

- Presentation by students
- Class Test
- Written Assignment
- End Semester University Theory and Practical Exams



DEPARTMENT OF COMMERCE
FACULTY OF COMMERCE AND BUSINESS
UNIVERSITY OF DELHI

COURSES OFFERED BY DEPARTMENT OF COMMERCE

Category I

(Single Core Discipline)

[UG Programme for Bachelor of Commerce (Honours) degree in three years]

DISCIPLINE SPECIFIC CORE COURSE -1 (DSC-1) –: Management Principles and

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Management Principles and Applications BCH: DSC-1.1	4	3	1	0	Pass in XII	NIL

Learning Objectives

The course aims to familiarize the learner with extant and emerging management theories and practices for reflective and holistic thinking on management principles and practices.

Learning outcomes

The Learning Outcomes of this course are as follows:

1. describe the various levels of management and applicability of management principles.
2. evaluate a company's competitive landscape as per Porter's Five-force model.
3. demonstrate various types of authority, delegation and decentralization in authority
4. demonstrate various types of leadership styles and identify the motivation techniques used by leaders.
5. discuss the impact of emerging issues in management.

Course Contents:

Unit	Unit wise weightage of marks (in %)	C&K*	A&A**
Unit 1: Introduction	15	√	√
Unit 2: Planning	25	√	√
Unit 3: Organising	20	√	√
Unit 4: Directing and Controlling	25	√	√
Unit 5: Salient Developments and Contemporary Issues in Management	15	√	√

*C&K- Comprehension & Knowledge

**A&A – Analysis & Application

SYLLABUS OF DSC-1

Unit 1: Introduction

Meaning and importance of management; Coordination mechanisms in organisations; Management theories- classical, neo-classical and modern constructions of management; Managerial functions; Managerial roles (Mintzberg); Managerial competencies. Indian Ethos for Management: Value-Oriented Holistic Management; Learning Lessons from Bhagavat Gita and Ramayana.

Unit 2: Planning

Organisational objective setting; Decision-making environment (certainty, risk, uncertainty); Techniques for individual and group decision-making; Planning vis-à-vis Strategy- meaning and elements of the business firm environment- micro, meso, and macro; Industry structure, Business-level strategic planning.

Unit 3: Organising

Decentralization and Delegation; Factors affecting organisational design; Departmentalization; Organisational structures and Organograms: traditional and modern, comparative suitability and changes over time; formal- informal organisations' interface.

Unit 4: Directing and Controlling

Motivation- meaning, importance and factors affecting motivation; Leadership- meaning, importance and factors affecting leadership, leadership styles, and followership.

Controlling- Principles of controlling; Measures of controlling and accountability for performance.

Unit 5: Salient Developments and Contemporary Issues in Management

Management challenges of the 21st Century; Factors reshaping and redesigning management purpose, performance and reward perceptions- Internationalisation, Digitalisation, Entrepreneurship & Innovation, Values & Ethics - Case studies on Indian corporates like Tata, Bhilwara Group, IOC and Godrej, Workplace diversity, Democracy and Sociocracy, Subaltern management ideas from India.

Practical Exercises:

The learners are required to

1. participate in a role-play activity for describing the various levels of management and applicability of management principles in defining the policies of the chosen organisation.
2. identify a company and evaluate its competitive landscape as per Porter's Five-force model.
3. a) prepare a comparative analysis of organizational structures of various companies.
b) create a simulation exercise in class to demonstrate various types of authority, delegation and decentralization in authority
4. demonstrate various types of leadership styles in the form of role-play and identify the motivation techniques used by leaders.
5. discuss the impact of emerging issues in management.

Suggested readings

- Chhabra, T. N. (2021). Business Organisation and Management. Sun India Publications. New Delhi.
- Chakraborty, S. K. (1997). Human Values For Managers. Wheeler Publishing. (Case Studies - Chapter 1, 2, 4 and 8)
- Drucker, P. F. (1954). The Practice of Management. Newyork: Harper & Row.
- Drucker, P. F. (1999). Management Challenges for the 21st Century. Harper Collins Publishers Inc.
- Gupta, C. B., & Mathur, S. (2020). Management Principles and Applications. Scholar Tech Press, Delhi.
- Griffin. (2013). Management Principles and Application. Cengage.
- Koontz, H., & Weihrich, H. (2012). Essentials of Management: An International and Leadership Perspective. McGraw Hill Publications
- Kumar, P. (2019). Management: Principles and Applications. JSR Publication House LP, Delhi.
- Laasch, O. (2022). Principles of Management, 2e, Sage Textbook
- Mahajan, J. P., & Mahajan A. (2016). Management Principles and Applications. Vikas Publications.
- Mitra, J. K. (2018). Principles of Management. Oxford University Press.
- Rao, V. S. P. (2020). Management Principles and Applications. Taxmann Publications.
- Sharlekar, S. A. (2010). Management (Value-Oriented Holistic Approach). Himalaya Publishing House. (Chapters 3 and 4)
- Singh, B. P., & Singh, A. K. (2002). *Essentials of Management*. New Delhi. Excel Books Pvt. Ltd.
- Tulsian, P. C., & Pandey, V. (2021). Business Organisation & Management. Pearson Education, India

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Human Resource Management

BCH: DSC- 2.3

Objective: The course aims to acquaint the learners with the techniques and principles to manage human resources of an organisation for better performance and workplace environment.

Learning Outcomes: After the completion of the course, the learners will be able to:

1. demonstrate necessary skills to design an HR policy that improves the work environment.
2. analyse job requirements and prepare a Human Resource Plan;
3. match the skills with the job requirement and preparation of report on job analysis;
4. organize an onboarding programme in an organisation;
5. describe and apply the use of different kinds of training and development strategies in real life situations;
6. organize counselling sessions for employees for better psychological health;
7. create incentive schemes for diverse job roles to enhance satisfaction and improve retention of employees;
8. design HR policies for employee engagement and experience; grievance redressal, employee health, safety, welfare, and social security, for employees to attain stress-free work life balance.

Course Contents:

Unit	Unit wise weightage of marks (in %)	C&K*	A&A**
Unit 1: Introduction to Human Resource Management	20	√	√
Unit 2: Procurement of Human Resource	20	√	√
Unit 3: Upgrading Employees: Training and Development	20	√	√

Unit 4: Performance Appraisal and Compensation Management	20	√	√
Unit 5: Employee Maintenance, Engagement and Emerging Horizons	20	√	√

*C&K- Comprehension & Knowledge

**A&A – Analysis & Application

Unit 1: Introduction to Human Resource Management

Concept and functions; Role, status and competencies of HR manager; HR policies; Evolution of HRM; Emerging challenges of HRM- Workplace diversity, empowerment, downsizing, VRS, work life balance.

Unit 2: Procurement of Human Resource

Human resource planning- Quantitative and qualitative dimensions; Job analysis – Job description and job specification; Recruitment – concept and sources; Selection – concept and process; Test and interview; Placement, induction and socialization; Retention of employees.

Unit 3: Upgrading Employees: Training and Development

A. Concept and significance; Role specific and competency-based training; Training and development methods – Apprenticeship, understudy, job rotation, vestibule training, case study, role playing, hands on, shadowing, e-learning, sensitivity training, In-basket, management games, conferences and seminars, coaching and mentoring, management development programs; Training process outsourcing.

B. Scope of training; On board, soft skills, technical skills, product & service, quality, anti-harassment, legal.

Unit 4: Performance Appraisal and Compensation Management

Performance appraisal- Nature, objectives and process; Performance management; Methods of performance appraisal; Potential appraisal; Employee counselling; Job Transfer and promotion.

Compensation - Concept and policies, Base and supplementary compensation; Individual, group and organisation incentive plans; Fringe benefits; Performance linked compensation; Employee stock option; Pay band compensation system; Job evaluation.

Unit 5: Employee Maintenance, Engagement and Emerging Horizons

Employee health and safety; Employee welfare; Social security (excluding legal provisions);

Employer-employee relations; Grievance handling and redressal; Industrial disputes: Causes and settlement machinery, Stress-free environment, Rejuvenation breaks and leisure activities.

Emerging Horizons; Redundant manpower, e-HRM; Human Resource Information System (HRIS); HR Audit, Emerging job opportunities, Talent management, Employee burnout, Work life balance, Work from Home.

Practical Exercises:

The learners are required to:

1. design a human resource plan.
2. conduct orientation cum induction programme.
3. develop case studies that reflect alternative training and development strategies catering to real life problems.
4. hold mock counselling sessions for employees.
5. design team building activities.
6. devise incentive plans for a diverse workforce.
7. participate in simulation activities on work life balance. and analyse them.
8. draft a procedure for grievance redressal.

Suggested Readings:

- Aswathappa, K. & Dash, S. (2021). Human Resource Management-Text and cases, Ninth Edition, Tata McGraw-Hill.
- Chhabra, T. N. & Chhabra, M. (2020). Human Resource Management. Delhi:Sun India Publications.
- Decenzo, D.A., & Robbins, S. P. (2009). Fundamental of Human Resource Management. New Jersey; Wiley.
- Dessler G. & Varrkey B. (2020). Human Resource Management, Sixteenth Edition Pearson Paperback.
- French, W. L. (2006). Human Resource Management. Boston: Houghton Mifflin.
- Gupta, C. B. (2018). Human Resource Management. Delhi: Sultan Chand & Sons.
- Pattanayak, B. Human Resource Management, 6th ed. PHI learning
- Prasad, L.M. (2018). Human Resource Management, Delhi: Sultan Chand & Sons
- Rao, V. S. P. (2020). Human Resource Management. Delhi: Second edition,Taxmann's.
- Sengupta, A. (2018), Human Resource Management, Sage Textbook

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Leadership and Team Development

BCH: SEC- 4.1

Objective: The course aims to enable the learners to understand key leadership theories and be able to apply them effectively in developing solutions to relevant case studies and issues.

Learning Outcomes: After completion of the course, learners will be able to:

1. evaluate the traits of successful leader;
2. create the leadership self-assessment tool to assess their leadership styles;
3. differentiate between different leadership styles with real life examples and demonstrate role play as a leader in a team in the class;
4. analyse the strategies of building an effective team with a real-life example;
5. design shared vision and articulate business strategy of a hypothetical organisation to create high performing teams.

Course Contents:

Unit	Unit wise Weightage of Marks (in %)	C&K*	A&A**
Unit 1: Introduction	20	√	√
Unit 2: Leadership Styles	20	√	√
Unit 3: Leading and Empowering	20	√	√
Unit 4: Team Building	20	√	√
Unit 5: Leading Transformation through High Performance Teams	20	√	√

*C&K- Comprehension & Knowledge

**A&A – Analysis & Application

Unit 1: Introduction

Leadership: Meaning & Concept; Role and Functions of a Leader; The Great Man Theory; Trait Theory; Leadership & 3 Forces Model; Power: Definition & Types; Ways

to use Power for Effective Leadership; Creating Appropriate Power Base; Current Trends in Leveraging of Power.

Unit 2: Leadership Styles

Self & Personality in Leadership; Leadership Traits & Motive Profile. Lewin's (Iowa) Leadership Styles: Autocratic, Democratic, Free Reign; Contingency Theories of Leadership: Fiedler's Contingency Model, The Path-Goal Theory, Hersey-Blanchard Situational Leadership Theory; Transactional Leadership; Charismatic Leadership; Transformational Leadership.

Unit 3: Leading and Empowering

Leader as a Coach; Leader as a Mentor; Empowering Skills; Delegation of Authority; Decentralization; Service Leadership; Servant Leadership; Ethics & Leadership; Sustainable Leadership; Collective Leadership. Leadership Development Practices in various organisations.

Unit 4: Team Building

Team: Meaning, Characteristics, Types; Team Development Stages - Tuckman's Model, etc.; Team Building; Team Leader; Belbin Team Roles- Action Oriented Roles, People Oriented Roles, and Cerebral Roles; Team Meetings and Leadership; Ginnett-Team Effectiveness Leadership Model (TELM); High Performance Teams & Leadership.

Unit 5: Leading Transformation through High Performance Teams

Leading Transformation: Context, Shared Vision, Strategy. Wheel of Transformation Model. Determinants of High Performing Teams: 4 Cs- Context, Composition, Competencies, Change; Leading Innovative Teams- Employee First Customer Second, Cross-Cultural Teams, Virtual Teams.

Practical Exercises:

The learners are required to:

1. identify a Leader of your choice, prepare and present a report highlighting the important traits that have contributed to the effectiveness of that Leader.
2. using the leadership self-assessment tool available at the link <https://www.zerotothree.org/resources/413-leadership-self-assessment-tool>, rate themselves with respect to their leadership style. Prepare and present a report of their analysis.
3. identify organisations where:
 - a) model of Service Leadership is being followed,
 - b) model of Sustainable Leadership is being followed,
 - c) and Collective Leadership is followed;

present a report on their key learnings from its Leadership.

4. read a case study of Starbucks Company on Team Building. analyse its strategy of building an effective team and present a report of their key learnings.
5. analyse the organisation of the Leader chosen in Exercise 1 in terms of implementation of the concept of shared vision, well-articulated strategy, 4 Cs of high performing teams and present the findings in front of the class and respond to the questions raised by the learners;
6. analyse and interpret case study on Employee First Customer Second: Turning Conventional Management Upside Down by Vineet Nayar or any other similar case study.

Suggested Readings:

- Dyer, W. G. J., Dyer, J. H., & Dyer, W. G. (2013). Team Building: Proven Strategies for Improving Team Performance. New Jersey: John Wiley & Sons.
- Day, D. V. (2014). The Oxford Handbook of Leadership and organisations. Oxford, New York: Oxford University Press.
- Northouse, P. (2018). Leadership: theory and practice. California: SAGE Publications Inc.
- Mittal, R. (2015). Leadership: Personal Effectiveness and Team Building. Uttar Pradesh: Vikas Publishing House Pvt. Ltd.
- McGrath, E. H., S. J. Basic Managerial Skills for All, 9th ed. PHI learning
- Illink, J. (2020). Leadership Strategy and Tactics: Field Manual. New York: Macmillan Publishers.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Basics of Organisation Behaviour

BCH: GE- 4.1

Objective: The course aims to enhance the understanding of the basic concept of Organisational Behaviour (OB) and the working of modern organisations. It focuses on the study of human behaviour at three levels: Individual, Interpersonal and Group.

Learning Outcomes: After completion of the course, learners will be able to:

1. analyse the working of organisations and human Behaviour.
2. apply the concepts of OB in managing people at the workplace.
3. critically evaluate the role of motivation theories in guiding human behaviour.
4. develop understanding of diverse leadership styles and strategies.
5. summarise the ways to build supportive organisational culture.

Course Contents:

Unit	Unit wise weightage of marks (in %)	C&K*	A&A**
Unit 1: Introduction	15	√	
Unit 2: Individual Behaviour	20	√	√
Unit 3: Communication and Motivation	25	√	√
Unit 4: Group Behaviour and Leadership	25	√	√
Unit 5: Organisational Dynamics	15	√	√

*C&K- Comprehension & Knowledge

**A&A – Analysis & Application

Unit 1: Introduction

Introduction to organisational studies, importance of organisations, relationship between management and organizing function, emergence and development of Organisation Behaviour, Organisation Behaviour in changing times.

Unit 2: Individual Behaviour

Individual characteristics - Inherited characteristics vs. learned characteristics; Personality- concept and types; Components of Attitude, organisational commitment

and job satisfaction as work attitude; Sources and types of values; role of values and beliefs in the making of an individual.

Unit 3: Communication and Motivation

Communication - concept, process and types, essentials of effective communication; Johari Window.

Why people work - Maslow's Need Hierarchy theory, intrinsic and extrinsic rewards, monetary and non-monetary incentives, contemporary motivation practices.

Unit 4: Group Behaviour and Leadership

Importance of groups, groups vs. teams;

Leadership - trait theory, nature vs. nurture leadership; difference between a leader and a manager; Leadership styles (Likert) - exploitative, benevolent, consultative, and participative; making of great leaders, contemporary leadership practices.

Unit 5: Organisational Dynamics

Organisation as a system; organisational structure, relationship between organisation structure, system, and strategy; Managing conflict - reasons, types and resolutions; Managing stress.

Practical Exercises:

The learners are required to:

1. undertake a group activity to identify personality type.
2. role play on JOHARI Window
3. conduct a primary survey to study the dynamics of group Behaviour.
4. apply and test various stress management techniques like deep breathing, exercise, and mindfulness.
5. identify the innovative ways of motivation practiced by contemporary organisations.

Suggested Readings:

- Greenberg, J. (2015). Behaviour in organisations. Pearson Education India. Tenth edition.
- Hersey, P. K., Blanchard, D., & Johnson, D. (2013). Management of organisational Behaviour. Pearson.
- Luthans, F. (2017). Organisational Behaviour-An evidence based approach. McGraw-Hill Education, Twelfth Edition.
- Pareek, U. (2014). Understanding Organisational Behaviour. Oxford University Press.
- Robbins, S. T., Judge, T. A. (2019). Essentials of organisational Behaviour. Pearson.
- Singh, A. K., & Singh, B. P. Organisational Behaviour. New Delhi: Excel Books Pvt. Ltd.
- Singh, K. (2015). Organisational Behaviour: Texts & Cases (3rd Edition). India: Pearson. Additional Resources.

Collective Bargaining & Negotiation Skills

BCH: GE- 8.3

Objective: The course aims to promote an understanding of theories and practical issues related to collective bargaining and to build awareness of managerial skills required for effectively negotiating with people.

Learning Outcomes: After completion of the course, learners will be able to:

1. illustrate different theories of collective bargaining;
2. analyse the practical aspects of collective bargaining process;
3. evaluate types of negotiation and manage a negotiation process;
4. demonstrate the vital skills during a negotiation process.

Course Contents:

Unit	Unit wise Weightage of Marks (in %)	C&K*	A&A**
Unit 1: Collective Bargaining	20	√	
Unit 2: Collective Bargaining in India	20	√	√
Unit 3: Negotiating a Contract	20	√	
Unit 4: Negotiation Skills	20	√	√
Unit 5: Post Negotiation Process	20	√	√

*C&K- Comprehension & Knowledge

**A&A – Analysis & Application

Unit 1: Collective Bargaining

Concept and Characteristics of Collective Bargaining; Collective Bargaining and Stakeholders; Theories of Collective Bargaining: Hicks' Analysis of Wage Setting under Collective Bargaining, Conflict-choice model of negotiation, A Behavioural Theory of Labor Negotiation.

Unit 2: Collective Bargaining in India

Legal Framework of Collective Bargaining; Units and Levels of Collective Bargaining, Coverage and Duration of Agreements, International Collective Bargaining; Factors Influencing Bargaining Units and Levels; Subject Matters of Collective Bargaining; Hurdles in the Bargaining Process.

Unit 3: Negotiating a Contract

Meaning of Negotiations; Features and Elements of Negotiation; Types of Negotiations: Distributive, Integrative; Steps in Pre-negotiation phase of collective bargaining – Preparing the Charter of Demand(s), Creating the Bargaining Team, Submission of COD, Costing of Labor Contracts. Negotiation process: Preparing, Opening, Bargaining, Closing, PRAM Model.

Unit 4: Negotiation Skills

Negotiation process; Effective negotiation – Preparing for negotiation, Negotiating Integrative agreements; Negotiation and Collective Bargaining - Approaches and Phases in Collective Bargaining, Coalition and Fractional Bargaining, Impasse Resolution, Contract Ratification.

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Unit 5: Post Negotiation Process

Post-negotiation – Administration of the Agreement, Grievance Management, Binding up the Wounds. Distributive vs. Integrative Bargaining; Coalition and Fractional Bargaining; Post-negotiation - Grievance management. Emerging scenario in collective bargaining; Phases in collective bargaining.

Practical Exercises:

The learners are required to:

1. participate in an exercise wherein they will be divided into groups comprising of two teams i.e., trade union and management. Simulation exercise to be conducted in classroom on collective bargaining between both the teams (trade union and management);
2. interpret and analyse case study on collective bargaining at Nokia India; Cummins India Limited; Honda Motorcycle & Scooter (India) Private Limited and similar organisations;
3. participate in stimulation exercise in groups (created in previous unit) on preparation of Charter of Demands;
4. conduct role play in the classroom to exhibit Negotiation Skills by learners in resolving conflicts between management and trade unions;
5. participate in simulation exercise on preparing draft of grievance handling policy;
6. interpret and analyse case study on Grievance handling at TATA Steel Ltd. and similar organisations.

Suggested Readings:

- Kapoor, P. (2011). Counselling and Negotiation Skills for Managers. Delhi: Dreamtech Press.
- Lewicki, R., Barry, B., & Saunders, D. (2019). Negotiation. 7th Edition. New York: McGraw-Hill Education.

- Sinha, P. R. N., Sinha, I. B., & Shekhar, S. S. (2017). Industrial Relations, Trade Unions and Labour Legislation. 3rd Edition. Delhi: Pearson Education.
- Venkataratnam, C. S., & Dhal, M. (2017). Industrial Relations. 2nd Edition. Delhi: OUP India.

Note: Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.

Auditing

BCH: DSE- 5.5

Objective: The course aims to provide knowledge of auditing concepts, principles, procedures, and techniques in accordance with current legal requirements.

Learning Outcomes: After completion of the course, learners will be able to:

1. summarise the basic concepts of auditing and acquaint with latest developments in the area of auditing.
2. describe the need of auditing and the role of auditors.
3. demonstrate the principles, procedures and techniques of auditing.
4. interpret the contents of audit reports.
5. analyse the provisions of Companies Act, 2013 relating to auditor and auditing.

Course Contents:

Unit	Unit wise weightage of marks (in %)	C&K*	A&A**
Unit 1: Introduction	15	√	√
Unit 2: Internal Control and Audit Procedures	20	√	√
Unit 3: Vouching and Verification	25	√	√
Unit 4: Company Auditors	25	√	√
Unit 5: Audit Report	15	√	√

*C&K- Comprehension & Knowledge

**A&A – Analysis & Application

Unit 1: Introduction

Meaning and objectives of auditing; nature and scope of auditing; basic principles and techniques of auditing; Classification of audit; Audit in computerised environment.

Unit 2: Internal Control and Audit Procedures

Audit planning and documentation; audit evidence; audit sampling, internal check, internal control, and internal audit.

Unit 3: Vouching and Verification

Vouching – Meaning and objectives; Procedure of Vouching; Vouching of Cash and Bank, Purchase and Sales; Verification of Assets and Liabilities; Inventory Valuation.

Unit 4: Company Auditors

Qualifications and disqualifications; appointment and rotation, removal, remuneration, rights, duties and liabilities of Auditors.

Unit 5: Audit Report and Special Audit

Contents and types of audit report, Qualified and Unqualified report; National Financial Reporting Authority. Special Audit: Banking and Insurance company; Forensic Audit.

Practical Exercises:

The learners are required to:

1. critically analyse auditing-based case studies with the help of focussed group discussions.
2. examine the audit reports published by indian companies.
3. identify and verify any five-documentary evidence in connection with sales, purchases of goods/machineries, payment of expenses and liabilities.
4. prepare internal control questionnaire and internal control checklist for audit of an organisation/business firm.
5. examine the P & L account and balance sheet of listed companies and identify gaps for forensic audit.

Suggested Readings:

- Ainapure, V., & Ainapure, M. Auditing & Assurance. Delhi: PHI Learning.
- Garg, P. Auditing & Assurance. Delhi: Taxmann Publication.
- Kumar, R., & Sharma, V. Auditing Principles and Practice. Delhi: PHI Learning.
- Roy(2019). Auditing & Assurance. Oxford University Press
- Singh A. K., & Gupta, L. Auditing Theory and Practice. Galgotia Publishing

Additional Readings:

- Kamal, G. Contemporary Auditing. Delhi: Tata Mcgraw Hill Publishing Company.
- Tandon, B. N., Sudharsnam, S., & Sundharabahu, S. A. Hand book on Practical Auditing. New Delhi: S. Chand Publishing.

Note:

- (i) Suggested readings will be updated by the Department of Commerce and uploaded on Department's website.
- (ii) Standard on Auditing and Statements on Auditing Practice issued by the ICAI shall be referred wherever necessary.

Department of Economics
University of Delhi, Delhi

Minutes of Meeting

Subject : Pool of Discipline Specific Electives (DSE)
Semester : V
Course : Environmental Economics – ECON039
Date & Time: 14-May at 11:00 AM
Venue : Department of Economics
Chair : Surender Kumar and Swati Saini

The meeting was attended by the following teachers:

1	V. Sushmitha Naidu	Sri Venkateswara College
2	Apoorva Gupta	Hansraj College
3	Anand Kumar	College of Vocational Studies
4	Pradip Kumar Biswas	College of Vocational Studies
5	Dr. Apoorva Gupta	Hansraj College
6	Manjula Singh	St. Stephen's College
7	Dr. Anu Satyal	College of Vocational Studies
8	Dr. Jai Ram Meena	Shaheed Bhagat Singh College
9	Swaran Lata Meena	ARSD college
10	Rajan Kumar	Motilal lal nehru college evening
11	Dr Rashmi Chaudhary	Kalindi College
12	Deepti Sethi	Janki Devi Memorial College
13.	Sujayata Choudhry	Indraprastha College for Women

14	Pooja sharma	Daulat ram college
15	Uma	LBC
16	Manoj Kumar	Shyam Lal College (Eve.)
17	Rupali Khanna	Kamala Nehru College
18	Vandita Sahay	Kamala Nehru College

It was decided to constitute a sub-committee to recommend the topic-wise reading list. A Sub-Committee of the following teachers was formed:

Dr Pooja Sharma, Daulat Ram College

Dr Manoj Kumar, Shyam Lal College (Eve.)

Dr Vandita Sahay, Kamala Nehru College

Dr Rupali Khanna, Kamala Nehru College

The following recommendations were made by the subcommittee:

1. Introduction (8 hours)

-Kolstad:

Chapter 1

Chapter 3 (Do sections I, II, III (Skip section III.B pp 47-52) and IV

Chapter 4

-Don Fullerton and Robert Stavins (1998) "How Economists see the environment?", NATURE, Vol. 395, Oct 1, 1998, pp. 433-434. [Reprinted as Chapter 1 in Stavins (2012).]

- State of the Environment Report, 2015

<https://moef.gov.in/wp-content/uploads/2019/09/Final-SoER-2015-India-.pdf>

2. The Design and Implementation of Environmental Policy (15 hours)

- Kolstad :

Chapter 11 (skip sections II and IV),

Chapter 12 (Skip section V)

- *Schmalensee, Richard and Robert N. Stavins* (2017). “The design of environmental markets: What have we learned from experience with cap and trade?” Oxford Review of Economic Policy, Vol. 33, No. 4, pp. 572-588.

- *Blackman, Allen, Li, Z., and Liu, A. A.* (2018). “Efficacy of command-and-control and market-based environmental regulation in developing countries,” Annual Review of Resource Economics, Vol. 10, pp. 381-404.

3. Measuring the Benefits of Environmental Improvements (15 hours)

- *Kolstad*:

Chapter 7: Skip Section VI (Discrete Choice). Do all other sections.

Chapter 8: Do p. 147 and Section IV (skip section IV.E)

Chapter 10.

4. International Environmental Problems (7 hours)

Jonathan Harris and Brian Roach (2018). Environmental and Natural Resource Economics: A Contemporary Approach, Routledge. Chapters 12, 13.

Internal Assessment and Final Exam

Marks allocation in the final exam question paper would be: 90 marks (Maximum marks)

Internal Assessment: Two tests of 12 marks each

Continuous Assessment: Projects, Presentations, Educational Excursions, Case studies, Problem-solving in class.

Guidelines for Paper Examiners:

- Marks distribution in the Question paper be maintained in proportion to the lectures allocated to the topics.
- Students should be asked to answer 5 questions out of 7 to 8 questions, each of 18 marks.
- Each question must have two parts, part a and part b. Within each part, multiple parts may be avoided to maintain less lengthy question papers.
- One of the choices of the questions must contain a short note where students have to choose three parts out of 5 to 6 sub-parts. Each three-part will carry 9 marks each.

Readings: Charles Kolstad. *Intermediate Environmental Economics*, Oxford University Press, 2nd edition (2012). [[Indian reprint available.](#)]

Don Fullerton and Robert Stavins (1998) "How Economists see the environment?", NATURE, Vol. 395, Oct 1, 1998, pp. 433-434. [Reprinted as Chapter 1 in Stavins (2012).]

State of the Environment Report, 2015

<https://moef.gov.in/wp-content/uploads/2019/09/Final-SoER-2015-India-.pdf>

Schmalensee, Richard and Robert N. Stavins (2017). "The design of environmental markets: What have we learned from experience with cap and trade?" Oxford Review of Economic Policy, Vol. 33, No. 4, pp. 572-588.

- *Blackman, Allen, Li, Z., and Liu, A. A.* (2018). "Efficacy of command-and-control and market-based environmental regulation in developing countries," Annual Review of Resource Economics, Vol. 10, pp. 381-404

Jonathan Harris and Brian Roach (2018). Environmental and Natural Resource Economics: A Contemporary Approach, Routledge. Chapters 12, 13.

DISCIPLINE SPECIFIC CORE COURSE – 2 (DSC-2): European Classical Literature

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 2- European Classical Literature	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives:

The Learning Objectives of this course are as follows:

- To offer students a basic understanding of the mode of thought and understanding in classical Europe and contextualize the western classical texts within literary studies in a scholarly manner.

Learning outcomes:

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to gain an understanding of the classical, that is valuable in itself and as a frame of reference for subsequent periods of literary studies

SYLLABUS OF DSC- 2

UNIT – I (20 Hours)

1. Homer: *The Odyssey*

UNIT – II (20 Hours)

1. Aristotle: *Poetics*
2. Sophocles: *Antigone*

UNIT – III (20 Hours)

1. Aristophanes: *Lysistrata*

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings (if any):

1. Plato, 'Book X', *The Republic*. tr. Desmond Lee, London: Penguin, 2007.
2. Horace, 'Ars Poetica', *Horace: Satires, Epistles and Ars Poetica*. tr. H. Rushton Fairclough, Cambridge Mass.: Harvard University Press, 2005.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 3 (DSC-3): Indian Classical Literature

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Indian Classical Literature	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of Indian classical literary tradition.
- To introduce students to a rich and diverse literature from two classical languages of India, Sanskrit and Tamil.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to gain knowledge of the aesthetic and cultural values that serve as the groundwork for later developments in Indian philosophical and social change.

SYLLABUS OF DSC-3

UNIT – I (20 Hours)

1. Vyasa. Selections from *The Mahabharata*, from *The Mahabharata of Krishna-Dwaipayana Vyasa*, trans. K. M. Ganguli (Delhi: Munshiram Manoharlal Publishers, 2012).

- a) 'The Dicing' and 'Sequel to Dicing', Book 2, Sabha Parva Section XLVI-LXXII
- b) 'The Temptation of Karna', Book 5, Udyog Parva, Section CXL-CXLVI.
- c) 'Krishna's Peace Proposal', Book 5, Udyog Parva, Section LXXXIX-CXXXI

UNIT – II (20 Hours)

1. Kalidasa. *Abhijnanasakuntalam*, trans. Chandra Rajan, in *Kalidasa: The Loom of Time*. Penguin Classics, 1989, reprint 2000.

UNIT – III (20 Hours)

1. Ilango Atikal. 'The Book of Vanci', *Cilappatikaram*. trans. R. Parthasarathy (Columbia University Press, 1993; Penguin Books India, 2004).

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Bharata Muni. Selections from *Natyasastra*. (i) Chapter 6, 'The Sentiments'; (ii) Chapter 20, 'Ten Kinds of Play'; (iii) Chapter 35, 'Characteristics of the Jester', trans. Manomohan Ghosh, Calcutta: Asiatic Society of Bengal, 1951. pp105-17; 355-74; 548-50
2. Osho. Selections from *Krishna: The Man and His Philosophy*. (i) Krishna is Complete and Whole (ii) Draupadi: A Rare Woman (iii) Action, Inaction and Non-Action (iv) Rituals, Fire and Knowledge, Delhi: Jaico Publishing House, 1991.
3. Kapoor, Kapil. *Indian Knowledge System Vol. 1*. New Delhi: D.K. Printworld Pvt. Ltd., 2005. pp 1-31
4. Gerow, Edwin, et al. 'Indian Poetics', *The Literatures of India: An Introduction*. ed. Edward. C. Dimock et al, Chicago: University of Chicago Press, 1974. pp 115-143
5. Venkatachalapathy, R. 'Introduction', *Love Stands Alone: Selections from Tamil Sangam Poetry*. Delhi: Penguin Classics, 2013. pp XIII-XLI; 25; 45; 70; 186

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Essential/recommended readings- as listed in the units

Suggestive readings (if any):

1. Greenblatt, Stephen. *Shakespearean Negotiations: The Circulation of Social Energy in Renaissance England*. Oxford: Clarendon P, 1988.
2. Adelman, Janet. *Suffocating Mothers: Fantasies of Maternal Origin in Shakespeare's Plays, Hamlet to The Tempest*. New York and London: Routledge, 1992.
3. Dollimore, Jonathan and Alan Sinfield eds. *Political Shakespeare*. Ithaca and London: Cornell UP, 1985.
4. Black, Jeremy Black. *England in the Age of Shakespeare*. Bloomington: Indiana UP, 2019.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE– 6 (DSC-6): 18th Century Literature

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
18 th Century Literature	4	3	1	0	Passed Class XII with English from List A in CUET	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To recognise a continuing sense of the evolution of literary studies in English, so that the quiet revolutions of the eighteenth century in England resonate with significance in contemporary times.
- To define the period under survey through a combination of genres to focus on movements of empire, capital and emancipation.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to illustrate the ways in which the 'Age of Reason' shapes contemporary life.
- Students will be able to interpret the ways in which major lines of thought and action may have understated beginnings.

SYLLABUS OF DSC-6

UNIT – I (14 weeks-1 hour/week)

1. Alexander Pope: *Rape of the Lock*

UNIT – II (14 weeks-1 hour/week)

2. Jonathan Swift: *Gulliver's Travels*

UNIT – III (14 weeks-1 hour/week)

3. Oliver Goldsmith: *The Vicar of Wakefield*

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Butler, Marilyn. *Romantics, Rebels and Reactionaries: English Literature and Its Background, 1760-1830*. Oxford: Oxford University Press, 1981.
2. Habermas, Jurgen. *The Structural Transformation of the Public Sphere: An Inquiry into the Category of Bourgeois Society*. 1962. Cambridge, Mass: MIT, 1989.
3. Nussbaum, Martha. *The Cosmopolitan Tradition: A Noble but Flawed Ideal*. Cambridge, Mass: Harvard University Press, 2019.
4. Hobsbawm, Eric. *The Age of Revolution: Europe 1789-1848*. London: Wendenfeld and Nicholson, 1962.
5. 'Pope's Intellectual Character: Pope and Dryden Compared', from 'The Life of Pope', *The Norton Anthology of English Literature*, vol. 1, ed. Stephen Greenblatt, 8th edn. New York: Norton, 2006. pp 2693–2694, 2774–2777
6. Defoe, Daniel. 'The Complete English Tradesman' (Letter XXII), 'The Great Law of Subordination Considered' (Letter IV), & 'The Complete English Gentleman', *Literature and Social Order in Eighteenth-Century England*. ed. Stephen Copley, London: Croom Helm, 1984.

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical/ Practice			
GE-12 Contemporary India: Women and Empowerment	4	3	1	0	Passed Class XII	NIL	English

Learning Objectives

The Learning Objectives of this course are as follows:

- To outline and define the basic theories about gender, be it feminism, queer studies or masculinity studies.
- To identify literary texts that prioritise issues of gender in India.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to interpret and examine gender politics at work within a text and read social change through the lens of gender.
- Students will be able to assess the knowledge of gender theory and its evolution in their everyday life.

SYLLABUS OF GE- 12

UNIT – I (14 weeks-1 hour/week)

UNIT I: Concepts

- Sex and Gender -- social construction of gender; socialisation into gender
- Femininities and masculinities -- normative gender privilege; heteronormativity
- Patriarchy -- history of the efforts to undo feminism

ESSENTIAL READINGS:

1. Kamble, Baby. 'Our Wretched Lives', *Women Writing in India: 600 BC to the Early Twentieth Century*. Eds. Susie Tharu and K Lalitha, Delhi: OUP, 1997. pp 307-311
2. Rassundari Devi, Excerpts from *Amar Jiban*, *Women Writing in India: 600 BC to the Early Twentieth Century*. Eds. Susie Tharu and K Lalitha, Delhi: OUP, 1997. pp 190-202

3. Begum Rokeya Shekhawat Hossain, 'Sultana's Dream', *Women Writing in India: 600 BC to the Early Twentieth Century*. Eds. Susie Tharu and K Lalitha, Delhi: OUP, 1997. pp 340-351

4. Geetha, V. *Patriarchy*. Kolkata: Stree, 2007. pp 3-61

UNIT – II (14 weeks-1 hour/week)

UNIT II: Intersections

- Women and caste, religion, class, sexualities, race, disability
- Women and environment, technology, development
- Women and access to resources: employment, health, nutrition, education
- Women and reproductive work: singleness, marriage, motherhood, symbolical biological surrogacy and parenting, abortion, and other rights over own body

ESSENTIAL READINGS:

5. Devi, Mahasweta. 'Bayen', *Five Plays*. trans. Samik Bandyopadhyay, Calcutta: Seagull, 2009.

6. John, Mary. 'Feminism Poverty and the Emergent Social Order', *Handbook of Gender*. ed. Raka Ray, Delhi: Oxford University Press, 2012.

7. Kasturi, Leela. 'Report of the Sub-Committee Women's Role in Planned Economy National Planning Committee (1947)', *Feminism in India*. ed. Maitrayee Chaudhuri, Delhi: Zed, 2005. pp 136-155

8. Shiva, Vandana. Chapters 2 & 4, *Staying Alive: Women Ecology and Development*. Delhi: Kali for Women, 1989.

9. Vinodini, M.M. 'The Parable of the Lost Daughter', *The Exercise of Freedom*. eds. K. Satyanarayana and Susie Tharu, Delhi: Navayana, 2013. pp 164-77

UNIT – III (14 weeks-1 hour/week)

UNIT III: Histories

- The women's question pre-Independence -- sati-reform, widow remarriage, debates around age of consent
- Women in the Independence movement, Partition
- Post-Independence campaigns -- against sexual harassment and rape, dowry, violence, debates around the Uniform Civil Code

- Public sphere participation of women -- in politics, in the workplace, in the economy, creating educational inclusion

ESSENTIAL READINGS:

10. Kumar, Radha. Chapters 2; 3; 7; 8; 11, *A History of Doing: An Illustrated Account of Movements for Women's Rights and Feminism in India 1800—1990*. Delhi: Zubaan, 1993.
11. Sangari, Kumkum. 'Politics of Diversity: Religious Communities and Multiple Patriarchies', *Economic and Political Weekly*. Vol. 3052, 1995.
12. Sarkar, Tanika. 'Rhetoric against Age of Consent: Resisting Colonial Reason and Death of a Child-Wife', *Economic and Political Weekly*. Vol. 2836, April, 1993.
13. Moon, Meenakshi and Urmila Pawar. Chapters 1; 5; 6, *We also made history: Women in the Ambedkarite Movement*. Delhi: Zubaan, 2008.

Practical component (if any) –

Students to examine the bare text of 4 laws (as set out in the Gazette of India) followed by discussion and analysis -- laws against dowry (The Dowry Prohibition Act 1961), against sex determination (Pre-Conception & Pre-Natal Diagnostics Act 1994), against domestic violence (Protection of Women from Domestic Violence Act 2005), against sexual harassment at the workplace (The Sexual Harassment of Women at Workplace Prevention Prohibition and Redressal Act 2013).

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Nair, Janaki. 'The Foundations of Modern Legal Structures in India', *Handbook of Gender*. ed. Raka Ray, Delhi: OUP, 2012.
2. Agnes, Flavia. 'Conjugality, Property, Morality and Maintenance', *Handbook of Gender*. ed. Raka Ray, Delhi: OUP, 2012.
3. *Indian Literature: An Introduction*. Delhi: University of Delhi, 2005.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

GENERIC ELECTIVES (GE-13) CULTURE & THEORY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title &	Credits	Credit distribution of the course	Eligibility criteria	Pre-requisite	Department offering the
		21			

Department of English

Category I

BA(Hons.) English

DISCIPLINE SPECIFIC CORE COURSE -7 (DSC-7) – : Romantic Literature

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 7: Romantic Literature	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the way in which Romantic thought and literature continue to sensitise us in terms of cultural and social change.
- To open up a sense of how dominant movements in the field of political and social representation, education and imagination emerge powerfully at this time.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students' imagination will be stimulated by an understanding of the ways in which Romantic theory and praxis influence many movements of change in the contemporary world.
- This course will map an exciting phase in the development of thought, gender-mobility and social change.

SYLLABUS OF DSC-7

UNIT – I (15 weeks-1 hour/week)

1. William Blake: *Songs of Innocence and Experience*: (i) 'Lamb' (ii) 'Tiger' (iii) 'Chimney Sweeper' (Songs of Innocence) (iv) 'Chimney Sweeper' (Songs of Experience)

2. William Wordsworth: (i) 'Tintern Abbey' (ii) 'London'
3. Samuel Taylor Coleridge: (i) 'Kubla Khan' (ii) 'Dejection: An Ode'

UNIT – II (15 weeks-1 hour/week)

1. Percy Bysshe Shelley: (i) 'Ozymandias' (ii) 'Ode to the West Wind'
2. John Keats: (i) 'Ode to a Nightingale' (ii) 'Ode on a Grecian Urn' (iii) 'Ode to Autumn'

UNIT – III (15 weeks-1 hour/week)

1. Mary Shelley: *Frankenstein*

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. William Wordsworth, 'Preface to Lyrical Ballads', in *Romantic Prose and Poetry*, ed. Harold Bloom and Lionel Trilling, New York: OUP, 1973. pp 594–611
2. John Keats, 'Letter to George and Thomas Keats, 21 December 1817', and 'Letter to Richard Woodhouse, 27 October, 1818', in *Romantic Prose and Poetry*. ed. Harold Bloom and Lionel Trilling, New York: OUP, 1973. pp 766–768, 777–778
3. Jean-Jacques Rousseau, 'Preface' to *Emile or Education*. tr. Allan Bloom. Harmondsworth: Penguin, 1991.
4. Samuel Taylor Coleridge, 'Chap. XIII', *Biographia Literaria*. ed. George Watson, London: Everyman, 1993. pp 161–66
5. J.J. Rousseau, 'Discourse on the Origin of Inequality': Part One, *Jean-Jacques Rousseau: Basic Political Writings*. Hackett Publishing Company, 1987. pp 37-60
6. Gilpin, William. 'On Picturesque Travel', *Three Essays: On Picturesque Beauty; On Picturesque Travel; and On Sketching Landscape: to which is Added a Poem, On Landscape Painting*. UK: R. Blamire, 1794.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Department of English Semester-IV

BA (Hons.) English

DISCIPLINE SPECIFIC CORE COURSE 10 - (DSC-10) – : AMERICAN LITERATURE

No. of hours- 60(Theory- 45 hrs.+Tutorials -15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 10: American Literature	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the literature of the United States with specific reference to the way it chronicles patterns of oppression and freedom in the lives of its peoples.
- To open up a range of possibilities in the way in which literature shapes and chronicles new frontiers and cultural groups.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to trace the powerful role played by literature in shaping the emergent United States.
- Students will be enlightened on how literature chronicles and shapes both different kinds of enslavement and possibilities of liberation.

SYLLABUS OF DSC- 10

UNIT – I (15 hours)

1. Toni Morrison: *Beloved*

UNIT – II (15 hours)

2. Kate Chopin: *The Awakening*
3. Herman Melville: 'Bartleby the scrivener'

UNIT – III (15 hours)

4. Walt Whitman: (i) 'O Captain, My Captain' (ii) 'Passage to India' (lines 1–68)
5. Alexie Sherman Alexie: (i) 'Crow Testament' (ii) 'Evolution'

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Emerson, Ralph Waldo. 'Self-Reliance', *The Selected Writings of Ralph Waldo Emerson*. ed. Brooks Atkinson, New York: The Modern library, 1964.
2. Martin Luther King Jr, 'I have a dream', *African American Literature*. ed. Kieth Gilyard, Anissa Wardi, New York: Penguin, 2014. pp 1007-1011
3. Douglass, Frederick. Chaps. 1–7, *A Narrative of the life of Frederick Douglass*. Harmondsworth: Penguin, 1982. pp 47–87
4. Rich, Adrienne. 'When We Dead Awaken: Writing as Re-Vision', *College English*. Vol. 34, No. 1, Women, Writing and Teaching (Oct., 1972), pp. 18-30
5. Crevecoeur, Hector St John. Letter III: 'What is an American', *Letters from an American Farmer*. Harmondsworth: Penguin, 1982. pp 66–105

DISCIPLINE SPECIFIC ELECTIVE COURSE 5 (DSE-5): Literature of the Indian Diaspora

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-5 Literature of the Indian Diaspora	4	3	1	0	Passed Class XII	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with select contemporary literature of the Indian diaspora.
- To highlight diversity of diasporic locations and writings.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to acquire understanding of complex diasporic imaginations.
- Students will be able to comprehend the interrelations between home, homeland, diaspora, and migration.

SYLLABUS OF DSE-5:

UNIT – I (15 hours)

1. M. G. Vassanji: *The Book of Secrets*

UNIT – II (15 hours)

2. Vikram Seth: *The Golden Gate*

UNIT – III (15 hours)

3. Meera Syal: *Anita and Me*

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Mishra, Vijay. *The Literature of the Indian Diaspora: Theorising the Diasporic Imaginary*. New York: Routledge, 2007.
2. Braziel, Jana Evans, et al. (ed.). *Theorizing Diaspora: A Reader*. Wiley, 2003.
3. Unnikrishnan, Deepak. *Temporary People*. New York: Restless Books, 2017.
4. Phillips, Caryl. 'Somewhere in England', *Crossing the River*. London: Random House, 1993.
5. Gilroy, Paul. 'The Black Atlantic as a Counterculture of Modernity', *The Black Atlantic: Modernity and Double Consciousness*. London: Verso, 1993.
6. Jayaram, N. (ed.). *The Indian Diaspora: Dynamics of Migration*. Vol.4, Sage: New Delhi, 2004.

DISCIPLINE SPECIFIC ELECTIVE COURSE 6 (DSE-6): Graphic Narratives

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
DSE-6 Graphic Narratives	4	3	1	0	Passed Class XII	NIL

6. Irigaray, Luce. 'When the Goods Get Together', *This Sex Which is Not One*. in *New French Feminisms*. trans. Catherine Porter & Carolyn Burke, Ithaca: Cornell University Press, 1985. pp 23-33

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category III

Discipline Specific Courses for Undergraduate Programme of study with
ENGLISH(minor) as one of the Core Disciplines

DISCIPLINE SPECIFIC CORE COURSE 18- (DSC-18) : Women Writings

No. of hours- 60(Theory- 45 hrs.+Tutorials-15 hrs.)

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 18: Women Writings	4	3	1	0	Passed Class XII with English	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To offer students a foundational understanding of the ways in which critical categories such as ethnicity, caste and class find their articulation in writings by women.
- To open up a sense of the Indian presence in the ongoing debate on the rights and position of women in contemporary society.

Learning outcomes

The Learning Outcomes of this course are as follows:

- By studying this course, students will be able to inculcate a basic sense of how writings by women serve as a primary instrument to document and demand social change.
- This course will open up a space for a discussion on how this is a core area that demands attention and change in contemporary India.

SYLLABUS OF DSC-18:

UNIT – I (15 hours)

1. Alice Walker: *The Color Purple*

UNIT – II (15 hours)

2. Charlotte Perkins Gilman: 'The Yellow Wallpaper'
3. Begum Rokheya: 'Sultana's Dream'
4. Devi, Rassundari. Excerpts from *Amar Jiban*. trans. by Enakshi Chatterjee, *Women's Writing in India*. Vol 1, ed. Susie Tharu and K. Lalita, Oxford University Press, New Delhi, 1989. pp 192-202

UNIT – III (15 hours)

5. Emily Dickinson: (i) 'I cannot live with you' (ii) 'I'm wife; I've finished that'
6. Sylvia Plath: (i) 'Lady Lazarus' (ii) 'Daddy'
7. Eunice De Souza- (i) 'Advice to Women' (ii) 'Bequest'

Practical component (if any) - NIL

Essential/recommended readings- as listed in the units

Suggestive readings:

1. Wollstonecraft, Mary. *A Vindication of the Rights of Woman*. New York: Norton, 1988.
2. Woolf, Virginia. *A Room of One's Own*. New York: Harcourt, 1957.
3. Elaine Showalter: 'Introduction', *A Literature of Their Own: British Women Novelists from Bronte to Lessing*, 1977.
4. Simone de Beauvoir: 'Introduction', *The Second Sex*
5. Chakravarti, Uma. 'Reconceptualising Gender: Phule, Brahmanism and Brahmanical Patriarchy', *Gender and Caste*. edited by Anupama Rao, Kali for Women, New Delhi, 2003. pp 164-179
6. Irigaray, Luce. 'When the Goods Get Together', *This Sex Which is Not One*. in *New French Feminisms*. trans. Catherine Porter & Carolyn Burke, Ithaca: Cornell University Press, 1985. pp 23-33

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Paper 6: Popular Literature

1. Lewis Carroll *Through the Looking Glass*
2. Agatha Christie *The Murder of Roger Ackroyd*
3. Shyam Selvadurai *Funny Boy*
4. Durgabai Vyam and Subhash Vyam *Bhimayana: Experiences of Untouchability/ Autobiographical Notes on Ambedkar* (For the Visually Challenged students)

Suggested Topics and Background Prose Readings for Class Presentations

Coming of Age
The Canonical and the Popular
Caste, Gender and Identity
Ethics and Education in Children's Literature
Sense and Nonsense
The Graphic Novel

Readings

1. Chelva Kanaganayakam, 'Dancing in the Rarefied Air: Reading Contemporary Sri Lankan Literature' (*ARIEL*, Jan. 1998) rpt. Malashri Lal, Alamgir Hashmi, and Victor J. Ramraj, eds., *Post Independence Voices in South Asian Writings* (Delhi: Doaba Publications, 2001) pp. 51-65.
2. Sumathi Ramaswamy, 'Introduction', in *Beyond Appearances?: Visual Practices and Ideologies in Modern India* (Sage: Delhi, 2003) pp. xiii-xxix.
3. Leslie Fiedler, 'Towards a Definition of Popular Literature', in *Super Culture: American Popular Culture and Europe*, ed. C.W.E. Bigsby (Ohio: Bowling Green University Press, 1975) pp. 29-38.
4. Felicity Hughes, 'Children's Literature: Theory and Practice', *English Literary History*, vol. 45, 1978, pp. 542-61.

Paper 7: British Poetry and Drama: 17th and 18th Centuries

1. John Milton *Paradise Lost: Book 1*
2. John Webster *The Duchess of Malfi*
3. Aphra Behn *The Rover*
4. Alexander Pope *The Rape of the Lock*

Suggested Topics and Background Prose Readings for Class Presentations

Religious and Secular Thought in the 17th Century
The Stage, the State and the Market
The Mock-epic and Satire
Women in the 17th Century
The Comedy of Manners

Readings

1. The Holy Bible, *Genesis*, chaps. 1–4, *The Gospel according to St. Luke*, chaps. 1–7 and 22–4.
2. Niccolò Machiavelli, *The Prince*, ed. and tr. Robert M. Adams (New York: Norton, 1992) chaps. 15, 16, 18, and 25.
3. Thomas Hobbes, selections from *The Leviathan*, pt. I (New York: Norton, 2006) chaps. 8, 11, and 13.
4. John Dryden, 'A Discourse Concerning the Origin and Progress of Satire', in *The Norton Anthology of English Literature*, vol. 1, 9th edn, ed. Stephen Greenblatt (New York: Norton 2012) pp. 1767–8.

Paper 8: British Literature: 18th Century

1. William Congreve *The Way of the World*
2. Jonathan Swift *Gulliver's Travels* (Books III and IV)
3. Samuel Johnson 'London'
Thomas Gray 'Elegy Written in a Country Churchyard'
4. Laurence Sterne *The Life and Opinions of Tristram Shandy, Gentleman*

Suggested Topics and Background Prose Readings for Class Presentations

Topics

The Enlightenment and Neoclassicism
 Restoration Comedy
 The Country and the City
 The Novel and the Periodical Press

Readings

1. Jeremy Collier, *A Short View of the Immorality and Profaneness of the English Stage* (London: Routledge, 1996).
2. Daniel Defoe, 'The Complete English Tradesman' (Letter XXII), 'The Great Law of Subordination Considered' (Letter IV), and 'The Complete English Gentleman', in *Literature and Social Order in Eighteenth-Century England*, ed. Stephen Copley (London: Croom Helm, 1984).
3. Samuel Johnson, 'Essay 156', in *The Rambler*, in *Selected Writings: Samuel Johnson*, ed. Peter Martin (Cambridge, Mass.: Harvard University Press, 2009) pp. 194–7; *Rasselas* Chapter 10; 'Pope's Intellectual Character: Pope and Dryden Compared', from *The Life of Pope*, in *The Norton Anthology of English Literature*, vol. 1, ed. Stephen Greenblatt, 8th edn (New York: Norton, 2006) pp. 2693–4, 2774–7.

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Paper 9: British Romantic Literature

1. William Blake 'The Lamb',
'The Chimney Sweeper' (from *Songs of Innocence and of Songs of Experience*)
'The Tyger' (*Songs of Experience*)
'Introduction' to *Songs of Innocence*
Robert Burns 'A Bard's Epitaph'
'Scots Wha Hae'
2. William Wordsworth 'Tintern Abbey'
'Ode: Intimations of Immortality'
Samuel Taylor Coleridge 'Kubla Khan'
'Dejection: An Ode'
3. Lord George Gordon
Noel Byron 'Childe Harold': canto III, verses 36–45
(lines 316–405); canto IV, verses 178–86
(lines 1594–674)
Percy Bysshe Shelley 'Ode to the West Wind'
'Ozymandias'
'Hymn to Intellectual Beauty'
John Keats 'Ode to a Nightingale'
'To Autumn'
'On First Looking into Chapman's Homer'
4. Mary Shelley *Frankenstein*

Suggested Topics and Background Prose Readings for Class Presentations

Topics

Reason and Imagination
Conceptions of Nature
Literature and Revolution
The Gothic
The Romantic Lyric

Readings

1. William Wordsworth, 'Preface to Lyrical Ballads', in *Romantic Prose and Poetry*, ed. Harold Bloom and Lionel Trilling (New York: OUP, 1973) pp. 594–611.
2. John Keats, 'Letter to George and Thomas Keats, 21 December 1817', and 'Letter to Richard Woodhouse, 27 October, 1818', in *Romantic Prose and Poetry*, ed. Harold Bloom and Lionel Trilling (New York: OUP, 1973) pp. 766–68, 777–8.
3. Jean-Jacques Rousseau, 'Preface' to *Emile or Education*, tr. Allan Bloom (Harmondsworth: Penguin, 1991).
4. Samuel Taylor Coleridge, *Biographia Literaria*, ed. George Watson (London: Everyman, 1993) chap. XIII, pp. 161–66.

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Paper 10: British Literature: 19th Century

1. Jane Austen *Pride and Prejudice*
2. Charlotte Brontë *Jane Eyre*
3. Charles Dickens *Hard Times*
4. Alfred Tennyson 'The Lady of Shalott'
- 'Ulysses'
- 'The Defence of Lucknow'
- Robert Browning 'My Last Duchess'
- 'The Last Ride Together'
- 'Fra Lippo Lippi'
- Christina Rossetti 'The Goblin Market'

Suggested Topics and Background Prose Readings for Class Presentations

Topics

Utilitarianism
 The 19th Century Novel
 Marriage and Sexuality
 The Writer and Society
 Faith and Doubt
 The Dramatic Monologue

Readings

1. Karl Marx and Friedrich Engels, 'Mode of Production: The Basis of Social Life', 'The Social Nature of Consciousness', and 'Classes and Ideology', in *A Reader in Marxist Philosophy*, ed. Howard Selsam and Harry Martel (New York: International Publishers, 1963) pp. 186-8, 190-1, 199-201.
2. Charles Darwin, 'Natural Selection and Sexual Selection', in *The Descent of Man in The Norton Anthology of English Literature*, 8th edn, vol. 2, ed. Stephen Greenblatt (New York: Norton, 2006) pp. 1545-9.
3. John Stuart Mill, *The Subjection of Women in Norton Anthology of English Literature*, 8th edn, vol. 2, ed. Stephen Greenblatt (New York: Norton, 2006) chap. 1, pp. 1061-9.

Paper 11: Women's Writing

1. Emily Dickinson 'I cannot live with you'
- 'I'm wife; I've finished that'
- Sylvia Plath 'Daddy'
- 'Lady Lazarus'
- Eunice De Souza 'Advice to Women'
- 'Bequest'
2. Alice Walker *The Color Purple*

3. Charlotte Perkins Gilman 'The Yellow Wallpaper'
Katherine Mansfield 'Bliss'
Mahashweta Devi 'Draupadi', tr. Gayatri Chakravorty Spivak (Calcutta: Seagull, 2002)
4. Mary Wollstonecraft *A Vindication of the Rights of Woman* (New York: Norton, 1988) chap. 1, pp. 11–19; chap. 2, pp. 19–38.
Pandita Ramabai 'A Testimony of our Inexhaustible Treasures', in *Pandita Ramabai Through Her Own Words: Selected Works*, tr. Meera Kosambi (New Delhi: OUP, 2000) pp. 295–324.
Rassundari Debi Excerpts from *Amar Jiban* in Susie Tharu and K. Lalita, eds., *Women's Writing in India*, vol. 1 (New Delhi: OUP, 1989) pp. 192–202

Suggested Topics and Background Prose Readings for Class Presentations

Topics

The Confessional Mode in Women's Writing
Sexual Politics
Race, Caste and Gender
Social Reform and Women's Rights

Readings

1. Virginia Woolf, *A Room of One's Own* (New York: Harcourt, 1957) chaps. 1 and 6.
2. Simone de Beauvoir, 'Introduction', in *The Second Sex*, tr. Constance Borde and Shiela Malovany-Chevallier (London: Vintage, 2010) pp. 3–18.
3. Kumkum Sangari and Sudesh Vaid, eds., 'Introduction', in *Recasting Women: Essays in Colonial History* (New Delhi: Kali for Women, 1989) pp. 1–25.
4. Chandra Talapade Mohanty, 'Under Western Eyes: Feminist Scholarship and Colonial Discourses', in *Contemporary Postcolonial Theory: A Reader*, ed. Padmini Mongia (New York: Arnold, 1996) pp. 172–97.

Paper 12: British Literature: The Early 20th Century

1. Joseph Conrad *Heart of Darkness*
2. D.H. Lawrence *Sons and Lovers*
3. Virginia Woolf *Mrs Dalloway*
4. W.B. Yeats 'Leda and the Swan'
'The Second Coming'
'No Second Troy'
'Sailing to Byzantium'
T.S. Eliot 'The Love Song of J. Alfred Prufrock'
'Sweeney among the Nightingales'
'The Hollow Men'

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Suggested Topics and Background Prose Readings for Class Presentations

Topics

Modernism, Post-modernism and non-European Cultures
 The Women's Movement in the Early 20th Century
 Psychoanalysis and the Stream of Consciousness
 The Uses of Myth
 The Avant-Garde

Readings

1. Sigmund Freud, 'Theory of Dreams', 'Oedipus Complex', and 'The Structure of the Unconscious', in *The Modern Tradition*, ed. Richard Ellman et. al. (Oxford: OUP, 1965) pp. 571, 578–80, 559–63.
2. T.S. Eliot, 'Tradition and the Individual Talent', in *Norton Anthology of English Literature*, 8th edn, vol. 2, ed. Stephen Greenblatt (New York: Norton, 2006) pp. 2319–25.
3. Raymond Williams, 'Introduction', in *The English Novel from Dickens to Lawrence* (London: Hogarth Press, 1984) pp. 9–27.

Paper 13: Modern European Drama

1. Henrik Ibsen *Ghosts*
2. Bertolt Brecht *The Good Woman of Szechuan*
3. Samuel Beckett *Waiting for Godot*
4. Eugene Ionesco *Rhinoceros*

Suggested Topics and Background Prose Readings for Class Presentations

Topics

Politics, Social Change and the Stage
 Text and Performance
 European Drama: Realism and Beyond
 Tragedy and Heroism in Modern European Drama
 The Theatre of the Absurd

Readings

1. Constantin Stanislavski, *An Actor Prepares*, chap. 8, 'Faith and the Sense of Truth', tr. Elizabeth Reynolds Hapgood (Harmondsworth: Penguin, 1967) sections 1, 2, 7, 8, 9, pp. 121–5, 137–46.
2. Bertolt Brecht, 'The Street Scene', 'Theatre for Pleasure or Theatre for Instruction', and 'Dramatic Theatre vs Epic Theatre', in *Brecht on Theatre: The Development of an Aesthetic*, ed. and tr. John Willet (London: Methuen, 1992) pp. 68–76, 121–8.
3. George Steiner, 'On Modern Tragedy', in *The Death of Tragedy* (London: Faber, 1995) pp. 303–24.

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Paper 14: Postcolonial Literatures

1. Chinua Achebe *Things Fall Apart*
2. Gabriel Garcia Marquez *Chronicle of a Death Foretold*
3. Bessie Head 'The Collector of Treasures'
- Ama Ata Aidoo 'The Girl who can'
- Grace Ogot 'The Green Leaves'
4. Pablo Neruda 'Tonight I can write the saddest Lines'
- 'The Way Spain Was'
- Derek Walcott 'A Far Cry from Africa'
- 'Names'
- David Malouf 'Revolving Days'
- 'Wild Lemons'
- Mamang Dai 'Small Towns and the River'
- 'The Voice of the Mountain'

Suggested Topics and Background Prose Readings for Class Presentations

Topics

De-colonization, Globalization and Literature
 Literature and Identity Politics
 Writing for the New World Audience
 Region, Race, and Gender
 Postcolonial Literatures and Questions of Form

Readings

1. Franz Fanon, 'The Negro and Language', in *Black Skin, White Masks*, tr. Charles Lam Markmann (London: Pluto Press, 2008) pp. 8-27.
2. Ngugi wa Thiong'o, 'The Language of African Literature', in *Decolonising the Mind* (London: James Curry, 1986) chap. 1, sections 4-6.
3. Gabriel Garcia Marquez, the Nobel Prize Acceptance Speech, in *Gabriel Garcia Marquez: New Readings*, ed. Bernard McGuirk and Richard Cardwell (Cambridge: Cambridge University Press, 1987).

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2. B.R. Ambedkar, *Annihilation of Caste* in *Dr. Babasaheb Ambedkar: Writings and Speeches*, vol. 1 (Maharashtra: Education Department, Government of Maharashtra, 1979) chaps. 4, 6, and 14.
3. Sujit Mukherjee, 'A Link Literature for India', in *Translation as Discovery* (Hyderabad: Orient Longman, 1994) pp. 34-45.
4. G.N. Devy, 'Introduction', from *After Amnesia* in *The G.N. Devy Reader* (New Delhi: Orient Blackswan, 2009) pp. 1-5.

Paper 2: Literature of the Indian Diaspora

1. M. G. Vassanji *The Book of Secrets* (Penguin, India)
2. Rohinton Mistry *A Fine Balance* (Alfred A Knopf)
3. Meera Syal *Anita and Me* (Harper Collins)
4. Jhumpa Lahiri *The Namesake* (Houghton Mifflin Harcourt)

Suggested Topics and Background Prose Readings for Class Presentations

Topics

The Diaspora
Nostalgia
New Medium
Alienation

Reading

1. "Introduction: The diasporic imaginary" in Mishra, V. (2008). *Literature of the Indian diaspora*. London: Routledge
2. "Cultural Configurations of Diaspora," in Kalra, V. Kaur, R. and Hutyniak, J. (2005). *Diaspora & hybridity*. London: Sage Publications.
3. "The New Empire within Britain," in Rushdie, S. (1991). *Imaginary Homelands*. London: Granta Books.

Paper 3: British Literature: Post World War II

1. John Fowles *The French Lieutenant's Woman*
2. Jeanette Winterson *Sexing the Cherry*
3. Hanif Kureishi *My Beautiful Laundrette*
4. Phillip Larkin 'Whitsun Weddings'
'Church Going'
Ted Hughes 'Hawk Roosting'
'Crow's Fall'
Seamus Heaney 'Digging'
'Casualty'
Carol Anne Duffy 'Text'
'Stealing'

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PROSPECTING E-WASTE FOR SUSTAINABILITY

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Prospecting E-Waste for Sustainability	2	0	0	2	Class XII	NA

Learning Objectives

The Learning Objectives of this course are as follows:

- To provide in-depth knowledge on the effective mechanisms to regulate the generation, collection, and storage of e-waste
- To gain insights into the internationally/nationally acceptable methods of transport, import, and export of e-waste within and between countries
- To develop a holistic view on recycling, treatment, and disposal of e-waste and related legislative rules.

Learning outcomes

The Learning Outcomes of this course are as follows:

- After studying this course, students will be able to holistically analyze the environmental impacts of e-waste
- After studying this course, students will be able to apply the skills and various concepts for sustainable management of e-waste
- After studying this course, students will be able to decipher the role of various national and international regulations for e-waste management
- After studying this course, students will be able to provide specific recommendations for improved methods for handling e-waste at different stages such as generation, collection, storage, transport, and recycling

SYLLABUS

Practical/Hands-on Exercises

(02 Credits: 60 hours)

1. Identification of e-waste and its types
2. Composition of e-waste and segregation- from the material provided
3. Dismantling of e-waste and handling process
4. Visit a nearby e-waste handling facility
5. Environmental protection laws and producer's responsibility for e-waste management
6. Build an understanding of how regulatory mechanisms can be utilized in the management of e-waste in educational institutions.
7. Discussion on plausible ways and implementation of e-waste reduction at the source
8. Evaluation of the status of e-waste handling at your institution. Suggest potential solutions as per the existing norms of E-Waste (Management) Rules, 2016 and beyond.

9. Estimate how recycling of e-waste in metro cities will go in sync with the circular economy
10. Develop an understanding and itinerary of the process for procuring e-waste import permissions.
11. Inventory of the e-waste disposal mechanisms.
12. Study the evolution of e-waste management rules and its implementation- Hazardous Waste Rules, 2008, E-waste (Management and Handling) Rules, 2011; and E-Waste (Management) Rules, 2016
13. Study the international laws on e-waste management- the international legislations: The Basel Convention; The Bamako Convention; The Rotterdam Convention; Waste Electrical and Electronic Equipment (WEEE) Directive in the European Union; Restrictions of Hazardous Substances (RoHS) Directive

Teaching and learning interface for practical skills:

To impart training on technical and analytical skills related to the course objectives, a wide range of learning methods will be used, including (a) laboratory practicals; (b) field-work exercises; (c) customized exercises based on available data; (d) survey analyses; and (e) developing case studies; (f) demonstration and critical analyses; and (h) experiential learning individually and collectively.

Prospective sector(s):

- Electric and electronic industries,
- E-waste Recycling Unites,
- Private entrepreneurs,
- Environmental consultancies,
- Pollution Boards, and
- Environmental NGOs

Suggested Readings:

- Hester, R.E. and Harrison, R.M., 2009. Electronic Waste Management: Design. Analysis and Application. Royal Society of Chemistry Publishing. Cambridge, UK.
- Fowler, B.A., 2017. Electronic Waste: Toxicology and Public Health Issues. Academic Press.
- Gaidajis, G., Angelakoglou, K. and Aktsoglou, D., 2010. E-waste: environmental problems and current management. Journal of Engineering Science and Technology Review, 3(1), pp.193-199.
- Janyasuthiwong, S., 2020. Metal Removal and Recovery from Mining Wastewater and E-waste Leachate. CRC Press.

Examination scheme and mode:

Evaluation scheme and mode II be as per the guidelines notified by the University of Delhi.



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DSC 3: Indian Social Institutions and Polity

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
Indian Social Institutions and Polity	04	3	1	0	Class XII Pass	Nil	Sanskrit

Learning Objectives

- To generate interest in Ancient Sociological and Political Structure of the Society. students.
- To impart knowledge of the ancient Political Thinkers.
- To impart general skills to argue on the related topics.
- To establish the relevance of Ancient Indian Social and Political Institutions.

Learning outcomes

- Social institutions and Indian Polity have been highlighted in *Dharma and Artha śāstra* literature.
- The aim of this course is to make students acquainted with various aspects of social institutions and Indian polity as propounded in the ancient Sanskrit texts such as *Mahābhārata*, Kauṭilya's *Arthasāstra* and other works known as *Nītiśāstra*.
- After learning this, students will be able to know the ancient Indian Political system and its universal theory.

SYLLABUS OF DSC-3

Unit 1 - Foundations of Indian Society

1 Credit

i. Dharma

Sources of Dharma (*Manusmṛti*, 2,12; *Yājñavalkyasmṛti*,1.7)
 Fourteen-Dharmasthānas (*Yājñavalkyasmṛti*,1.3)
 Dharma as Social and Moral Duty (*Mitākṣarāṇīkā* on *Yājñavalkyasmṛti*,1.1).
 (*Manusmṛti*,6.92);

ii. Dharma as an evolving institution - Directions of and reasons for changes in Dharma Śāstra



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- iii. Sociological Significance of Sixteen *Samskāras*.
- iv. Balanced Life - Four aims of life '*Puruṣārtha Catusṭaya*'- 1. *Dharma*, 2. *Artha*, 3. *Kāma*, 4. *Mokṣa*.

Unit II - Structure of Society

1 Credit

i. Varṇa-System and Caste System:

Four-fold division of *Varṇa* System, (*R̥gveda*, 10.90.12),

Mahābhārata, *Śāntiparva*, 72.3.8

Division of *Varṇa* according to *Guṇa* and *Karma* (*Bhagvadgītā*, 4.13, 18.41-44).

Caste-System and Inter-caste Marriages (*Mahābhārata*, *Anuśāsanaparva*, 48.3-11);

Assimilation of foreign tribes in *Varṇa*-System (*Mahābhārata*, *Śāntiparva*, 65.13-22).

Up-gradation and down-gradation of Caste (*Āpastambadharmasūtra*, 2.5.11.10-11,

Baudhāyanadharmasūtra, 1.8.16.13-14, *Manusmṛti*, 10,64, *Yājñavalkyasmṛti*, 1.96)

ii. Position of Women in the Society:

Brief survey of position of women in different stages of Indian Society;

Position of women in *Mahābhārata* (*Anuśāsanaparva* 46.5-11, *Sabhāparva*, 69.4-13.

Praise of women in The *Bṛhatsamhitā* of Varāhamihira

(*Strīprasamsā*, chapter-74.1-10)

Unit III State and Kingship

1 Credit

- i. Concept of Welfare State in *Arthaśāstra* of Kauṭilya (*Arthaśāstra*, 1.13: '*matsyanyāyābhibhutāḥ*' to '*yo' asmāngopāyati*')
- ii. Essential Qualities of King (*Arthaśāstra*, 6.1.16-18: '*sampādayatyasampannaḥ*' to '*jayatyeva na hīyate*')
- iii. Conduct of the state (*Manu Smṛiti* 7 Verses 1 to 15)

Unit IV - State and International Relations

1 Credit

- i. '*Saptāṅga*' Theory of State: 1. *Svāmi*, 2. *Amātya*, 3. *Janapada* 4. *Pura*, 5. *Kośa*, 6. *Daṇḍa* and 7. *Mitra*
(*Arthaśāstra*, 6.1. *Mahābhārata*, *Śāntiparva*, 56.5, *Śukranīti*, 1.61-62).
- ii. '*Maṇḍala*' Theory of Inter-State Relations: 1. *Ari*, 2. *Mitra*, 3. *Ari-mitra*, 4. *Mitra-mitra*, 5. *Ari-mitramitra*;
- iii. *Śāḍgunya* Policy of War and Peace: 1. *Sandhi*, 2. *Vigraha*, 3. *Yāna*, 4. *Āsana*, 5. *Samśraya* 6. *Dvaidhibhāva*.

Essential/recommended readings

- 1. *Arthaśāstra* of Kauṭilya - (Ed.) Kangale, R.P. Delhi, Motilal Banarasidas 1965
- 2. *Mahābhārata* (7 Vols) - (Eng. Tr.) H.P. Shastri, London, 1952-59.
- 3. *Manu's Code of Law* - (Ed. & Trans.): Olivelle, P. (A Critical Edition and Translation of the *Manava- Dharmasāstra*), OUP, New Delhi, 2006.



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4. Yājñavalkyasmṛti with Mitākṣarā commentary - Chowkhamba Sanskrit Series Office, Varanasi, 1967
5. कौटिलीय अर्थशास्त्र – उदयवीर शास्त्री मेहर चन्द लछमन दास, दिल्ली
6. बृहत्संहिता – वराहमिहिर, हिन्दी अनुवाद बलदेव प्रसाद मिश्र, खेमराज श्रीकृष्णदास प्रकाशन, मुंबई
7. महाभारत (भाग १ – ६), हिन्दी अनुवाद सहित, गीता प्रेस गोरखपुर
8. मनुस्मृति- चौखंबा प्रकाशन, दिल्ली

Suggested readings

1. काणे, पी. वी. धर्मशास्त्र का इतिहास (1-4 भाग), अनु० अर्जुन चौबे काश्यप, (उत्तर प्रदेश हिन्दी संस्थान, लखनऊ, 1966-73
2. जायसवाल सुवीरा, वर्ण तथा जाति व्यवस्था उद्भव तथा विकास, 2004
3. विद्यालङ्कार सत्यकेतु- प्राचीनभारतीय शासन व्यवस्था और राजशास्त्र, सरस्वतीसदन, मैसूर, 1968
4. Altekar, A.S, State and Government in Ancient India, MotilalBanarsidass, Delhi, 2001.
5. Altekar, A.S, The Position of Women in Hindu Civilization, Delhi, 1965.
6. Bhandarkar, D.R., Some Aspects of Ancient Indian Hindu Polity, Banaras Hindu University
7. Ghosal, U.N., A History of Indian Political Ideas, Bombay, 1959.
8. Jayaswal, K.P. Hindu Polity, Bangalore, 1967.
9. Jha, M.N. -Modern Indian Political Thought, Meenakshi Parkashan, Meerut, UP.
10. Law, N. S., Aspect of Ancient Indian Polity, Calcutta, 1960.
11. Lingat Robert, Classical Hindu Law,
12. Mathur A.D. Medieval Hindu Law, Oxford University Press, New Delhi, 2006
13. Mehta, V.R., Foundations of Indian Political Thought, Manohar Publisher, Delhi, 1999.
14. Pandey, G.C. Jaina Political Thought, Jaipur Prakrit Bharti, 1984.
15. Prabhu, P.H. Hindu Social Organisation, Popular Prakashan, Mumbai, 1998
16. Prasad, Beni, Theory of Government in Ancient India, Allahabad, 1968.
17. Saletore, B.A. Ancient Indian Political Thought and Institutions, Bombay, 1963.
18. Sharma, R. S., Aspects of Political Ideas and Institutions in Ancient India, MLBD, Delhi, 1996.

Weekly Plan

Week 1	- Unit 1
Week 2	- Unit 1
Week 3	- Unit 1
Week 4	- Unit 1
Week 5	- Unit 2
Week 6	- Unit 2
Week 7	- Unit 2
Week 8	- Unit 3



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Week 9	- Unit 3
Week 10	- Unit 3
Week 11	- Unit 3
Week 12	- Unit 4
Week 13	- Unit 4
Week 14	- Unit 4
Week 15	- Unit 4

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

I	External Examination	Marks 75
I	Long Questions -4 (from unit 1-4)	04 x 12 = 48
ii.	Short notes - 4 (from unit -1 to 4)	04 x 05 = 20
iii.	One Note in Sanskrit	01x 7 = 7
II	Internal Assessment (Project/Discussion/Assignment/ paper presentation/ Periodic tests etc.)	Marks 25
	Total Marks: (I+II)	(75+25) = 100



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GE-3: Basic Principles of Āyurveda

Max. Marks: (75+25= 100)

Total Credits: 04

[A] Course Objectives:

The primary objective of this course is to offer the students an opportunity of learning about Ancient Indian Medical practices. Students will be familiar with the basic principles of the Science of Ayurveda.

[B] Course Learning Outcomes:

This course will enable the students to get a fair understanding of the Science of Ayurveda (Medical Science). The course will make the learner capable of analyzing the classification and elements of Indian herbs. The course is supposed to create among the students an awareness of ancient medical practices.

[C] Course Contents:

Unit: I

Introduction to Āyurveda

Definition of Āyurveda, Aim of Āyurveda, Subject Matter of Āyurveda, Salient Features of Āyurveda, Concept of Health according to Āyurveda, Unique features of Āyurveda.

History of Āyurveda

Introduction to Major Texts (Suśruta Samhitā and Caraka Samhitā) and Authors (Suśruta and Caraka) and Aṣṭāṅga Hṛdayam, Aṣṭāṅga Saṅgraha of Vāgbhaṭa.

Unit: II

Basic Principles of Āyurveda

1. **Triguṇas:** Sattva, Rajas and Tamas.
2. **Pañcamahābhūtas:** Ākāśa (Space), Vāyu (Air), Teja or Agni (Fire), Jala (Water) and Pṛthvī (Earth).
3. **Tridoṣas:** Vāta, Pitta and Kapha.
4. **Saptadhātus:** Rasa (fluid), Rakta (blood), Māṁsa, Meda (fat), Asthi, Majjā and Śukra.
5. **Trayodasāgni:** Jatharāgni (gastric fire), Saptadhātvāgni and Pācabhātāgni.
6. **Trimalas:** Purīṣā (faeces), Mūtra (urine) and Sveda (sweat).

Unit: III

Aṣṭāṅga Āyurveda:

1. Kāy cikitsā (General Medicine)
2. Kaumārabhṛtya (Pediatrics)
3. śalyatantra (Surgery)
4. Śālākya-Tantra (Ent. and Ophthalmology)
5. Bhūta Vidyā (Psychiatry Medicine).
6. Viṣa Vijñāna (Toxicology).
7. Rasāyana (Rejuvenates).
8. Vajīkaraṇa (Aphrodisiac).

Unit: IV



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Important Medicinal Plants and their bases on Āyurveda

Medicinal Plants in Suśruta Samhitā: Tulsī, Haridrā, Sarpagandhā, Ghṛta Kumārī, Guggulu, Brāhmī, āmalā, Aśwagandhā, Arjun, Haldi, Neema Plant, Jamun, Pudina

[D] References:

1. Acharya, Srinivas, Panchakarma Illustrated, Chaukhamba Sanskrit Pratishthana, Delhi, 2006.
2. V.B. Athavale, Basic Principles of Āyurveda, Chaukhamba Sanskrit Pratishthan New Delhi, 2005.
3. Āyurveda Kā Saṅkṣipta Itihāsa, Hindi Sahitya Sammelan, Allahabad.
4. Bhagavan Dash, Vaidya, and Acarya Manfred M. Junius, A Handbook of Āyurveda, Concept Publishing Co., New Delhi, 1987.
5. Bhishagratna, Kaviraj Kunjalal, ed., translator. (2002). Sushruta Samhita Volumes I and II. Varanasi, India: Chowkhamba Sanskrit Series.
6. Charak Samhita E-text: <http://www.charakasamhita.com/>
7. <http://www.speakingtree.in/blog/medicinal-plants-from-ancient-india>
8. http://www.tkdil.res.in/tkdil/langdefault/ayurveda/Ayu_Principles.asp?GL=#q1
9. K. R. Srikantha Murthy, Illustrated Susruta Samhita, ChaukhambaOrientalia, 2012
10. M.S. Valiathan, An Introduction to Āyurveda Paperback, Universities Press (India) Private Limited, 2013
11. M.S. Valiathan, The Legacy of Suśruta, Universities Press, 2007
12. Priya Vrat Sharma, Essentials of Āyurveda: Sodashanghridayam, Motilal Banarsidass Publishers, 1999
13. Ravi Datta Tripathi, Vāgbhāṭa's Aṣṭāṅg-saṅgraha, Chowkhamba Sanskrit Pratishthanam, Delhi., 2011.
14. Shantha Godagama, The Handbook of Āyurveda, North Atlantic Books, 2004
15. Sharma, Priyavrit V., ed., translator. (1981-1994). Charaka Samhita, Vols. 1 - 4, Chaukhamba Sanskrit Series, Varanasi, India: Varanasi, India: Chowkhamba Sanskrit Series.
16. Sharma, Ram Karan and Bhagawan Dash, Vaidya, eds., translators (1992 – 2000). Charaka Samhita Vols. 1 – 6. Varanasi, India: Chowkhamba Sanskrit Series.
17. Srikrishnamurthy, K.R. Srikantha, translator. (1991-1992). Vagbhata, Astanga Hridayam Vols. 1 and 2. Varanasi, India: Krishnadas Academy.
18. Srikrishnamurthy, K.R. Srikantha, translator. (2001). Sharangadhara Samhita: A treatise on Āyurveda. Varanasi, India: ChaukhambaOrientalia.
19. Susruta Susruta (Author), Kunja Lal Bhishagratna, An English Translation of the Sushruta Samhita, Based on Original Sanskrit Text. Edited and Published by Kaviraj Kunja Lal Bhishagratna. with a Full ... Notes, Comparative Views, Index, Glossary, Nabu Press, 2012

[E] Teaching Learning Process:

1. Teachers will explain the relevant texts in lecture method.
2. Teachers will make the students visit to and experience themselves the medicinal plants.
3. Teachers will instruct the students to prepare reports on their understanding of the plants.

[F] Weekly Plan

Week 1 - Unit 1



Department of Sanskrit
University of Delhi
Under Graduate Course for Sanskrit
B.A. (Hons.) Under UGCF-22

Week 2	- Unit 1
Week 3	- Unit 1
Week 4	- Unit 1
Week 5	- Unit 2
Week 6	- Unit 2
Week 7	- Unit 2
Week 8	- Unit 2
Week 9	- Unit 3
Week 10	- Unit 3
Week 11	- Unit 3
Week 12	- Unit 3
Week 13	- Unit 4
Week 14	- Unit 4
Week 15	- Unit 4

[G] Assessment Methods:

I. Final Examination

I. Basic Structure of Question Paper & Division of Marks 75

Four long questions from Units I to IV 15x4=60

Three short notes (with options) from Units I to IV 5x3=15

II. Internal Assessment 25

(Project/Discussion/Assignment/ paper presentation/ Periodic tests etc.)

Total Marks: (I+II) (75+25) = 100

[H] Keywords:

bhujāṅgaprayāta, sragviṇī, toṭaka, harigītikā, vidyunmālā, anuṣṭup, āryā, mālinī,
śikhariṇī, vasantatilakā, mandākrāntā, sragdharā and nyusārdūlvikrīḍita.

Sociology of Gender

DISCIPLINE SPECIFIC CORE COURSE -12 (DSC-12) : Sociology of Gender

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 12 Sociology of Gender	4	3	1	0	12 th Class Pass	BA (H) DSC 05: Social Stratification or equivalent course

Learning Objectives:

1. To introduce the sociology of gender as a critical area of sociological inquiry.
2. To provide a sociological understanding of the categories of gender, sex and sexuality.
3. To problematise the common-sense conception of gender from a sociological perspective.

Learning outcomes:

Students will be able to:

1. *Identify* and explain key concepts in the sociology of gender.
2. *Investigate* gendered inequalities in a comparative mode across time and space.
3. *Analyse* gender in relation to other forms of social stratification and identities such as caste, class, family and work.

SYLLABUS OF DSC-12: Sociology of Gender

Unit I. Understanding Gender (9 Hours)

This unit locates the understanding of gender within the framework of sociological theories.

Unit II. Gender, Power and Resistance (9 Hours)

This unit examines the forms of resistance to gender-based power through ideological change and social movements.

- a. Power and Subordination
- b. Negotiations and Resistance

Unit III. Gender: Differences and Inequalities (12 Hours)

This unit examines the intersection of gender with different forms and locations of social inequality.

- a. Stratification and Difference

b. Work and Household

Unit IV. Masculinity and Femininity (15 Hours)

This unit elucidates the varied ways in which gender is socially constructed.

a. Production of Masculinity and Femininity

b. Culture and Sexuality

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Understanding Gender

Jackson, S. and S. Scott (eds.) 2002 'Introduction: The Gendering of Sociology' in S. Jackson and S. Scott *Gender: A Sociological Reader*, London: Routledge. pp 1-26.

Risman, Barbara J. 2018. 'Gender as a Social Structure' in Handbook of the Sociology of Gender. Germany, Springer International Publishing, 2018. Pp. 19-38.

Unit II. Gender, Power and Resistance

a. Power and Subordination

Susie, Tharu and Tejaswini Niranjana. 1994. 'Problems for a Contemporary theory of Gender' in *Social Scientist*, Vol.22 No. ¾ (Mar-Apr) Pp. 93-117.

Abu Lughod, Lila. 2002. 'Do Muslim Women Really Need Saving? Anthropological Reflections on Cultural Relativism and its Others.' in *American Anthropologist*, Vol. 104, No. 3. Pp.783-790.

b. Negotiations and Resistance

Kandiyoti, Deniz. 1991. 'Bargaining with Patriarchy' in Judith Lorber and Susan A. Farrell (eds.) *The Social Construction of Gender*, New Delhi: Sage Publications. Pp. 104-118.

Ahmed, S. 2017. 'Bringing Feminist Theory Home' in *Living a Feminist Life*. Durham: Duke University Press. Pp. 1-18.

Unit III. Gender: Differences and Inequalities

a. Stratification and Difference

Walby, Sylvia. 2002. 'Gender, Class and Stratification: Towards a New Approach' in S. Jackson and S. Scott (eds.) *Gender: A Sociological Reader*. London: Routledge. Pp. 93-96.

Rege, S. 1998. 'Dalit Women Talk Differently: A Critique of 'Difference' and Towards a Dalit

Feminist Standpoint Position' in *Economic and Political Weekly*, Vol. 33, No. 44, Oct.31-Nov. 6. Pp. 39-48.

b. Work and Household

Whitehead, A. 1981. 'I'm Hungry Mum: The Politics of Domestic Budgeting' in K. Young et al. (eds.) *Of Marriage and the Market: Women's Subordination Internationally and its Lessons*. London: Routledge and Kegan Paul. Pp. 93-116.

Palriwala, Rajni. 1999. 'Negotiating Patriliney: Intra-household Consumption and Authority in Rajasthan (India)', in Rajni Palriwala and Carla Risseuw (eds.), *Shifting Circles of Support: Contextualising kinship and gender relations in South Asia and Sub-Saharan Africa*. Delhi: Sage Publications Pp. 190-220.

Unit IV. Masculinity and Femininity

a. Production of Masculinity and Femininity

Halberstam, Judith. 2012. 'An Introduction to Female Masculinity: Masculinity without Men' in *Female Masculinity*. Delhi: Zubaan . Pp. 1-29.

Cornwall, Andrea and Nancy Lindisfarne 1994 'Dislocating Masculinity: Gender, Power and Anthropology' in Cornwall and Lindisfarne (ed.). *Dislocating Masculinity: Comparative Ethnographies*. Routledge. Chapter 1, pp 11-26.

b. Culture and Sexuality

Ortner, Sherry. 1974. 'Is male to female as nature is to culture?' in M.Z. Rosaldo and L. Lamphere (eds.) *Women, Culture and Society*. Stanford: Stanford University Press. Pp. 67-87.

Dube, Leela. 2001. *Anthropological Explorations in Gender: Intersecting Fields*. Delhi: Sage Publications, 2001. Chapter 3. The Symbolism Of Biological Reproduction and Sexual Relations of Production. Pp. 119-151

Rubin, Gayle. 1984. 'Thinking Sex: Notes for a Radical Theory of the Politics of Sexuality' in Carole Vance, ed., *Pleasure and Anger*. London: Routledge. Pp. 143-165.

Suggested Readings:

Bhatia, R. 2022. *Gender: A Sociological Understanding*. Delhi: Pearson

Hill-Collins, Patricia. 2002. "Learning from the Outsider Within" in S. Jackson and S. Scott (eds.) *Gender: A Sociological Reader*. London: Routledge. Pp. 69-78.

Narrain, Arvind and Vinay Chandra. (eds). 2015. *Nothing to Fix: Medicalization of Sexual Orientation and Gender Identity*. New Delhi Sage Publications. Chapter 3.

Uberoi, Patricia “Feminine Identity and National Ethos in Indian Calendar Art” in *Economic and Political Weekly*, Vol. 25, No. 17 (Apr. 28, 1990)Pp. WS41-WS48.

Visvanathan, S. 1996. 'Women and Work: From Housewifization to Androgyny' in *Economic and Political Weekly*, Vol. 31 Number 45/46. Pp. 3015–17.

Menon, Nivedita .2012. *Seeing like a Feminist*. India: Penguin.

Additional Resources

Being Male, Being Koti (2010) Dir: Mahua Bandhopdhyay

Paris is Burning (1991) Dir: Jenine Livingston

Izzatnagari Ki Asabhya Betiyaan (2012) Dir: Nakul Singh Sawhney

Danish Girl (2015) Dir: Tom Hooper

Bol (2011) Dir: Shoaib Mansoor

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Sociology
Generic Elective (GE) 09
Sociology of Climate Change

Generic Elective Course -09 (GE 09): Sociology of Climate Change

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 09 Sociology of Climate Change	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To introduce students to the issue of climate change from a multidisciplinary perspective.
2. To examine various dimensions of climate change and the efforts at mitigating its effects from a sociological lens.
3. To examine issues sustainability and climate risks in face of climate change.

Learning Outcomes:

1. *Demonstrate* an understanding of the various sociological dimensions of climate change and sustainability.
2. *Analyse* causes, course and consequences of climate change.
3. *Develop* skills to *advance and assess* solutions for social issues arising out of climate change.

SYLLABUS OF GE 09:

Unit 1 Understanding Climate Change (15 Hours)

This unit attempts to locate the primary arguments related to sociology of climate change by contextualising how society and human activity have contributed to environmental transformations.

- a. Anthropocene
- b. Population and Consumption
- c. Development and Sustainability

Unit 2 Governing Climate Change (15 Hours)

This unit looks at how climate change is not only a social and human issue, but political and legislative as well, with far reaching societal and environmental consequences.

- a. Policy and Protocols
- b. Disaster and Risk Management
- c. Role of Civil Society

Unit 3 Experiencing Climate Change (15 Hours)

This unit highlights the interconnectedness of environment and society, highlighting a need to understand climate change by re-examining social and environmental events and processes.

- a. Social Inequalities
- b. Migration and Adaptation

Practical component (if any) – NIL

Essential/Recommended Readings:

Unit 1. Understanding Climate Change

a. Anthropocene

Dietz, T., Shwom, R. L., & Whitley, C. T. (2020). Climate change and society. *Annual Review of Sociology*, 46(1), Pp. 135-158.

Rosa, E. A., Et. Al. (2015). The human (anthropogenic) driving forces of global climate change. In R. E. Dunlap & R. J. Brulle. *Climate Change and Society: Sociological perspectives*. Oxford University Press. Pp. 32-60.

b. Population and Consumption

Chertkovskaya, E. (2019). Ecology of culture. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* Tulika Books. Pp. 166-168.

Ehrhardt-Martinez, K., Schor, Et. Al. (2015). Consumption and climate change. In R. E. Dunlap & R. J. Brulle. *Climate Change and Society: Sociological perspectives*. Oxford University Press. Pp. 93-126.

c. Development and Sustainability

Adger, W. N., Et. al. (2013). Cultural dimensions of climate change impacts and adaptation. *Nature Climate Change* 3(2). Pp. 112-117.

Kothari, A., Et. al. (Eds.), *Pluriverse: A post-development dictionary* (pp. 32-33). Tulika Books. Development – for the 1 per cent, Maldevelopment, Climate-smart agriculture, Sustainable development. Pp. 6-11, 32-33, 71-73.

Unit 2 Governing Climate Change

a. Policy and Protocols

Andharia, J. (2021). Disaster management: Institutionalising risk-informed planning. In R. Agarwal, and O. Goyal. (Eds.). *The Crisis of Climate Change: Weather report*. Routledge India Pp. 34-46.

b. Disaster and Risk Management

Beck, U. (2006) Living in the world Risk Society. *Economy and Society*,35(3). Pp.329-345.

Swyngedouw, E. (2010). Apocalypse forever? Post-political populism and the specter of climate change. *Theory, Culture and Society*, 27(2-3). Pp. 213-232.

Seed, J. (2019). Deep ecology. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* Tulika Books. Pp.145-147.

c. Role of Civil Society

Kothari, A., Et. al. (Eds.), *Pluriverse: A post-development dictionary* . Tulika Books. Commons, Environmental justice, Tribunal on the rights of nature, Ubuntu. Pp. 32-33, 124-126, 182-184, 320-325.

Dutta, S. (2021). From ‘climate change’ to ‘climate justice’: ‘Civil society’ movement(s). In R. Agarwal and O. Goyal (Eds.). *The Crisis of Climate Change: Weather report*. Routledge. Pp. 230-244.

Unit 3 Experiencing Climate Change:

a. Social Inequalities

Harlan, S. L., Et. al (2015). Climate justice and inequality. In R. E. Dunlap & R. J. Brulle. *Climate Change and Society: Sociological perspectives*. Oxford University Press. Pp. 127-163.

Terreblanche, C. (2019). Ecofeminism. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary*, Tulika Books. Pp. 163-165.

b. Migration and Adaptation

Kothari, A., Et. al. (Eds.), *Pluriverse: A post-development dictionary* Transhumanism,. Earth spirituality, Nature rights, social ecology. . Tulika Books. Pp. 74-78, 157-159, 243-246, 308-310

Suggested Readings:

Ammar, N. (2019). Islamic ethics. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* (pp. 212-213). Tulika Books.

Damdul, G. D. (2019). Buddhism and wisdom-based compassion. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* (pp. 108-110). Tulika Books.

Ghazala, S. (2021). Forests and climate change in the anthropocene. In R. Agarwal & O. Goyal (Eds.). *The Crisis of Climate Change: Weather report* (1st ed., pp.69-77). Routledge India.

Halpin, H. (2019). Free software. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* (pp. 188-190). Tulika Books.

Handmer, J., Et. al. (2012). Changes in impacts of climate extremes: Human systems and ecosystems. In C. B. Field, Et. al. (Eds.) *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press. Pp. 231-233, 237-266.

Hugu, S. (2019). Tao worldview. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* (pp. 314-316). Tulika Books.

Kumar, S. (2019). Jain ecology. In Kothari, A., Salleh, A. Escobar, A., Demaria, F., & Acosta, A. (Eds.), *Pluriverse: A post-development dictionary* (pp. 214-216). Tulika Books.

Mishra Anupam (2006). *Saf Mathey ka Samaj*, London ,Penguin Books

Mishra Anupam (2027). *Aaj Bhi Khare Hain Talab*, Delhi, Prabhat Prakashn.

Rao, N. (2021). Achieving gender equality in the face of a climate crisis. In R. Agarwal & O. Goyal (Eds.). *The Crisis of Climate Change: Weather report* (1st ed., pp.104-115). Routledge India.

Additional Resources

<https://sdgs.un.org/goals>

<https://www.indiawaterportal.org/>

Documentaries

1. *Kiss the ground: How we can reverse climate change* [YouTube channel]. YouTube: https://www.youtube.com/watch?v=uf8dF0agJEk&ab_channel=FactualAmericaPodcast
2. *Anote's Ark* (2018) [Film]. <https://www.imdb.com/title/tt7689934/>
3. *Welcome to the Anthropocene* [Video]. YouTube
4. https://www.youtube.com/watch?v=fvgG-pxlobk&ab_channel=ArlindBoshnjaku
5. *Wall-E* ,(2008), Directed by , Andrew Stanton, Walt Disney Studios Motion Pictures.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category VI

Common List of Generic Electives (GE)

Generic Elective (GE) 13 Understanding Development

GENERIC ELECTIVE COURSE- 13 (GE 13): Understanding Development

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
GE 13 Understanding Development	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To introduce diverse processes of development from a sociological view point.
2. To familiarise students with ideas, theories, and practices of development.
3. To acquaint students with the trajectory and experiences of development in post-colonial India.

Learning outcomes:

Students will be able to:

1. *Identify* and understand different ideas of, and approaches to, development.
2. *Examine* the discourse of development as a relationship between developmental institutions, actors, policies and theories.
3. *Analyse* the key features of developmental processes in post-colonial India.
4. *Evaluate* developmental practices in different locations, moments, and contexts.

SYLLABUS OF GE 13: Understanding Development

Unit I: Unpacking Development (9 Hours)

This unit examines the way development discourse is constituted analytically and historically.

Unit II: Theorizing Development (18 Hours)

This unit introduces students to various theoretical perspectives on development.

- a. Modernization, Dependency and the World Systems
- b. Gender, Ecology and Development Theory
- c. Development as Freedom
- d. De-essentialising Development

Unit III: Development: Histories, Practices and Alternatives (18 Hours)

This unit maps analytical and historical contours of development in South Asia and introduces issues arising out of development in practice.

a. Histories

b. Practices

c. Alternatives

Practical Component: NIL

Essential/Recommended Readings:

Unit I. Unpacking Development

Rist, Gilbert. *The History of Development: From Western Origins to Global Faith*. United Kingdom: Zed Books, 2014. Chapter 1. Definitions of Development. Pp. 1-24.

Sachs, Wolfgang (ed). *The Development Dictionary: A Guide to Knowledge as Power*. United Kingdom: Zed Books, 2010.v *Development*. Pp. 1-21.

Unit II. Theorizing Development (18 Hours)

a. Modernization, Dependency and the World Systems

Bernstein, Henry. 'Modernization Theory and the Sociological Study of Development', *The Journal of Development Studies*, 1971, Volume 7, No. 2. Pp. 141-155

Roberts, J. Timmons. *The Globalization and Development Reader: Perspectives on Development and Global Change*. Germany: Wiley, 2014. Pp. 107-114, 126-144.

b. Gender, Ecology and Development Theory

Pearson, Ruth 'The Rise and Rise of Gender and Development' in Kothari, Uma K. *A Radical History of Development Studies: Individuals, Institutions and Ideologies*. United Kingdom: Zed Books, 2019. Pp. 157- 176.

Redclift, Michael 'Development and the Environment: Managing the Contradictions?' in Leslie Sklair (ed.) *Capitalism and Development*. United Kingdom: Taylor & Francis, 2002. Pp. 123-137

c. Development as Freedom

Sen, Amartya. *Development as Freedom*. United Kingdom: OUP Oxford, 2001. pp. 3-11, 35-54.

d. De-essentialising Development

Sanyal, Kalyan. *Rethinking Capitalist Development: Primitive Accumulation, Governmentality and Post-Colonial Capitalism*. United Kingdom: Taylor & Francis, 2014. Pp. 168-189.

Unit III. Development: History, Practices and Alternatives (18 Hours)

a. History

Ludden, David. 'Development Regimes in South Asia: History and the Governance Conundrum' *Economic and Political Weekly*, 2000, Vol. 40, No. 37. Pp. 4042–51.

Chatterjee, Partha, 2008. 'Democracy and Economic Transformation in India,' *Economic and Political Weekly*, 2008, Vol. 48, No. 16. Pp. 53-62.

Mosse, David. Caste and Development: Contemporary Perspectives on a Structure of Discrimination and Advantage. *World Development*, 2018, Volume 110. Pp. 423-433.

b. Practices

Hirschman, Albert O. *Development Projects Observed*. United States: Brookings Institution Press, 2014. Pp. 1-31

De-Sardan, Jean-Pierre Oliver. *Anthropology and Development: Understanding Contemporary Social Change*. United Kingdom: Bloomsbury Publishing, 2008. Pp. 137-151.

c. Alternatives

Kothari, Ashish., Shrivastava, Aseem. *Churning the Earth: The Making of Global India*. India: Penguin, 2012. Pp. 254-292.

Suggested Readings:

Bardhan, Pranab K. *The Political Economy of Development in India*. United Kingdom: B. Blackwell, 1984.

Harrison, Elizabeth., Crewe, Emma. *Whose Development? An Ethnography of Aid*. United Kingdom: Bloomsbury Academic, 1998.

Galeano, Eduardo. *Open Veins of Latin America*. United Kingdom: Monthly Review Press, 1997.

Mies, Maria. *Patriarchy and Accumulation on a World Scale: Women in the International Division of Labour*. United Kingdom: Zed Books, 2014.

Rodney, Walter. *How Europe Underdeveloped Africa*. United Kingdom: Verso Books, 2018.

Schumacher, E. F., McKibben, Bill. *Small Is Beautiful: Economics as If People Mattered*. India: Harper Collins, 2010.

Wolf, Eric R. *Europe and the People Without History*. United Kingdom: University of California Press, 2010.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A. (H) Sociology
Discipline Specific Core (DSC) 18
Environmental Sociology

Discipline Specific Core Course -18 (Dsc-18): Environmental Sociology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSC 18 Environmental Sociology	4	3	1	0	12th Class Pass	BA (H) DSC 01 Introduction to Sociology Or equivalent course

Learning Objectives:

1. The course will enable students to reflect on *environment* as an object of sociological inquiry.
2. The course will develop analytical thinking on the linkages between society and the environment from a sociological standpoint.
3. To develop an awareness of the character of causality in environmental sociology and expose students to critical debates on the role of humans in ecological crises.
4. The course will enhance the capacity to examine the social consequences and responses to ecological crises with the help of case studies.

Learning outcomes:

Students will be able to:

1. Understand the dynamic between natural and social worlds from a sociological perspective.
2. Identify and grasp the fundamental principles and core theoretical debates of the discipline.

3. Apply a sociological perspective on environment and contribute to research endeavours or public policy conversations that assess the causes, effects and possible solutions to environmental problems.
4. Examine the intertwining issues of ecology and inequity and address the questions of environmental justice and ethics.

SYLLABUS OF DSC-18: Environmental Sociology

Unit 1: Basic Concepts in Environmental Sociology (12 Hours)

This unit introduces the basic concepts and themes in environmental sociology necessary to develop a holistic perspective.

- a. What is Environmental Sociology?**
- b. Mainstream Ideas in Environmentalism**
- c. Indian Environmentalism**

Unit 2: Social Theory and the Environment (21 Hours)

This unit exposes students to the intersectionality of the environment with social processes and institutions.

- a. Theorising the Environment**
- b. Intersectionality and Environment**
- c. Social Ecology**

Unit 3: Social Responses to Environmental Disruption (12 Hours)

This unit examines the social responses to ecological crises through new issues of livelihood and experiments in sustainable living.

- a. Environmental Justice**
- b. Alternative Engagements**

Practical Component: NIL

Essential/Recommended Readings:

Unit 1: Basic Concepts in Environmental Sociology

- a. What is Environmental Sociology?**

Chung-En Liu, J. and Mayerfeld Bell, M. (2017). 'Environmental Sociology'. In Kathleen O. Korgen (Ed.), *The Cambridge Handbook of Sociology: Core Areas in Sociology and the Development of the Discipline*, Vol. 1. Cambridge: Cambridge University Press. Pp. 435-444.

- b. Mainstream Ideas in Environmentalism**

Dunlap, Riley E. (2010). 'The Maturation and Diversification of Environmental Sociology: From Constructivism and Realism to Agnosticism and Pragmatism'. In Michael R. Redclift and G. Woodgate (Eds.), *International Handbook of Environmental Sociology*, 2nd Ed. Cheltenham. UK: Edward Elgar. Pp. 15-32.

c. Indian Environmentalism

Gadgil, M and Guha, R (1995) Ideologies of Environmentalism. In Madhav Gadgil and Ramachandra Guha, *Ecology and Equity: The Use and Abuse of Nature in Contemporary India*. London : Routledge. Chapter 4. Pp.98-112

Chapple, Christopher K. (1998). 'Toward an Indigenous Indian Environmentalism'. In Lance E. Nelson (Ed.), *Purifying the Earthly Body of God: Religion and Ecology in Hindu India*. Albany, USA: State University of New York Press. Pp. 13-38.

Unit 2: Social Theory and the Environment

a. Theorising the Environment

Barbosa, Luiz C. (2009). 'Theories in Environmental Sociology'. In Kenneth A. Gould and Tammy L. Lewis (Ed.), *Twenty Lessons in Environmental Sociology*. New York: Oxford University Press. Pp. 25-44.

Cordner, Alissa (2021). 'Risk'. In Beth S. Caniglia, et al. (Eds.), *Handbook of Environmental Sociology*. Switzerland: Springer. Pp. 167-187.

Agarwal, Bina, (2007). 'The Gender and Environment Debate: Lessons from India'. In Mahesh Rangarajan. (Ed.), *Environmental Issues in India: A Reader*. New Delhi: Pearson, Longman. Pp. 316-324, 342-352.

b. Intersectionality and Environment

Ergas, Christina, McKinney, Laura and Bell, S. Elizabeth (2021). 'Intersectionality and the Environment'. In Beth S. Caniglia, et al. (Eds.), *Handbook of Environmental Sociology*. Switzerland: Springer. Pp. 15-30.

Sharma, Mukul (2017). 'Eco-casteism: Sulabh and the Denial of Dalit Existence'. In Mukul Sharma, *Caste and Nature: Dalits and Indian Environmental Politics*. Delhi: Oxford University Press. Pp. 1-22.

c. Social Ecology

Mukerjee, Radhakamal (1994). 'An Ecological Approach to Sociology'. In Ramchandra Guha (Ed.), *Social Ecology. Oxford in India Readings in Sociology and Social Anthropology*. Delhi: Oxford University Press. Pp. 22-26.

Unit 3: Social Responses to Environmental Disruption

a. Environmental Justice

Maung, Rebecca and Pellow, David. N. (2021). 'Environmental Justice'. In Beth S. Cagnilia, et al. (Eds.) *Handbook of Environmental Sociology*. Switzerland: Springer Pp. 35-47.

Lewis, Tammy L. (2009). 'Environmental Movements in the Global South'. In Kenneth A. Gould and Tammy L. Lewis (Ed.), *Twenty Lessons in Environmental Sociology*. New York: Oxford University Press. Pp. 244-254.

Sangvai, S. (2007). 'The Tragedy of Displacement'. In Mahesh Rangarajan (Ed.), *Environmental Issues in India: A Reader*. New Delhi: Pearson/Longman. Pp. 437-443.

b. Alternative Engagements

Leahy, Terry (2021). 'What is Permaculture? Three Perspectives' in *The Politics of Permaculture*. London: Pluto Press. Pp. 1-23.

Suggested Readings:

Guha, R and Martinez-Alier, J (2006). *Varieties of Environmentalism: Essays North and South*. London: Earthscan

Baviskar, A. (1995). *In the Belly of the River: Tribal Conflicts Over Development in the Narmada Valley*. Delhi, New York: Oxford University Press.

Bell, Michael M. (2008). *An Invitation to Environmental Sociology*. Thousand Oaks, CA: Sage.

Divan, S. and Rosencranz, A. (2022). *Environmental Law and Policy in India: Cases and Materials*. US: Oxford University Press.

Vasan, S. (2006). *Living with Diversity: Forestry Institutions in the Western Himalaya*. India: Indian Institute of Advanced Study.

Hannigan, J. (1995). *Environmental Sociology*. London and New York: Routledge.

Schnaiberg, A. (1980). *The Environment: From Surplus to Scarcity*. New York: Oxford University Press.

Shiva, V. (1988). *Women In Nature*. In *Staying Alive: Women Ecology and Development*. New Delhi: Zed Books

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Category II

Sociology
Discipline Specific Elective (DSE) 09
Sociology and Social Policy

DISCIPLINE SPECIFIC ELECTIVE COURSE -09(DSE-09): Sociology and Social Policy

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 09 Sociology and Social Policy	4	3	1	0	12th Class Pass	Nil

Learning Objectives:

1. To constitute social policy as an object of sociological investigation and recount key theories, concepts, and methods developed for around it.
2. To impart the methods of analysing the formulation, adoption, implementation of social policy from a sociological vantage.
3. To appreciate social policy analysis as an interdisciplinary field of study and understand the complex dynamics of the politics of decision making.

Learning Outcomes:

Students will be able to:

1. *Develop* critical and analytical skills with respect to examining the complex dynamics involved in social policy making process.
2. *Recognise, evaluate* and dissect policies of social importance in the interest of people, society and environment.
3. *Exhibit* the requisite analytical skills to evaluate and improve social policy.

SYLLABUS OF DSE-09: Sociology and Social Policy

Unit I: Social Policy and Sociological Analysis (15 Hours)

This unit invites students to the world of Social Policy and familiarizes them with some of its important conceptual and theoretical frameworks, meanings, evolution and manifest practices.

- a. What is Social Policy?
- b. Social Policy and Sociological Perspectives

Unit II: Making Social Policy I: Institutions, Ideologies and Actors (15 Hours)

This unit engages with the context, value framework, social character and politics involved in the policy-making process.

- a. Social Policy as a Worldview
- b. The Character of Social Policies in India

Unit III: Making Social Policy II: Craft and Analysis (15 Hours)

This unit introduces students to the methodological issues involved in the craft of policy-making from a sociological perspective and problematizes the dominance of technocracy and reductionist public policy experts.

- a. Methodological and Technical Frameworks
- b. Emerging Issues and Concerns in Social Policy

Practical Component: NIL

Course Outline and Essential/Recommended Readings:

Unit I. Social Policy and Sociological Analysis

- a. What is Social Policy?

Spicker, P. (2014). Introduction: The Nature of Social Policy. In: *Social Policy: Theory and Practice*. Great Britain: Policy Press. Pp. 1–20.

Dreze, J. (2016). Social Policy: An Introduction In: Jean Dreze (ed.) (2016). *Social Policy: Essays from Economic and Political Weekly*, New Delhi: Orient Blackswan. Pp.1-18.

- b. Social Policy and Sociological Perspectives

Coffey, A. (2004). Sociological Theory and Social Policy, In: *Re-Conceptualizing Social Policy: Sociological Perspectives on Contemporary Social Policy*. England: Open University Press. Pp.1-4, 10-11, 19-22, 30-41.

Unit II: Making Social Policy I: Institutions, Ideologies and Actors

- a. **Social Policy Worldview: Ideology, Value Frameworks and Priorities**

Spicker, P. (2014). Principles and Values. In: *Social Policy: Theory and practice*. Great Britain: Policy Press. Pp. 181–202.

Lapuente, V & Van de Walle, S. (2020). The Effects of New Public Management on the Quality of Public Services. In: *Governance: An International Journal of Policy, Administration and Institution*. Vol.33, Issue.3. Pp. 461-464.

Manuel, T. (2019). How Does One Live the Good Life?: Assessing the State of Intersectionality in Public Policy. In: O. Hankivsky, J. S. Jordan-Zachery (eds.), *The Palgrave Handbook of Intersectionality in Public Policy*. London:Palgrave. Pp-33-46

Ghosh, J. (2004). Social Policy in Indian Development. In: T. Mkandawire (eds) *Social Policy in Development Context*. London: Palgrave Macmillan. Pp. 284-307.

b. The Character of Social Policies in India

Sen, S (2022). Law and Social Policy in India. In: Davy, U., & Chen, A.H.Y. (Eds.). *Law and Social Policy in the Global South: Brazil, China, India, South Africa*. New York: Routledge. Pp-78-127

Pellissery, S. (2021). One Hundred Years of the (Stifed) Social Question, In: L. Leisering (ed.). *One Hundred Years of Social Protection, Global Dynamics of Social Policy*. Cham: Palgrave Mcmillan. Pp.121-142

Chopra, D. (2011). Policy Making in India: A Dynamic Process of Statecraft. *Pacific Affairs*, 84(1), 89–107.

Unit III: Making Social Policy II: Craft and Analysis (15 Hours)

a. Methodological and Technical Frameworks

Fischer, Frank. (2007). Deliberative Policy Analysis as Practical Reason: Integrating Empirical and Normative Arguments, In: Frank Fischer, Gerald J. Miller, Mara S. Sidney (ed.) 2007. *Handbook of Public Policy Analysis: Theory, Politics, and Methods*. New York: CRC Press Taylor & Francis Group.pp.223-236

Spicker, P. (2014). Policy in Practice. In *Social policy: Theory and practice*. Great Britain: Policy Press. Pp. 223–244, 429-431

Deshpande, S., and Y. Yadav. (2006). Redesigning Affirmative Action. *Economic and Political Weekly*. Volume 41. Pp. 2419–2424.

b. Emerging Issues and Concerns in Social Policy

Dunleavy, P. (2016). ‘Big data’ and Policy Learning. In: Gerry Stoker and Mark Evans (ed.). *Evidence-based Policy Making in the Social Sciences: Methods that Matter*. UK: Policy Press. Pp.145-160, 163-166.

(To make the course more empirically grounded and impactful the instructors are suggested to incorporate activities like Policy Review, Field Study, and Policy Expert Interaction)

Suggested Readings:

O'Connor, F. Mary Katherine & Netting, Ellen (Eds.). (2011). *Analyzing Social Policy Multiple Perspectives for Critically Understanding and Evaluating Policy*. New Jersey: John Wiley & Sons, Inc. Pp.1-7, 14-17

- Blakemore, K and Griggs, E. (2007). Ideas and Concepts. In: *Social Policy: An Introduction*. Open University Press, England, pp. 5-10 & 15-39.
- Government of India. (1946 – 1950). *Constituent Assembly Debates (Proceedings) Vol. I to XII(1946-1950)*.
- Government of India. (1963). The Planning Process, Planning Commission, New Delhi, 1963
- Government of India. (1985). *Challenges of Education: A Policy Perspectives*. MHRD.
- Government of India. (2005). The Mahatma Gandhi National Rural Employment Guarantee Act, 2005..
- Government of India. (2013). The National Food Security Act 2013.
- Govt. of India, Ministry of Education. (2019,2020). Draft National Education Policy, 2019 and National Education Policy, 2020.
- Government of India. (2020). The Code on Social Security, 2020, Government of India
- Murali, K. (2018). Caste, Class and Capital: The Social and Political Origins of Economic Policy in India. Cambridge: Cambridge University Press.
- Nussbaum, M and Sen, A. (1993). *The Quality of Life*. Oxford: Oxford University Press.
- Patton, C V; Sawicki, D; Clark, Je. (2016). *Basic Methods of Policy Analysis and Planning*. New York:Rutledge.Pp. 21-33, 43-57.
- Report of the Expert Group to Propose “Diversity Index” and to Work out the Modalities for Implementation. 2008. Submitted to the Ministry of Minority Affairs. Government of India
- Saha, K.T. (Eds.). (1947). *National Planning Committee Series, Report of the Sub-committees (Vol.1-25)* Bombay: Vora & co. Publishers Ltd.
- Vaidyanatha Ayyar, R.V. (2017). *History of Education Policy Making in India: 1947 - 2016*. Delhi: Oxford University Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

ZH DSE Course-XI: Wildlife Conservation and Management

Course Learning Objective:

The Discipline Specific Paper on Wildlife Conservation and Management is designed to acquaint students with varied aspects of wildlife conservation, including its importance, major threats, management of their habitats and populations. The emphasis will be on developing interest and invoking a sense of responsibility among students towards wildlife conservation. The course also explores different techniques, perspectives, and approaches to both identify and achieve wildlife management goals. This course will motivate students to pursue career in the field of wildlife conservation and management.

Course Learning Outcome:

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

- Become aware about the importance of wildlife in general, and its conservation and management in particular.
- Comprehend the application of the principles of ecology and animal behaviour to formulate strategies for the management of wildlife populations and their habitats.
- Understand the management practices required to achieve a healthy ecosystem for wildlife population along with emphasis on conservation and restoration.
- Know the key factors for loss of wildlife and important strategies for their *in situ* and *ex situ* conservation.
- Recognize the techniques for estimation, remote sensing and Global Position Tracking for wildlife.
- Gain knowledge about the wildlife diseases and the quarantine policies.
- Know about the Protected Area Networks in India, Ecotourism, Ecology of perturbation and Climax persistence.
- Perform critical thinking, literature review; scientific writing as well as presentations; and participation in citizen science initiatives with reference to wildlife.

Course Content:

Theory [Credits: 4]

60hrs

Unit 1: Introduction to Wildlife

6hrs

Values of wildlife - positive and negative; Conservation ethics; Importance of conservation; Causes of depletion; World conservation strategies: WCS, CBD, Agenda 21
(Chapter 1, 2, 3 and 10: Singh; Chapter 1 and 3: Saha and Mazumdar)

Unit 2: Evaluation and Management of Wildlife

10hrs

Habitat analysis: a) Physical parameters: Topography, Geology, Soil and water; b) Biological Parameters: food, cover, forage, browse and cover estimation; Standard evaluation procedures: remote sensing and GIS.
(Chapter 2, 11 & 12: Sutherland; Chapter 6: Singh; Chapter 6: Saha and Mazumdar)

Unit 3: Management of Habitats

10hrs

Setting back succession: Grazing logging; Mechanical treatment; Advancing the successional process: Cover construction; Preservation of general genetic diversity; Restoration of degraded habitats.
(Chapter 11 & 12: Sutherland; Chapter 6: Singh)

Unit4: Population Estimation

12 hrs

Population density, Natalty, Birth rate, Mortality, fertility schedules and sex ratio computation; Faecal analysis of ungulates and carnivores: Faecal samples, slide preparation, and Hair identification; Pug marks and Census methods
(Chapter 2 & 4: Sutherland; Chapter 8 and 9: Singh; Chapter 6: Saha and Mazumdar)

Unit5: Management Planning of Wildlife in Protected Areas

8hrs

Estimation of carrying capacity; Human-wildlife conflict; Eco tourism / wild life tourism in forests; Climax communities: characteristics and theories; Ecology of perturbation.
(Chapter 9: Sutherland; Chapter 1: Woodroff; Chapters 8 and 11: Singh; Chapter 9: Saha and Mazumdar)

Unit6: Management of Excess Population

6hrs

Bio- telemetry; Care of injured and diseased animal; Quarantine; Common diseases of wild animals: Zoonosis (Ebola and Salmonellosis), Rabies, Foot and Mouth Disease, Mycobacterium TB, Bovine and Avian Flu
(Chapters 6, 7 and 11: Saha and Mazumdar)

Unit:7 Protected Areas

8hrs

National parks and sanctuaries; Biosphere reserves; Conservation and Community reserve; Important features of protected areas in India; Tiger conservation - Tiger reserves in India and Management challenges in Tiger reserve
(Chapters 11 and 12: Singh; Chapters 3 and 9: Saha and Mazumdar)

Practical [Credits: 2]

1. Identification of mammalian fauna, avian fauna, herpeto-fauna through direct and indirect evidences seen on a field trip to a wildlife conservation site.
2. 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).
3. Familiarization and study of animal evidences in the field: Identification of animals through pug marks, hoof marks, scats, nests and antlers.
4. Demonstration of different field techniques for flora and fauna: PCQM.
5. Trail / transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences).
6. Identification of big cats: Lion, tiger, panther, cheetah, leopard and jaguar.
7. A report based on a visit to National Park/Wildlife Sanctuary/Biodiversity Park or any other wildlife conservation site.

Teaching and Learning Process:

The case study approach with real-life examples from the field will give a better understanding of the subject and its applications. The traditional chalk and talk method will be supplemented with LCD projection system and use of visualizer for theory classes. Projection of videos or short movies available on the subject will enhance the understanding of the subject. Digital collection of pictures of pugmarks, hoof marks, bird's nests, wild fauna and flora will facilitate observation of their characteristic features with ease. Group discussions, book reviews, paper presentations, videos, animations, are some methods that can be employed for effective teaching. Project based reports, assignments and E-posters can also form an important part of learning regime. Field-based research projects will develop interest in the subject and motivate students to pursue research as a career in

future. Laboratory visits to renowned institutions like WII, Dehradun and Field visits to various conservation sites like Jim Corbett National Park, Aravali Biodiversity Park and National Zoological Park will provide students a practical or hands on knowledge of the subject. Students should participate in citizen science initiatives related to wildlife such as bird counts and uploading of the data on E-bird.org.

Assessment Methods:

Students will be assessed using the following methods:

- Formative/ Continuous assessment: This will be done through problem solving exercises, oral and written examinations, closed-book and open book tests, practical assignment laboratory reports, observation of practical skills, individual project reports, seminar presentation, viva voce interviews, computerized adaptive testing, literature surveys and evaluations, outputs from collaborative work etc. to assess the retention abilities of students.
- Summative assessment: Semester-end written and practical examinations will be an indicator of student's learning throughout the semester and analyses comprehensive knowledge gained by the students.

Keywords:

Wildlife, Conservation, Management, Population, Habitat, Succession, Climax, Quarantine, Tiger Project, National Park, Wildlife Sanctuaries, Biodiversity Reserves, Wildlife Diseases, Protected Areas

Recommended Books:

- Saha, G.K. and Mazumdar, S. (2017). Wildlife Biology: An Indian Perspective. PHI learning Pvt. Ltd. ISBN: 8120353137, 978-812035313
- Sinclair, A.R.E., Fryxell, J.M. and Caughley, G. (2006). Wildlife Ecology, Conservation and Management. Wiley-Blackwell, Oxford, UK.
- Singh, S.K. (2005). Text Book of Wildlife Management. IBDC, Lucknow.

Suggested Readings:

- Hudson, P.J., Rizzoli, A., Grenfell, B.T. Heesterbeek, H. and Dobson, A.P. (2002). The Ecology of Wildlife Diseases. Oxford University Press, Oxford.
- Banerjee, K. (2002). Biodiversity Conservation in Managed and Protected Areas. Agrobios, India.
- Sharma, B.D. (1999). Indian Wildlife Resources Ecology and Development. Daya Publishing House, Delhi.
- Primack, R.B. (1998). Essentials of Conservation Biology. Sinauer Associates, Inc. Sunderland, MA.
- Hossetti, B. B. (1997). Concepts in Wildlife Management. Daya Publishing House, Delhi.

Online Tools and Web Resources:

- <https://swayam.gov.in/courses/4687-july-2018-wildlife-conservation>
- <https://swayam.gov.in/courses/5364-jan-2019-wild-life-ecology>
- <https://papaco.org/mooc-on-species-conservation/>
- <https://www.iucn.org/theme/protected-areas/our-work/capacity-development/moocs>
- <https://www.zsl.org/united-for-wildlife-free-conservation-courses>
- <https://wildlife.org/next-generation/career-development/online-courses/>
- <https://www.openlearning.com/umtmooc/courses/wildlife-management>

Course Title: Concepts of Ecology**Total Credits: 04 (Credits: Theory - 02, Practical - 02)****Total Lectures: Theory - 30 hrs.; Practical - 60 hrs.****DSC 3**

Objectives: The primary aim of this course is to develop a scientific understanding of the diverse aspects of the field of ecology. The students will be familiarized with the interactions between the organisms and their physical environment. Additionally, various attributes of populations and communities with help of theoretical concepts and field examples will be discussed. It provides a platform to understand the varied forces that lead to variations among populations of a species.

Unit I: Introduction to Ecology**03 hrs**

Autecology and Synecology, Laws of limiting factors, Study of physical factors: Temperature and Light.

Unit II: Population**07 hrs**

Unitary and Modular populations; Unique and group attributes of population: density, natality, mortality, life tables, fecundity tables, survivorship curves, age ratio, sex ratio, dispersal and dispersion; Exponential and logistic growth, equations and patterns, r and k strategies; Intraspecific population regulation: density-dependent and independent factors.

Unit III: Species Interactions**06 hrs**

Types of species interactions, Interspecific competition: Lotka-Volterra model of competition, Gause's Principle with laboratory and field examples, Niche concept; Predation: Lotka-Volterra equations, Functional and numerical responses, predator defence mechanisms, Resource partitioning.

Unit IV: Community**05 hrs**

Community characteristics: species richness, dominance, diversity, abundance, guilds, ecotone and edge effect; Ecological succession with examples and types.

Unit V: Ecosystem**06 hrs**

Types of Ecosystems: Terrestrial ecosystem, vertical stratification in tropical forest; Food chain: detritus and grazing food chains, linear and Y-shaped food chains, food web; Energy flow through the ecosystem; Ecological pyramids and Ecological efficiencies; Biogeochemical cycle- nitrogen cycle.

Unit VI: Applied Ecology**03 hrs**

Ecology in wildlife conservation and management, Protected areas: National Parks, Biosphere reserves and Sanctuaries; Restoration ecology, Principles of Environmental impact assessment.

Practical:

1. Study of life tables and plotting of survivorship curves of different types from

hypothetical/ real data

2. Determination of population density in a natural or a hypothetical community by quadrat method and calculation of Shannon-Weiner diversity index.
3. Study of an aquatic ecosystem:
 - a. Phytoplankton and zooplankton
 - b. Measurement of temperature, turbidity/penetration of light, determination of pH
 - c. Dissolved oxygen content (Winkler's method), chemical oxygen demand
 - d. Free carbon dioxide and alkalinity
4. Study of ten endemic animals of India with slides/pictures/videos.
5. Report on a visit to a National Park/Biodiversity Park/Wildlife Sanctuary.

Recommended Books:

1. Odum, E.P. and Barrett G. W. (2008). Fundamentals of Ecology. Indian Edition (5th). Publisher: Brooks/Cole.
2. Smith T. M. and Smith R. L. (2015). Elements of Ecology. 9th International Edition. Publisher: Benjamin Cummings.
3. Saha G.K. and Mazumdar S. (2020) Wildlife Biology, An Indian Perspective. Publisher: PHI Learning Private Limited
4. Zimmer C. and Emlen D. J., (2013) 1st Edition. Evolution: Making Sense of Life, Roberts & Co.
5. Futuyma, Douglas and Mark, Kirkpatrick (2017) 3rd Edition. Evolutionary Biology, Oxford University Press

Teaching-Learning Process:

Teaching would encompass board teaching, PowerPoint presentations and field visits. The learning process will include the reading of research papers, participatory activities like focused group discussions, experience sharing, brainstorming sessions, project writing and presentations by students. Field trips to National parks and Eco-parks would complement and enhance understanding of the concepts and information about wildlife and its conservation. Laboratory work will provide students with hands-on experience for a better understanding of the subject.

Learning Outcomes:

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

- Demonstrate an understanding of the basic concepts of the subject
- Explain the characteristics, dynamics, and growth of populations
- Understand the characteristics of the community, ecosystem development and climax

theories

- Gain knowledge about the relationship of the evolution of various species and the environment they live in.
- Design basic field studies, collect data and interpret it
- Carry out population and community studies

Assessment Methods:

The learners/ students can be assessed in the following ways:

- Presenting the topics in the class via blackboard teaching/presentations, group discussions etc.
- Lecture units will be assessed by written exams (multiple-choice, short-answer or essay-based).
- Practical units will be assessed by experimental reports and/or short written assignments and/or written exams.
- From time to time, learners will be given practical problems to test their theoretical skills and promote practical knowledge.
- Students would be provided feedback on their work with a view to improving their academic performance.
- Formative feedback throughout the course and summative feedback as mid-semester and semester-end evaluation.

ABILITY ENHANCEMENT COURSE
Offered by
DEPARTMENT OF ENVIRONMENTAL SCIENCE

AEC 1: Environmental Science: Theory into Practice – I

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
AEC 1: Environmental Science: Theory into Practice – I	02	01	–	01	All UG Courses	All UG Courses	Department of Environmental Studies/Sciences

Learning Objectives

The Ability Enhancement Course on Environmental Science: Theory into Practice (I & II) at Undergraduate level (AEC- I) aims to train students to cater to the need for ecological citizenship through development of a strong foundation on the critical linkages between ecology-society-economy.

The Learning Objectives of this course are as follows:

- **Disciplinary knowledge**
Enable students to develop a comprehensive understanding of various facets of life forms, ecological processes, and the impacts on them by humans during the Anthropocene era.
- **Critical thinking**
Build capabilities to identify relevant environmental issues, analyse the various underlying causes, evaluate the practices and policies, and develop framework to make informed decisions.
- **Moral and ethical awareness/reasoning**
Develop empathy for all life forms, appreciation for the various ecological linkages within the web of life, awareness and responsibility towards environmental protection and nature preservation.

[State the purpose for creating and teaching the course. Describe what the course aims to do from the teacher's perspective.]

Learning outcomes

The Learning Outcomes of this course are as follows.

After the course the students will be empowered and able to:

- Analyse natural processes and resources that sustain life and govern economy.
- Predict the consequences of human actions on the web of life, global economy, and quality of human life.
- Think critically and develop appropriate strategies (scientific, social, economic, administrative, and legal) for environmental protection, conservation of biodiversity, environmental equity, and sustainable development.
- Demonstrate values and show compassionate attitudes towards complex environmental-economic-social challenges, and participate at national and international levels in solving current environmental problems and preventing the future ones.
- Adopt sustainability as a practice in life, society, and industry.

Teaching Learning process

The teaching–learning methodologies are designed to provide the undergraduate students a comprehensive understanding of the subject in a simplistic manner as well as evoke critical reasoning and analytical thinking among them. Some of the theoretical concepts related to practicals/outreach activities, etc. should be covered during practical sessions. The various approaches to teaching–learning process include classroom lectures, video presentations, and ICT enabled teaching tools. Forenhancing practical understanding, field visits are encouraged to relevant places in Delhi like Biodiversity parks, Protected areas, Wetlands, Sewage treatment plants, etc.

SYLLABUS OF AEC-1: Environmental Science: Theory into Practice – I

UNIT – I

(1 -2 Weeks)

Introduction to Environmental Studies (1 lectures and 1 practical/ outreach activities)

- Multidisciplinary nature of environmental studies; components of environment: atmosphere, hydrosphere, lithosphere, and biosphere
- Scope and importance; Concept of sustainability and sustainable development; Brief history of environmentalism

UNIT – II

(3-7 Weeks)

Ecosystems (5 lectures and 7 practical/ outreach activities)

- Definition and concept of Ecosystem
- Structure of ecosystem (biotic and abiotic components); Functions of Ecosystem: Physical (energy flow), Biological (food chains, food web, ecological succession), and Biogeochemical (nutrient cycling) processes. Concepts of productivity, ecological pyramids and homeostasis

- Types of Ecosystems: Tundra, Forest, Grassland, Desert, Aquatic (ponds, streams, lakes, rivers, oceans, estuaries); importance and threats with relevant examples from India
- Ecosystem services (Provisioning, Regulating, Cultural, and Supporting); Ecosystem preservation and conservation strategies; Basics of Ecosystem restoration

UNIT – III

(8-11 Weeks)

Natural Resources (5 lectures and 6 practical/ outreach activities)

- Land resources: Minerals, soil, agricultural crops, natural forest products, medicinal plants, and forest-based industries and livelihoods; Land cover, land use change, land degradation, soil erosion, and desertification; Causes of deforestation; Impacts of mining and dam building on environment, forests, biodiversity, and tribal communities
- Water resources: Natural and man-made sources; Uses of water; Over exploitation of surface and ground water resources; Floods, droughts, and international & inter- state conflicts over water
- Energy resources: Renewable and non-renewable energy sources; Use of alternate energy sources; Growing energy needs; Energy contents of coal, petroleum, natural gas and bio gas; Agro-residues as a biomass energy source
- Case studies: Contemporary Indian issues related to mining, dams, forests, energy, etc (e.g., National Solar Mission, Cauvery River water conflict, Sardar Sarovar dam, Chipko movement, Appiko movement, Tarun Bharat Sangh, etc)

UNIT – IV

(12-15 Weeks)

Environmental Pollution and Control (4 lectures and 6 practical/ outreach activities)

- Environmental pollution (Air, water, soil, thermal, and noise): causes, effects, and controls; Primary and secondary air pollutants; Air and water quality standards
- Nuclear hazards and human health risks
- Solid waste management: Control measures for various types of urban, industrial waste, Hazardous waste, E-waste, etc; Waste segregation and disposal
- Pollution control measures: Introduction to legal, biological, and physico-chemical methods; Role in sustainability
- Pollution case studies: Ganga Action plan (GAP), Delhi air pollution and public health issues, Plastic waste management rules, Bhopal gas tragedy, etc

(The total number of weeks should add up to 15 only)

Practical component (if any) –

(15 Weeks)

Unit I

Introduction to Environmental Studies (1 practical/ outreach activity)

Practical/Exercises/Experiential activities/Outreach activities

(College may choose as per requirement)

- Analysis of achievement of Sustainable Development Goals of any country.
- Gain insights of sustainability framework for an industrial activity using activity worksheets
- Use of environmental activity worksheets to understand interdependence and interactions between different environmental components.

Unit 2

Ecosystems (7 practical/ outreach activities)

Practical/Exercises/Experiential activities/Outreach activities

(College may choose as per requirement)

- Schematic collection of data for depicting ecological pyramids in the College campus
- Differentiation of natural and managed ecosystems using Google Earth/Google Map
- Field visit to terrestrial and aquatic ecosystems (a) forests, (b) grasslands, (c) wetlands, (d) biodiversity parks, etc.
- Develop a working model of any ecosystem
- Use of worksheets to identify structure and function of different ecosystems.

Unit 3

Natural Resources (6 practical/ outreach activities)

Practical/Exercises/Experiential activities/Outreach activities (College may choose as per requirement)

- Visit to a paper recycling unit/rainwater harvesting plant/solar plant/biogas plant in the College campus
- Develop and understand working model of renewable/non-renewable sources of energy
- Mapping of natural resources of a given study area using Google Earth
- Time-series analysis of natural resource consumption of a given country using publicly available data
- Comparison of energy demand and consumption of a particular state over the years using graphical tools
- Assessing the consumption pattern of a natural resource in the dominant industry at local scale and status of natural resource in areas supplying it

Unit 4

Environmental Pollution (6 practical/ outreach activities)

Practical/Exercises/Experiential activities/Outreach activities

(College may choose as per requirement)

- Determine water quality of a given location using rapid pollution monitoring kits
- Assess air quality index (AQI) of any location using real-time air quality parameters
- Determine magnitude of solid waste generated in a home/college on a monthly basis
- Develop and maintain compost/vermicompost using biodegradable waste in the College
- Identify suitability of given water samples for various purposes using given kits
- Prepare water audit report of the college/house/locality/colony.
- Map solid and liquid discharge of the college/colony and develop a management plan

(show it using schematic diagram, and photographs.

- Repurpose waste for economic and environmental benefits in your college/near by area/colony (submit a small video).
- Analyze river-society-economy nexus based on primary or secondary data (use quantitative data, and show it using photographs on a poster).

Essential/recommended readings

Unit 1

Introduction to Environmental Studies

1. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y., and Berg, L.R. (2015). *Environment*, 8th Edition. Wiley Publishing, USA. **Chapter 1** (Pages: **1-17**); **Chapter 2** (Pages: **22-23**); **Chapter 3** (Pages: **40, 41**); **Chapter 4** (Pages: **64, 66**).
2. Singh, J.S., Singh, S.P., and Gupta, S.R. (2017). *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi. **Chapter 1** (Page: **3-28**).

Unit 2

Ecosystems

1. Odum, E.P., Odum, H.T., and Andrews, J. (1971). *Fundamentals of Ecology*. Saunders, Philadelphia, USA. **Chapter 1** (Pages: **1-16**); **Chapter 2** (Pages: **18-76**); **Chapter 10** (Pages: **414-458**).
2. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y., and Berg, L.R. (2015). *Environment*, 9th Edition. Wiley Publishing, USA. **Chapter 3** (Pages: **38-52**); **Chapter 4** (Pages: **53-62**); **Chapter 5** (Pages: **100-103**); **Chapter 6** (Pages: **106-128**).
3. Singh, J.S., Singh, S.P., and Gupta, S.R. (2017). *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi. **Chapter 13** (Pages: **307-323**); **Chapter 18** (Pages: **420-442**); **Chapter 28** (Pages: **747-769**).

Unit 3

Natural Resources

1. Gadgil, M. and Guha, R. (1993). *This Fissured Land: An Ecological History of India*. University of California Press, Berkeley, USA. (pp. 1-245).
2. McCully, P. (1996). *Rivers no more: the environmental effects of dams*, In: *Silenced Rivers: The Ecology and Politics of Large Dams*, Zed Books, New York, USA. **Page. 29-64**.
3. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y. and Berg, L.R. (2015). *Environment*, 9th Edition. Wiley Publishing, USA. **Chapters 10, 11, 12, 13** (Pages: **180-263**); **Chapter 14** (Pages: **272-275**); **Chapter 15** (Pages: **286-289**).
4. Singh, J.S., Singh, S.P. and Gupta, S.R. (2017). *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi. **Chapter 25** (Pages: **623-663**).

Unit 4

Environmental Pollution

1. Brusseau, M.L., Pepper, I.L. and Gerba, C.P. (2019). *Environmental and Pollution Science*, 3rd Edition. Academic Press, USA. **Chapter 16** (Pages: 243-255); **Chapter 18** (Pages: 280-305); **Chapter 21** (Pages: 352-358); **Chapter 22** (Pages: 365-374); **Chapter 23** (Pages: 378-388); **Chapter 25** (Pages: 416-426).
2. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y. and Berg, L.R. (2015). *Environment*, 9th Edition. Wiley Publishing, USA. **Chapter 19** (Pages: 359-381); **Chapter 21** (Pages: 401-421); **Chapter 23** (Pages: 440-453).
3. Singh, J.S., Singh, S.P. and Gupta, S.R. (2017). *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi. **Chapters 19, 20, 12** (Pages: 445-535).

Suggested readings

1. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y. and Berg, L.R. (2015). *Environment*, 9th Edition. Wiley Publishing, USA.
2. Carson, R. (2002). *Silent Spring*. Houghton Mifflin Harcourt, USA.
3. Brusseau, M.L., Pepper, I.L. and Gerba, C.P. (2019). *Environmental and Pollution Science*, 3rd Edition. Academic Press, USA.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

Assessment methods

1. Written examinations (Semester exams) [(**Year 1**: 01 credit (1 hour); **Year 2**: 01 credit (1 hour))]
2. Project work and reports related to field visits, outreach activities, case study, project formulation, assignments, presentations and practical learning (Internal practical assessment) [(**Year 1**: 01 credit (2 hour); **Year 2**: 01 credit (2 hour))]
Year 1 (Sem-I/Sem-II): 01 Credit Theory+ 01 Credit practical exercises, etc.
= **Total 02 Credits (03 hours)**
Year 2 (Sem-I/Sem-II): 01 Credit Theory+ 01 Credit practical exercises, etc.
= **Total 02 Credits (03 hours)**

AEC 1: Environmental Science: Theory into Practice –II

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department Offering the Course
		Lecture	Tutorial	Practical/ Practice			
AEC 1: Environmental Science: Theory into Practice – II	02	01	–	01	All UG Courses	All UG Courses	Department of Environmental Studies/Sciences

Learning Objectives

The Ability Enhancement Course on Environmental Science: Theory into Practice (I & II) at Undergraduate level (AEC- I) aims to train students to cater to the need for ecological citizenship through development of a strong foundation on the critical linkages between ecology-society-economy.

The Learning Objectives of this course are as follows:

- **Disciplinary knowledge**
Enable students to develop a comprehensive understanding of various facets of life forms, ecological processes, and the impacts on them by humans during the Anthropocene era.
- **Critical thinking**
Build capabilities to identify relevant environmental issues, analyse the various underlying causes, evaluate the practices and policies, and develop framework to make informed decisions.
- **Moral and ethical awareness/reasoning**
Develop empathy for all life forms, appreciation for the various ecological linkages within the web of life, awareness and responsibility towards environmental protection and nature preservation.

Learning outcomes

The Learning Outcomes of this course are as follows.

After the course the students will be empowered and able to:

- Analyse natural processes and resources that sustain life and govern economy.
- Predict the consequences of human actions on the web of life, global economy, and quality of human life.
- Think critically and develop appropriate strategies (scientific, social, economic, administrative, and legal) for environmental protection, conservation of biodiversity, environmental equity, and sustainable development.
- Demonstrate values and show compassionate attitudes towards complex environmental-economic-social challenges, and participate at national and international levels in solving current environmental problems and preventing the future ones.
- Adopt sustainability as a practice in life, society, and industry.

Teaching Learning process

The teaching-learning methodologies are designed to provide the undergraduate students a comprehensive understanding of the subject in a simplistic manner as well as evoke critical reasoning and analytical thinking among them. Some of the theoretical concepts related to practicals/outreach activities, etc. should be covered during practical sessions. The various approaches to teaching-learning process include classroom lectures, video presentations, and ICT enabled teaching tools. For enhancing practical understanding, field visits are encouraged to relevant places in Delhi like Biodiversity Parks, Protected areas, Wetlands, Sewage treatment plants, etc.

SYLLABUS OF AEC-1: Environmental Science: Theory into Practice – II (Year 2)

Unit V

Global Environmental Issues and Policies (5 lectures 8 practical/ outreach activities)

- Causes of Climate change, Global warming, Ozone layer depletion, and Acid rain; Impacts on human communities, biodiversity, global economy, and agriculture
- International agreements and programmes: Earth Summit, UNFCCC, Montreal and Kyoto protocols, Convention on Biological Diversity (CBD), Ramsar convention, The Chemical Weapons Convention (CWC), UNEP, CITES, etc.
- Sustainable Development Goals: India's National Action Plan on Climate Change and its major missions
- Environment legislation in India: Wildlife Protection Act, 1972; Water (Prevention and Control of Pollution) Act, 1974; Forest (Conservation) Act 1980; Air (Prevention & Control of Pollution) Act, 1981; Environment Protection Act, 1986; Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

Unit VI

Biodiversity and Conservation (6 lectures and 7 practical/ outreach activities)

- Definition of Biodiversity; Levels of biological diversity: genetic, species and ecosystem diversity
- India as a mega-biodiversity nation; Biogeographic zones of India; Biodiversity hotspots; Endemic and endangered species of India; IUCN Red list criteria and categories
- Value of biodiversity: Ecological, economic, social, ethical, aesthetic, and informational values of biodiversity with examples; sacred groves and their importance with examples
- Threats to biodiversity: Habitat loss, degradation, and fragmentation; Poaching of wildlife; Man-wildlife conflicts; Biological invasion with emphasis on Indian biodiversity; Current mass extinction crisis
- Biodiversity conservation strategies: in-situ and ex-situ methods of conservation; National Parks, Wildlife Sanctuaries, and Biosphere reserves; Keystone, Flagship, Umbrella, and Indicator species; Species reintroduction and translocation
- *Case studies*: Contemporary Indian wildlife and biodiversity issues, movements, and projects (e.g., Project Tiger, Project Elephant, Vulture breeding program, Project Great Indian Bustard, Crocodile conservation project, Silent Valley movement, Save Western Ghats movement, etc)

Unit VII

Human Communities and the Environment (4 lectures and 5 practical/ outreach activities)

- Human population growth: Impacts on environment, human health, and welfare; Carbon foot-print
- Resettlement and rehabilitation of developmental project affected persons and communities; relevant case studies
- Environmental movements: Chipko movement, Appiko movement, Silent valley movement, Bishnois of Rajasthan, Narmada Bachao Andolan, etc
- Environmental justice: National Green Tribunal and its importance
- Environmental philosophy: Environmental ethics; Role of various religions and cultural practices in environmental conservation
- Environmental communication and public awareness: case studies (e.g., CNG vehicles in Delhi, Swachh Bharat Abhiyan, National Environment Awareness Campaign (NEAC), National Green Corps (NGC) "Eco-club" programme, etc)

(The total number of weeks should add up to 15 only)

Practical component–

(15 Weeks)

Unit V

Global Environmental Issues and Policies (8 practical/ outreach activities)

Practical/Exercises/Experiential activities/Outreach activities

(College may choose as per requirement)

- Depict temperature/precipitation trend of a given study area using online data
- Formulate questionnaire/online surveys for assessment of the impact of climate change on people
- Assess Nationally Determined Contributions (NDCs) of developed and developing countries
- Development and simulation of Model UNFCCC for inoculating negotiation skills at climate change summits
- Development and simulation of Moot Court for Mock Trials in Negotiation Green Tribunal
- Identify carbon footprint of your college/home/locality (refer wwf@envis.nic.in).
- Analyze the status of at least 3 sustainable development goals in your neighbourhood and write a proposal to help achieve them at global standard (identify environmental problems and its social and economic impact, define objectives, explain methodology, budgetary requirements, and suggest the expected outcomes). A PowerPoint presentation to be made based on the project proposal.

Unit VI

Biodiversity and Conservation (7 practical/ outreach activities)

Practical/Exercises/Experiential activities/Outreach activities

(College may choose as per requirement)

- Acquaintance with open-source databases of biodiversity
- Determine species location in a given study area
- Depict distribution of biodiversity across latitude and altitude
- Show species distribution across space and time
- Quantify species loss across different time periods
- Sampling of plant and animal biodiversity of the College campus
- Identification of the floral diversity of Delhi and other states.
 - Documentation of the plants by clicking pictures, finding out the scientific names/ local names through literature or mobile applications, identification of their conservation status (IUCN red book list), medicinal properties, water consumption status, and socio-economic-environmental importance. A short report to be submitted)
- Exercise to understand the socio-economic-environmental impact of wildlife conservation.

(Students can choose any global animal species and identify the relevance of the species for the ecosystem/ society/ culture/ local economy, historic or present range of the species, emerging threats due to human activities, identification of documented events of natural disasters/ conflicts/ poaching of the species in the present range, conservation status (IUCN red book list), identification of protected areas/ programs of the government/ international organisation, and their opinion to further improve the conservations of the species. A short report to be submitted.

Unit 7

Human Communities and the Environment (5 practical/ outreach activities)

Practical/Exercises/Experiential activities/Outreach activities

(College may choose as per requirement)

- Assessment of carbon foot-print of different countries using online databases and mathematical tools
- Visit to marginalized localities and students for environmental education and environmental awareness
- Formulation of questionnaire/online surveys for assessment of the impact of environmental education
- Visit to any developmental project affected locality for assessing the impacts of economic development on human lives
- Correlation analysis of human population growth and impacts on the environment and human health

Essential/recommended readings

Unit V

Global Environmental Issues and Policies (5 lectures 8 practical/ outreach activities)

1. Divan, S. and Rosencranz, A. (2002). *Environmental Law and Policy in India: Cases, Material & Statutes*, 2nd Edition. Oxford University Press, India. **Chapter 2** (Pages: 23-39); **Chapter 3** (Pages: 41-86).
2. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y. and Berg, L.R. (2015). *Environment*, 9th Edition. Wiley Publishing, USA. **Chapter 19** (Pages: 370-376); **Chapter 20** (Pages: 385-399).
3. Singh, J.S., Singh, S.P. and Gupta, S.R. (2017). *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi. **Chapter 23** (Pages: 555-598); **Chapter 30** (Pages: 801-807).

Unit VI

Biodiversity and Conservation (6 lectures and 7 practical/ outreach activities)

1. Primack, R.B. (2014). *Essentials of Conservation Biology*, Oxford University Press, USA. Page.1-536.
2. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y. and Berg, L.R. (2015). *Environment*, 9th Edition. Wiley Publishing, USA. **Chapter 5** (Pages: 97-99); **Chapter 16** (Pages: 299-318).
3. Singh, J.S., Singh, S.P. and Gupta, S.R. (2017). *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi. **Chapters 24** (Pages: 599-690); **Chapter 26** (Pages: 664-714).

Unit VII

Human Communities and the Environment (4 lectures and 5 practical/ outreach activities)

Suggested Readings

1. Divan, S. and Rosencranz, A. (2002). *Environmental Law and Policy in India: Cases, Material & Statutes*, 2nd Edition. Oxford University Press, India. **Chapter 10** (Pages: 416-473).
2. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y. and Berg, L.R. (2015). *Environment*, 9th Edition. Wiley Publishing, USA. **Chapter 2** (Pages: 33-36); **Chapter 8** (Pages: 148-162).
3. Singh, J.S., Singh, S.P. and Gupta, S.R. (2017). *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi. **Chapter 1** (Pages: 23-26); **Chapter 31** (Pages: 826-842).

Suggested readings

1. Brusseau, M.L., Pepper, I.L. and Gerba, C.P. (2019). *Environmental and Pollution Science*, 3rd Edition. Academic Press, USA.
2. Carson, R. (2002). *Silent Spring*. Houghton Mifflin Harcourt, USA.
3. Raven, P.H, Hassenzahl, D.M., Hager, M.C, Gift, N.Y. and Berg, L.R. (2015). *Environment*, 9th Edition. Wiley Publishing, USA.
4. van Wormer, K. and Besthorn, F. (2017). *Human Behavior and the Social Environment*, Macro Level Groups, Communities, and Organizations, Third Edition, Oxford University Press.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

Assessment methods

1. Written examinations (Semester exams) [(**Year 1**: 01 credit (1 hour); **Year 2**: 01 credit (1 hour))]
2. Project work and reports related to field visits, outreach activities, case study, project formulation, assignments, presentations and practical learning (Internal practical assessment) [(**Year 1**: 01 credit (2 hour); **Year 2**: 01 credit (2 hour))]

Year 1 (Sem-I/Sem-II): 01 Credit Theory+ 01 Credit practical exercises, etc.

= Total 02 Credits (03 hours)

Year 2 (Sem-I/Sem-II): 01 Credit Theory+ 01 Credit practical exercises, etc.

= Total 02 Credits (03 hours)



REGISTRAR

GENERIC ELECTIVES (GE-EVS-7): CORPORATE, SOCIAL, AND ENVIRONMENTAL RESPONSIBILITIES FOR CONSERVATION AND SUSTAINABLE DEVELOPMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
CORPORATE, SOCIAL, AND ENVIRONMENTAL RESPONSIBILITIES FOR CONSERVATION AND SUSTAINABLE DEVELOPMENT	4	2	0	2	Class XII pass	NIL

Learning objectives

The Learning Objectives of this course are as follows:

- Inculcate interdependent and interrelated theories of corporate branding, environmental sustainability, and social equity
- Understand the working and driving forces of CSR and its significance as a stepping stone to Sustainable Business Models
- Gain insights into CSR as a tool to ensure social justice and adopt environmental wisdom from industries
- Empower with emerging frameworks and practices in CSR for environmental sustainability and improve quality of life

Learning outcomes

After the course, students will be able to:

- Explain the concept of CSR from an environmental sustainability perspective and its significance in next-generation marketing strategies
- Apply concepts of CSR to develop strategies for responsible marketing, business success, and environmental protection.
- Develop systems thinking and evolve as a responsible consumer
- Decipher linkages between concepts of circular economy, sharing economy, and carbon/ecological footprints, and identify opportunities and challenges to specific businesses and target consumers.
- Gain insights into five dimensions of sustainability performance: economic, environmental, governance, social and ethical
- Practice sustainability management, implement cleaner technologies, and argue in favour of environmental protection.

SYLLABUS OF GE-EVS-7

Theory (02 Credits: 30 lectures)

UNIT – I Sustainable Development (8 Hours)

Definitions, goals and frameworks; Sustainability: Definition and concept, Bottom of the pyramid and fairtrade; Evolution of concepts, Socio-ethical and environmental aspects, Benefits in strategic planning; Associated world's leaders and corporations, Financial, social and reputational benefits, Circular and share economy (8 lectures)

UNIT – II Corporate social responsibility (CSR) (6 Hours)

CSR: Definition and concept, Philosophy and practices of CSR; Measuring CSR; Impact of CSR on rural livelihoods, natural resources management, biodiversity conservation; Carbon footprint; Cleaner technologies; Emerging CSR policies in India

UNIT – III CSR and Sustainability (9 Hours)

Why and when to apply CSR activities, Competitiveness vs Ethical, Green markets and budget, Bottlenecks of being sustainable, Public-private partnerships for socio-ecological entrepreneurship, Vocal for local embedding sustainability; Business strategies for sustainable individuals, firms, and industries, Power-Inequality-Environment-CSR nexus, Managing, Monitoring, and Reporting CSR, Beyond framing CSR as strategic, political or utopian (9 lectures)

UNIT – IV Case studies (7 Hours)

CSR applications for improving livelihoods, enhancing soil health and crop productivity in stress environment, adaptation to climate change, and diversification of crop patterns improving rural wastewater management (7 lectures)

Practicals/Hands-on Exercises – based on theory (02 Credits: 60 hours)

1. Analyze variations in CSR efforts in saving the environment by countries differing in biodiversity and ecosystem diversity
2. Critically analyze OECD Guidelines for Multinational Enterprises on corporate responsibility
3. Select a company/business organization and, based on its activities and products, identify the environmental issues that need to be addressed for societal need
4. Evaluate diverse environmental issues based on their impact on society and organizational brand value and develop its vision document and a CSR plan for environmental conservation
5. Determine priorities and evolve a code of conduct document for the selected company to maximize its CSR for environmental issues
6. Based on the activities of the target business organization, develop an action plan and policies to suit the international guidelines and standards of CSR for environmental conservation

7. Identify the constraints to implement the guidelines and standards set based on dialogue with different stakeholders and surveying the local circumstances
8. Analyze the variations in guidelines and standards to meet the CSR in countries differing in biodiversity and cultural values
9. Identify the environmental indicators to formulate a monitoring and reporting system for CSR success
10. Evolve the appropriate communication style for different internal and external stakeholders
11. Field surveys and lab-based assays for monitoring the targeted ecosystem, biodiversity, environmental compartment, and socio-ecological systems for the impact of CSR

Essential/recommended readings

- Bachnik, K., Kaźmierczak, M., Rojek-Nowosielska, M., Stefańska, M. and Szumniak-Samolej, J. (eds.), 2022. *Corporate Social Responsibility and Sustainability: From Values to Impact*. Routledge.
- Camilleri, M.A., 2017. *Corporate Sustainability, Social Responsibility and Environmental Management*. Cham, Switzerland: Springer International Publishing.
- Geoffrey H., 2010. *When Principles Pay: Corporate Social Responsibility and the Bottom Line*, Columbia University Press.
- McKenna, K., 2015. *Corporate Social Responsibility and Natural Resource Conflict*. Routledge.

Suggested readings

- Roberts, L., Georgiou, N. and Hassan, A.M., 2022. Investigating biodiversity and circular economy disclosure practices: Insights from global firms. *Corporate Social Responsibility and Environmental Management*. DOI: 10.1002/csr.2402
- Ringham, K., 2017. *CSR and Sustainability: From the Margins to the Mainstream: A Textbook*, Routledge
- Rendtorff, J.D., 2019. *Philosophy of Management and Sustainability: Rethinking Business Ethics and Social Responsibility in Sustainable development*. Emerald Group Publishing.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

General Elective 2: HUMAN-WILDLIFE CONFLICT AND MANAGEMENT

Theory (30 Lectures)

Course objectives:

- Analyze causal factors determining conflicts between humans and wildlife
- Gaining insights into complexity of habitat sharing between wildlife and human societies
- Acquire deeper understanding of causal factors of habitat shrinkage and its impact on wildlife dynamics and threats and benefits to human societies
- Reveal the nexus between humans-culture-economy-wildlife
- Develop scientific and social perspective of wildlife conservation.

Unit 1: Introduction to wildlife management

(5 lectures)

Need of environmental management; wildlife conservation: moral obligation? philosophy of wildlife management; why is it necessary to worry about human wildlife conflicts? What is the role of government, wildlife biologists and social scientists, concept of deep and shallow ecology.

Unit 2: Evolution of the concept of wildlife management

(5 lectures)

Journey of mankind from predator to conservator; prehistoric association between wildlife and humans: records from Bhimbetkawall paintings; conservation of wildlife in the reign of king Ashoka: excerpts from rock edicts; Bishnoi community; understanding wildlife management, conservation and policies regarding protected areas in 21st century; positive values provided by wildlife conservation (monetary, recreational, scientific and ecological benefits).

Unit 3: Wildlife conservation laws in India

(5 lectures)

Types of protected areas (Wildlife Sanctuaries, National Parks, Biosphere Reserves); IUCN categories of protected areas, Natural World Heritage sites; concept of core and buffer area in a protected range, brief introduction to Wildlife Protection Act of 1972, Forest act 1927, Environmental Protection Act 1986, and Forest conservation Act 1920; introduction of Tiger task force, Status of current protected areas in India.

Unit 4: Socio-economic and legal basis of conflicts

(5 lectures)

Concepts of development and encroachment, who is the intruders: human or animal? Impact of conflict on humans and wildlife, impact of habitat fragmentation, social inequality in terms of forest conservation: luxury hotels within protected areas vs. displacement of native tribes, forest produce as a need vs. forest exploitation, introduction to tribal rights in India, demographic profile of tribes in India, importance of forest produce to tribal populations, Scheduled tribes and other traditional Forestdwellers (Recognition of forest right) Act, 2006.

Unit 5: Wildlife conflicts

(3 lectures)

Insight into the important conflicts: Keoladeo National park conflict of Bharatpur, Human and elephant conflicts of Kerala, Fisherman and tiger conflict of Sundarbans forest, shifting cultivation in North east India.

Unit 6: Human wildlife coexistence

(7 lectures)

Symbiotic relationship between tribals and forest, forest and development, focus on the inclusive growth of tribes: community participation in forest management, case study of Chipko movement, sacred groves forests, India's Bishnoi community and their conservation practices; ecological- economic welfare and development: conservation of indigenous culture and traditions, role of international organizations: Man and biosphere programmes; concept of conservation reserves and community reserves, importance of wildlife corridors in minimizing the conflicts and conservation.

Practicals/Hands-on Exercises: Based on the theory.

1. Prepare a case study that has potential to develop as a human-wildlife conflicts in the area of your choice.
2. Write a case study describing different aspect of human-wildlife conflict and depict all associated factors in a schematic diagram
3. Using a case study, demonstrate the importance of historical facts in providing solutions in the present day
4. Evaluate merits and demerits of multistage sampling technique while collecting information on human-wildlife conflicts
5. Develop a questionnaire to identify the causal factors of human-wildlife conflicts emerging in a target regions
6. Analyze the roles of psychological factors in development of human-wildlife conflicts
7. Evaluate the relationship between resource scarcity and abundance in determining human-wildlife conflicts
8. Correlate the success and failure in resolving human-wildlife conflicts with existence of institutional framework
9. Use methods of triangulating information, field observations, photography and Problem Animal Control Report as complementary methods to focused interviews to understand the problem and suggest the solution
10. Understanding the significance of mediation among different policies on societal benefits and wildlife conservation to resolve human-wildlife conflicts

Learning outcomes:

After successful completion of this course, students will be able to:

- Develop clear perspective on human-wildlife conflict by defining and examining its historical & present-day status
- Discriminate the underlying factors associated with successful & unsuccessful efforts on providing solutions to human-wildlife conflicts

- Demonstrate the relevance of cultural factors in understanding the issues and providing acceptable and practical solutions
- Critically evaluate different case studies for identifying factors that may have major impact in resolving human-wildlife conflicts

Suggested Readings

1. Angelici, F.M. and Rossi, L., 2020. Problematic Wildlife II. Springer International Publishing.
2. Conover, M. 2001. *Resolving Human Wildlife Conflicts*, CRC Press.
3. Conover, M.R. and Conover, D.O., 2022. Human-Wildlife Interactions: From Conflict to Coexistence. CRC Press.
4. Dickman, A. J. 2010. Complexities of conflict: the importance of considering social factors for effectively resolving human–wildlife conflict. *Animal Conservation* **13**: 458-466.
5. Hill, C.M., Webber, A.D. and Priston, N.E. eds., 2017. Understanding conflicts about wildlife: A Biosocial Approach (Vol. 9). Berghahn Books.
6. Manfred, M.J., 2008. Who Cares About Wildlife? Social Science Concepts for Exploring Human-wildlife Relationships and Conservation Issues.
7. Messmer, T. A. 2000. The emergence of human–wildlife conflict management: Turning challenges into opportunities. *International Biodeterioration & Biodegradation* **45**: 97-102.
8. Nyhus, P.J., 2016. Human–wildlife conflict and coexistence. *Annual Review of Environment and Resources*, 41, pp.143-171.
9. Warrier, R., Noon, B.R. and Bailey, L.L., 2021. A framework for estimating human-wildlife conflict probabilities conditional on species occupancy. *Frontiers in Conservation Science*, p.37.
10. Woodroffe, R. 2005. *People and Wildlife: Conflict and Coexistence*. Cambridge.

VAC 1: AYURVEDA AND NUTRITION

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Ayurveda and Nutrition	02	1	0	1	Pass in Class 12 th	NIL

Learning Objectives

The Learning Objectives of the course are:

- To introduce the basic principles of nutrition in Ayurveda
- To link the Ayurvedic nutrition with modern dietary practices for health
- To analyse basic tenets of traditional diets and health recipes
- To understand the contemporary food habits in everyday life

Learning outcomes

The Learning outcomes of the Course are:

- Awareness of traditional food cultures of India
- Evaluate changing food patterns and lifestyle over the years
- Understand Indian Knowledge Systems (IKS) and key Vedic principles with respect to Food and Nutrition
- Apply basic tenets of traditional diets for health and disease
- Prepare selected healthy recipes based on Ayurvedic principles

SYLLABUS OF AYURVEDA AND NUTRITION

UNIT – I Introduction to Ayurvedic Nutrition

(4 Weeks)

- Ayurveda and Indian food cultures
- Nutrition and lifestyle transition over the years
- Regional Food Traditions of India

UNIT – II Basic principles of Food and Nutrition and Ayurveda (6 Weeks)

- Understanding rich sources of nutrients
- Concept of Doshas & assessment
- Ayurvedic Principles of food habits and factors determining quality of food (Ahara vidhi visheshaayatana)
- FSSAI regulations on Ayurvedic Aahar

UNIT – III Ayurvedic Diets (5 Weeks)

- Principles of Diet: Aharavidhi vidhan, Sattvic, Rajasi, Tamasic foods
- Incompatible food (Viruddha Ahara), Pathya; Apathya; Viprita Ahaar
- Lifestyle Management with Dincharya and Ritucharya
- Application of Ayurvedic diets to stress linked food behaviour

Practical component (if any) – (15 Weeks)

- Visit your local market and classify the available food items according to Sattvic, Rajasi, Tamasic foods
- Conduct a survey of 10-15 households in your locality:
 - i. to study food behaviour and analyse them in light of Ayurvedic dietary principles of Sattvic, Rajasi, Tamasic
 - ii. to study the food consumption patterns and intake of incompatible food: Viruddha Ahara, Pathya; Apathya; Viprita Ahaar
 - iii To know about their adopted lifestyle Dincharya and Ritucharya
- Students are required to visit available e-resources of University of Delhi, Ministry of Ayush with regard to Ayurveda and Nutrition.
- If required, students can share their experiences in the form of a Project Report.
- The students may share their experiences in the form of audio-visual presentations of 15-30 minutes.
- Any other Practical/Practice as decided from time to time

Essential Readings

- Rastogi S (2014) Ayurvedic Science of Food and Nutrition. ASIN: BOOHWMV094, Springer: ISBN-13:978-1461496274
- Rastogi S (2010) Building bridges between Ayurveda and modern science. Int J Ayurveda Res. 1(1):41-46.
- FSSAI regulations on Ayurveda Aahar Regulations 2022. Gazette of India CG-DL-E-07052022-235642. New Delhi, Friday, May 6, 2022/ Vaisakha 16, 1944.
- Frawley D (2012) Ayurvedic healing: A comprehensive guide. Lotus Press, India.
- <https://iksindia.org/>: Indian Knowledge Systems

Suggested Readings

- Charaka Samhita, Charaka (1998) In: Tripathi BN (ed) Sutra Stahan Maharashitiya Adhyay. Chaukhamba Orientelia, Varanasi.
- Kapoor Kapil & Singh AK Indian Knowledge Systems Volume – 1. Indian Institute of Advanced Study Shimla. Published by DK Printworld (P) Ltd, N.Delhi.
<https://www.lkouniv.ac.in>.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time



VAC 1: CONSTITUTIONAL VALUES AND FUNDAMENTAL DUTIES**Credit distribution, Eligibility and Pre-requisites of the Course**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Constitutional Values And Fundamental Duties	02	1	0	1	Pass in Class 12 th	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- Enrich students with knowledge and relevance of the Constitution.
- Develop awareness about Duties and Values.
- Inculcate a sense of Constitutionalism in thought and action.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Understand the Constitution and its relevance
- Appreciate the values and goals embedded in the Constitution.
- Recognise the importance of Fundamental Duties enshrined in the Constitution.
- Apply the spirit of fundamental values and duties in everyday national life.

SYLLABUS OF CONSTITUTIONAL VALUES AND FUNDAMENTAL DUTIES**UNIT – I The Constitution of India – An Introduction****(5 Weeks)**

- Federal Republic, Rule of Law, Separation of Powers
- Sovereignty, Socialism, Democracy
- Secularism and Sarva Dharma Sama Bhava

UNIT – II Constitutional Values**(5 Weeks)**

- Justice: Social, Political, Economic

- Liberty: Thought, Expression, Belief, Faith, Worship
- Equality: Equality before law & equal application of laws
- Fraternity: Dignity, Unity and Integrity

UNIT – III Fundamental Duties

(5 Weeks)

- Reflecting on the ancient Indian notions of righteousness and duty consciousness
- Fundamental Duties- Article 51A [(a) – (k)]
- Legal status of Fundamental Duties - Judicial approach

Practical component (if any) –

(15 Weeks)

- Reflections on some of the constitutional values/ fundamental duties and its contemporary relevance in day-to-day national life through group discussions and projects.
- Conduct workshops to spread awareness on the Fundamental Duties and Values.
- Students are required to conduct a survey (minimum 25 respondents) on assessing the awareness of the constitutional duties amongst the citizens.
- Students may share their experiences on Fundamental Duties and Values in the form of a Project Report.
- Any other Practical/Practice as decided from time to time

Essential/recommended readings

- Preamble to the Constitution of India, 1950.
- The Constitution of India, Articles - 14, 19, 21.
- The Constitution of India, Fundamental Duties [Ar. 51 A (a) – (k)].

Suggested readings

- Durga Das Basu, et al., Introduction to the Constitution of India (LexisNexis, 26th edn, 2022).
- Leila Seth, We, the Children of India: The Preamble to Our Constitution (New Delhi, Puffin Books, Penguin Books India, 2010).
- Mahendra Pal Singh, V.N. Shukla's Constitution of India, (Eastern Book Company, Lucknow, 13th revised edn. 2017)
- B.R. Ambedkar Selected Speeches, (Prasar Bharati, New Delhi, 2019) available at: https://prasarbharati.gov.in/whatsnew/whatsnew_653363.pdf.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

VAC: Culture and Communication

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Prerequisite of the Course
		Lecture	Tutorial	Practical/ Practice		
Culture and Communication	02	1	0	1	Pass in Class 12 th	NIL

Learning Objectives:

- To focus on traditional values disseminated from Indian cultural heritage.
- To understand the interconnections between the legacy of our past and needs of our contemporary society.
- To learn to adapt, interact and celebrate our diversity and pluralistic culture.
- To develop communication skills in speaking, listening, reading and writing and apply them in our quotidian life as young citizens of contemporary India.
- To integrate ethical values and life skills.

Course Outcomes

- Students will be able to appreciate the relevance of ancient Indian wisdom and core ethical values in our contemporary life.
- Students will be able to engage in a dialogue between the past and the present and inculcate the best principles towards a meaningful life.
- Students will be encouraged to involve themselves in team work and group activities to address challenges faced in metropolitan cities.
- Students will be able to develop communication skills, that is, analytical reading, empathetic listening, considerate speaking as well as informed writing.

- Extension activities will equip the students, drawn from diverse backgrounds, with life skills and confidence to integrate with a multicultural environment and work towards an inclusive community.
- Students will be encouraged to envisage and work towards an ethically robust society and thereby strengthen the nation.

UNIT - I Ethical Values from Indian Cultural Heritage <ul style="list-style-type: none"> • <i>Vasudhaiva Kutumbakam</i> • United We Stand, Divided We Fall • <i>Ek Bharat, Shresht Bharat</i> 	3 Classes
UNIT - II Developing Life Skills <ul style="list-style-type: none"> • Empathy • Adaptability • Conserving our natural resources • Sharing knowledge resources 	4 Classes
UNIT - III Effective Communication in Everyday Life <ul style="list-style-type: none"> • Empathetic listening • Considerate speaking • Analytical reading • Informed writing 	8 Classes

Practical/ Practice Component

(15 Sessions of 2 hours each= 30 hours)

As hands-on experience is an essential component of the course, this section will focus on the practical aspects to correlate with the fundamental principles and learnings of the theory portion. Students will be encouraged to use the communication tools learnt through Unit 3 and corroborate the continuities of core principles studied in Unit 1 and 2.

- Students will be asked to conduct surveys/interviews in their neighbourhood or commuting routes to assess the nature and quality of negotiating our cultural diversity and pluralist traditions.

- Students would be assigned visits to old-age homes, hospitals, cancer wards, etc. to interact and write about their experiences with old people, caregivers, patients, nursing staff, helpers, etc.
- They will also be assigned visits to historically important places and monuments within the city and also converse with the tourists in order to trace a comprehensive view of the rich cultural history of India. They may create video documentaries, take and record tourists' interviews and/or write a journal entry of the visit using the communication skills learnt.
- Students shall make group presentations or individual reports on the activities undertaken. Discussions with classmates and the teacher shall be undertaken to evolve clarity of vision on the ethical values and effective communication skills learned through this course.
- Any other related activity.

Essential Readings:

- Aurobindo, Sri. *Introduction To The Gita*. Sri Aurobindo Ashram Press, 2017. pp 23-40
- Dhanavel. S.P. *English and Soft Skills*. Orient Black Swan, 2010.
- Haksar, A. N. D. 'Chanakya Niti Shastra', *Chanakya Niti*. India, Penguin Random House India Private Limited, 2020.
- Malik, Keshav. "A Dehumanized Environment". *Culture of Peace: Experience and Experiment*, edited by Baidyanath Saraswati. Indira Gandhi National Centre for the Arts, New Delhi, 1999. pp 77-79
- Murthy, Sudha. 'How to Beat the Boys', *Three Thousand Stitches: Ordinary People, Extraordinary Lives*. Penguin Books, 2017.
- Ramanujan, A.K. 'A Flowering Tree', *Cultural Diversity, Linguistic Plurality & Literary Traditions in India*. Department of English, OUP, 2015. pp 125-138.
- Vande Mataram Song from Chatterji, Bankimchandra. *Anandamath, or The Sacred Brotherhood*. Translated by Julius J. Lipner, Oxford University Press, 2005. pp 297-299.
- Vivekananda, Swami. "Response to the Welcome and Address at the Final Session." *Swami Vivekananda: A Contemporary Reader*, edited by Makarand R. Paranjape, Routledge, New Delhi, 2015, pp. 3–4, 18–19.

VAC 1: DIGITAL EMPOWERMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Digital Empowerment	02	1	0	1	Pass in Class 12 th	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- Understand the digital world and need for digital empowerment
- Create awareness about Digital India.
- Explore, communicate and collaborate in cyberspace.
- Building awareness on cyber safety and security.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Use ICT and digital services in daily life.
- Develop skills to communicate and collaborate in cyberspace using social platforms, teaching/learning tools.
- Understand the significance of security and privacy in the digital world.
- Evaluate ethical issues in the cyber world

SYLLABUS OF DIGITAL EMPOWERMENT

UNIT – I Digital inclusion and Digital Empowerment

(5 Weeks)

- Needs and challenges
- Vision of Digital India: DigiLocker, E-Hospitals, e-Pathshala, BHIM, e-Kranti (Electronic Delivery of Services), e-Health Campaigns
- Public utility portals of Govt. of India such as RTI, Health, Finance, Income Tax filing, Education

UNIT – II Communication and Collaboration in the Cyberspace (4 Weeks)

- Electronic Communication: electronic mail, blogs, social media
- Collaborative Digital platforms
- Tools/platforms for online learning
- Collaboration using file sharing, messaging, video conferencing

UNIT – III Towards Safe and Secure Cyberspace (4 Weeks)

- Online security and privacy
- Threats in the digital world: Data breach and Cyber Attacks
- Blockchain Technology
- Security Initiatives by the Govt of India

UNIT – IV Ethical Issues in Digital World (2 Weeks)

- Netiquettes
- Ethics in digital communication
- Ethics in Cyberspace

Practical component (if any) (15 Weeks)

- The course should be conducted in an interactive mode through demonstration, using appropriate tools.
- Conduct workshops on e-services initiated under Digital India.
- Spread digital literacy/awareness amongst the vulnerable groups and marginalised sections of the society like street vendors, domestic help, security guards, senior citizens.
- Students will take up team activities/ projects exploring digital services in the areas such as education, health, planning, farming, security, cyber security, financial inclusion, and justice, e-Kranti.
- Any other Practical/Practice as decided from time to time.

Essential Readings /Online Resources

- Rodney Jones and Christoph Hafner. "Understanding digital literacies: A practical
- Introduction". Routledge Books, 2nd edition, 2021.

- <https://www.digitalindia.gov.in>
- <https://www.digilocker.gov.in>
- <https://www.cybercrime.gov.in>
- <https://www.cybersafeindia.in>
- <https://www.meity.gov.in/cyber-surakshit-bharat-programme>

Suggested Readings

- David Sutton. "Cyber security: A practitioner's guide", BCS Learning & Development Limited, UK, 2017.
- <https://www.mha.gov.in/document/downloads/cyber-safety-handbook>

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time



VAC 1: EMOTIONAL INTELLIGENCE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Emotional Intelligence	02	1	0	1	Pass in Class 12 th	NIL

Learning Objectives

The Learning Objectives of the course are:

- Introduce the concept of emotional intelligence, its models and components.
- Understand the significance of emotional intelligence in self-growth and building effective relationships.
- Identify the measures of emotional intelligence.

Learning outcomes

The Learning Outcomes of the course are

- Self-Awareness, Self-Management, Social Awareness & Relationship Management.
- Discover personal competence and techniques of building emotional intelligence.
- Gain insights into establishing positive relationships.

SYLLABUS OF EMOTIONAL INTELLIGENCE

UNIT – I Fundamentals of Emotional Intelligence

(4 Weeks)

- Nature and Significance
- Models of emotional intelligence: Ability, Trait and Mixed
- Building blocks of emotional intelligence: self-awareness, self-management, social awareness, and relationship management

UNIT – II Personal Competence

(5 Weeks)

- Self Awareness: Observing and recognizing one's own feelings, Knowing one's strengths and areas of development.
- Self Management: Managing emotions, anxiety, fear, and anger.

UNIT – III Social Competence

(3 Weeks)

- Social Awareness: Others' Perspectives, Empathy and Compassion
- Relationship Management: Effective communication, Collaboration, Teamwork, and Conflict management

UNIT – IV Emotional Intelligence: Measurement and Development (3 Weeks)

- Measures of emotional intelligence
- Strategies to develop and enhance emotional intelligence

Practical component (if any)

(15 Weeks)

Students will practice self-management techniques to regulate emotions such as

- Mindfulness
- Conditioned relaxation response
- Boundary setting
- Any other

Students will practice various techniques of relationship management such as engaging with:

- Display of empathy
- Effective communication
- Teamwork
- Conflict resolution
- Any other
- If required, students can share their experiences in the form of a Project Report.
- Any other Practical/Practice as decided from time to time

Essential/recommended readings

- Bar-On, R., & Parker, J.D.A.(Eds.) (2000). The handbook of emotional intelligence. San Francisco, California: Jossey Bros.
- Goleman, D. (2005). Emotional Intelligence. New York: Bantam Book.
- Sternberg, R. J. (Ed.). (2000). Handbook of intelligence. Cambridge University Press.

Suggested Readings

- HBR's 10 Must Reads on Emotional Intelligence (2015)

- HBR's 10 Must Reads on Managing Yourself (2011)
- Self Discipline: Life Management, Kindle Edition, Daniel Johnson.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time



VAC 1: ETHICS AND CULTURE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Ethics and Culture	02	1	0	2	Pass in Class 12 th	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To help students explore ethical and cultural dimensions of their lives.
- To provides a forum for students to pause, revisit their assumptions and beliefs, and become mindful of their thoughts, emotions and actions.
- To give the students an opportunity to express themselves and inquire into their decision making processes.
 - To cultivate ethical values and participate in the creation of a society based on acceptance, compassion, and justice.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Explore perspectives on ethics in thoughts, words and actions
- Evolve ethical decision making practises
- Understand the need for an ethical society and culture
- Introspect, become conscious of and assess one's stance in life
- Cultivate empathy, tolerance and compassion
- Apply the values learnt in the course to everyday life

SYLLABUS OF ETHICS AND CULTURE

UNIT – I Introduction - The Basis of Ethics

(3 Weeks)

- Getting to Know Each Other
- What to Expect from the Course?
- Recognition of Our Common Humanity
- Empathy, Compassion and Justice

UNIT – II The Role of Intelligence, Reason and Emotions

(4 Weeks)

- Discernment: What Is The Right Thing To Do?
- The Art of Conflict Resolution
- Destructive and Constructive Emotions
- The Need for Emotional Balance

UNIT – III Cultivating Inner Values- Ethics in the World of Work and Play

(4 Weeks)

- Training the Mind: Mindfulness and Kindness
- Meditation
- Discovering your Vocation and Interests
- Self-discipline, Integrity, Commitment, Creativity
- Work-Life Balance

UNIT – IV Striving for a Better World | Outreach Activities

(4 Weeks)

- Means and Ends
- Debate and Dialogue
- Culture as Shared Values
- Creating and Sustaining Ethical Cultures: The Role of Philosophy, Religion, Literature, Theatre, Cinema, Music, Media
- Outreach Activities

Practical component (if any) –

(15 Weeks)

Unit 1

1. The teacher may ask students to introduce themselves, sharing their regional and cultural roots. They may be asked to reflect on those aspects of their identities that reflect their cultural roots.
2. After a round of initial introduction, the teacher may ask students to list down a set of values that they think they have developed through their parents and grandparents. Are these values unique to their families, regional and/or ethnic backgrounds? Of these, which are the values they would like to sustain and which are the ones they would wish to modify?
3. The teacher may draw upon the values discussed by students in the previous lesson. Using these as the base, the teacher may ask students to think of ethical values that form the basis of their decisions.

4. The teacher may ask students to think of people who they think have lived an 'ethical life'. These may be people who they know from their personal lives or people known for upholding ethical values in the face of adversity.
5. Students are encouraged to identify what common human values are necessary are Realise shared common humanity– the feeling of interconnectedness/interdependence.
6. Class to be divided in small groups to discuss how each would make an effort to cultivate new morals/ethical values for betterment of their local environment.
7. Celebrating 'Sharing and Caring' based on regional diversity can be encouraged.
8. Engage students to do activities of 'being in the shoes of others' (peers, parents, siblings, house help/support or in any local community grappling with problems) to understand the problems empathetically.
9. The students can be asked to make bookmarks/cards to remind them about virtues pertaining to empathy versus sympathy, need versus greed, just versus unjust or compassion versus insensitivity.
10. Compassion is about cultivation of it as a daily value so students can in small groups undertake compassion based activities of looking after animals, birds, needy, elderly, differently abled, non-privileged etc. and share their thoughts in the class.

Unit 2

1. Make the student think of a hard decision they have made. What made it hard? How did you make the decision? How do you assess it retrospectively?
2. Encourage students to think of judgements and decisions based on the dilemmas and challenges they faced? How do they go about making these decisions?
3. The teacher may introduce any well known story and ask the students to discuss the story from the point of view of the different characters.
4. Ask students how willing they are to deal with a conflict when it occurs. What strategies do they adopt to resolve the conflict?
5. The teacher may ask students to prepare posters with captions like "avoidance", "competition", "cooperation" and "adaptation" and then may ask students to identify with one of these styles which according to them best represents their style of dealing with conflict.
6. The students may be asked to discuss different such similar situations that they may have encountered and a discussion may be initiated on how they resolve those conflicts.
7. The students can be asked to write down certain destructive emotions that they are experiencing presently. How would they work to make them constructive? A classroom discussion could follow around this.

8. Ask the students to note down a list of constructive emotions experienced by them recently. Were the constructive emotions less powerful as compared to the destructive ones experienced by them? Discussion in class can follow.
9. How do you (i) express, (ii) handle anger/ disgust/ distress/ fear (any destructive emotion can be taken up). A healthy discussion in the class can take place around this.
10. Students may be asked to practice a simple breathing exercise. They can sit straight with eyes opened or closed in a comfortable position to just observe their breathing. They can repeat this exercise six to eight times and share (if they like) their experience of silence.
11. To identify your interests and develop a meaningful hobby.
12. Have an open conversation in the class about happiness.

Unit 3

1. The students could observe various emotions that bottle-up in their minds and be asked to watch the flow of emotions non-judgmentally.
2. Students may be asked to recall their journey to the college that morning. Do they remember road signs, faces of people they crossed, the roads that they took, the people they interacted with, the sights and smells around them, or anything else?
3. Students could be asked to cultivate the habit of simple greeting as practice of gratitude and celebrate a day of joyful giving.
4. The students can close their eyes for 2-3 minutes and be asked to observe their thoughts, list them and categorise them into 'to be kept' or 'to let go'.
5. The teacher may ask students to close their eyes and imagine a situation in which they are truly happy. Students could wish for the well-being of two students in the same classroom in their meditative state.
6. Students could meditate on who has been their inspiration and the qualities of the person who has inspired them and then express gratitude to the person concerned.
7. The teacher may ask the students to think retrospectively about what they thought they would take up as a vocation when they were younger. How and why their choices were influenced and changed, if at all.
8. The teacher may ask the students to imagine and chart a journey and destination for themselves. They may also talk about the challenges they foresee.
9. The teacher may encourage the students to maintain a daily diary of their scheduling of time or a worklog and see how much time they effectively give to their work. The teacher may help the students identify the distractors and where one may be 'wasting' time and energy. The activity is designed to help students understand the value of effective time utilisation.

10. In this lesson, the teacher may ask the students to draw up a list of team ethics. They may build this based on their experiences of working with each other in groups.
11. The teacher may ask the students to share an incident each where they felt pressurised/ bored to complete some work. How did they deal with their stress and monotony of work?

Unit 4

1. Students will be asked to work in pairs and develop situations that pose ethical dilemmas and how to resolve them.
2. Students may be asked to look at a film or at an advertisement and discuss what they think about the question/s posed in them. The teacher may ask them if they can think of an alternative ethical approach to the problem posed.
3. Students will be asked to think of situations in which they lost their temper. Have they ever felt that in a fit of emotion they said something that they regretted later? If they had paused to listen and then respond, what would the other person have said? How would the outcome of the situation have been different?
4. A debate on any relevant topic may be conducted in the class. After the first round the students may be asked to adopt and argue their opponents point of view. At the end of this exercise the students can have an open discussion on which position finally appealed to them.
5. The teacher may give a short story to the students and ask them to change the ending. They may be asked to observe how characters and their views may have undergone change in the process.
6. There can be a discussion around a topic such as, the idea of corporal punishment, euthanasia etc. Students can be given a sheet of paper and can be asked to write for or against the theme. The idea is to enable them to understand that the positions they have taken vis-a-vis the theme are a result of different value orientations.
7. Popular foods from many parts of India can be discussed. Their origins can be traced to chart a kind of food history.
8. The teacher on the basis of discussions with students can draw from Philosophy, Religion, Literature, Theatre, Cinema, and Media to highlight that the choices people/characters make are grounded in their culture.
9. The students can discuss classical/folk dances that are performed in their respective groups. Details can be drawn based on the number of dancers, music (live or recorded) and costumes. 3. The role of oral traditions and literature in indicating the importance of ethics in our everyday lives can be discussed.

Suggested Activities for Outreach: Social/ Community Engagement and Service

In the weeks that follow, students will be expected to engage in outreach activities that shall enable them to put into practice some of the ethical considerations deliberated upon and imbibed in the previous modules. A list of suggested outreach activities is as follows:

- Adopt a village with the aim of cultural and ethical learning
- Discussing health and hygiene issues in a community
- Tutoring students
- Gender sensitisation
- Working on environmental issues
- Working with Child Care Centres such as Anganwadis and Balwadis
- Working with differently abled students
- Preserving cultural and heritage sites
- Spending time with senior citizens including in a Senior Citizens Home
- Extending care to animals in animal welfare shelters
- Addressing issues relating to Reproductive Health
- Spreading awareness about adolescent health
- Addressing issues relating to mental health
- Health and nutrition awareness
- Swacchata Abhiyaan
- Sensitisation towards disease awareness
- Vriksharopan
- If required, students can share their experiences in the form of a Project Report.
- Any other Practical/Practice as decided from time to time

Suggested Readings:

- Aristotle. Nichomachean Ethics. London: Penguin Classics, 2004
- Swami Vivekananda. The Complete Works of Swami Vivekananda. Advaita Ashrama, 2016.
---https://www.ramakrishnavivekananda.info/vivekananda/complete_works.html
- Panch Parmeshwar in English translation as The Holy Panchayat by Munshi Premchand
- The Silas Marner by George Eliot
- We are Seven by Wordsworth
- The Chimney Sweeper by William Blake

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

VAC 1: FINANCIAL LITERACY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Financial Literacy	02	1	0	1	Pass in Class 12 th	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- Familiarity with different aspects of financial literacy such as savings, investment, taxation, and insurance
- Understand the relevance and process of financial planning
- Promote financial well-being

Learning outcomes

The Learning Outcomes of this course are as follows:

- Develop proficiency for personal and family financial planning
- Apply the concept of investment planning
- Ability to analyse banking and insurance products
- Personal tax planning

SYLLABUS OF FINANCIAL LITERACY

UNIT – I Financial Planning and Financial Products

(3 Weeks)

- Introduction to Saving
- Time value of money
- Management of spending and financial discipline

UNIT – II Banking and Digital Payment

(4 Weeks)

- Banking products and services

- Digitisation of financial transactions: Debit Cards (ATM Cards) and Credit Cards., Net banking and UPI, digital wallets
- Security and precautions against Ponzi schemes and online frauds

UNIT – III Investment Planning and Management (4 Weeks)

- Investment opportunity and financial products
- Insurance Planning: Life and non-life including medical insurance schemes

UNIT – IV Personal Tax (4 Weeks)

- Introduction to basic Tax Structure in India for personal taxation
- Aspects of Personal tax planning
- Exemptions and deductions for individuals
- e-filing

Note: Some of the theoretical concepts would be dealt with during practice hours.

Practical component (if any) – (15 Weeks)

- Regular class activities to enhance students' understanding of topics and the application of concepts. The case study method may be followed as a teaching pedagogy.
- Numerical questions pertaining to each unit wherever applicable should be practiced.
- For the second unit, students may be assigned a project wherein they can log on to the website of various banks and conduct an in-depth analysis and comparison of various financial products offered.
- For Unit III, a Project related to building a dummy portfolio of stocks and tracking their returns may be given.
- An investment budget may be given to the students to select investment options that maximize the return and minimize the tax implications.
- For the last unit, students may also file a dummy IT return to get hands-on experience with e-filing.
- Students may conduct a financial literacy survey among at least 25 respondents to measure the level of financial literacy and share the findings in the awareness in the form of a report.
- Any other Practical/Practice as decided from time to time

Essential/recommended readings

- Introduction to Financial Planning (4th Edition 2017) – Indian Institute of Banking

& Finance.

- Sinha, Madhu. Financial Planning: A Ready Reckoner July 2017, McGraw Hill.

Suggested readings

- Halan, Monika, Lets Talk Money: You've Worked Hard for It, Now Make It Work for You, July 2018 Harper Business.
- Pandit, Amar The Only Financial Planning Book that You Will Ever Need , Network 18 Publications Ltd.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

VAC 1: SCIENCE AND SOCIETY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Science and Society	02	1	0	1	Pass in Class 12 th	NIL

Learning Objectives

The Learning Objectives of this course are:

- The primary objective of this course is to instil in students an appreciation for science and a scientific outlook and temper.
- The course further aims to increase awareness about fundamental scientific concepts that play an important role in our daily life using various examples and case studies.
- Pedagogy in this course should largely rely on learning by enquiry, observations, experimentation and group discussions using case studies/examples.
- Efforts should be made to instil an interest in students for science. Students should be encouraged to understand and appreciate scientific concepts and their applications rather than solely memorizing factual information.

Learning outcomes

The Learning Outcomes of this course are:

- This paper is interdisciplinary in nature and would provide students with basic exposure to scientific methods, technologies and developments that have played a significant role in the evolution of human society from ancient to modern times.
- 2. Students would also be made aware of the scientific rationale of technological developments that would enable them to make informed decisions about their potential impact on society.

SYLLABUS OF SCIENCE AND SOCIETY

UNIT – I Science and Technology – from Ancient to Modern Times (10 Weeks)

In this section, students should also be made aware about the contributions of Indian scientists since ancient times and the contributions of women in science.

Subtopics

- Philosophy of science, the scientific method, importance of observation, questions and experimental design, rational thinking, myths vs. Facts
- Science, Technology and Traditional Practices: Suggestive areas include: Water harvesting structures and Practices; Construction, architecture and design – use of natural environment-friendly designs and materials; Agriculture including domestication of plants and animals.
In this section, students should also be made aware about the contributions of Indian scientists since ancient times and the contributions of women in science.
- Science and Technology in Modern Times: Suggestive areas include: Public Health: Nutrition, Hygiene, Physical and Mental Health, Vaccines and Antibiotics, Anti-microbial resistance; Food Security: Green Revolution, White Revolution; IT Revolution, E-Governance; Clean Energy, Renewable Energy; Space Science and Exploration; Evolution, Ecology and Environment

UNIT II: Scientific Principles, and Concepts in Daily Life (5 Weeks)

Unit Description:

This section aims to encourage appreciation of the scientific method through observation, experimentation, analysis and discussions. Students are required to participate in activities and experiments. A suggestive list is given below:

Subtopics:

Suggested Activities:

- Observing and documenting flora and fauna of College campus/city.
- Visits to science laboratories in the College or neighbouring College/Institute.
- Visits to science museums, planetarium.
- Visits to biodiversity parks and nature walks.
- Participation in a citizen science project/initiative.

Suggested Experiments (minimum any four):

- Measuring the height of the college building using a stick.
- Measuring the curvature of earth, using distance and shadow length.
- Isolation of DNA (DNA Spooling)
- Observing transpiration and photosynthesis in plants
- The blood typing game (online)
- Are fruit juices, soap, carbonated drinks acidic or alkaline? (using pH strips or developing your own Litmus Test)
- Do plants learn and remember?
- Experiments on how migratory birds find their way. (Online)
- How can a mosquito sit on a water surface or a blade float on water?
- How does a submarine dip or rise in the ocean?
- How and why does the path of the sun in the sky change with the seasons?
- Identification of celestial objects with the naked eye
- Types of clouds
- Science of musical sounds
- Science of splitting of colours from white light: rainbow, CD-rom, prism, oil films.
- Lenses, mirrors and the human eye

Practical/ Practice Component : **Please Refer to Unit II.**

Essential/recommended readings

- Basu and Khan (2001). Marching Ahead with Science. National Book Trust
- Gopalakrishnan (2006). Inventors who Revolutionised our Lives. National Book Trust
- Yash Pal and Rahul Pal (2013) Random Curiosity. National Book Trust
- Hakob Barseghyan, Nicholas Overgaard, and Gregory Rupik (****) Introduction to History and Philosophy of Science
- John Avery (2005). Science and Society, 2nd Edition, H.C. Ørsted Institute, Copenhagen.
- Dharampal (2000). Indian Science and Technology in the Eighteenth Century, OIP.

Suggested Readings:

Section 1. Science and Technology – from Ancient to Modern Times:

Philosophy of science:

<https://blogs.scientificamerican.com/doing-good-science/what-is-philosophy-of-scienceand-should-scientists-care/>

http://abyss.uoregon.edu/~js/21st_century_science/lectures/lec01.html

https://wps.ablongman.com/wps/media/objects/1449/1483820/18_2.pdf

Myths vs. facts:

<https://www.sciencelearn.org.nz/resources/415-myths-of-the-nature-of-science>

History of technology:

<https://www.visualcapitalist.com/history-of-technology-earliest-tools-modernage/>

Water harvesting:

<https://worldwaterreserve.com/introduction-to-rainwater-harvesting/>

Public Health :

[https://www.ajpmonline.org/article/S0749-3797\(11\)00514-9/fulltext](https://www.ajpmonline.org/article/S0749-3797(11)00514-9/fulltext)

<https://study.com/academy/lesson/public-health-vs-medicinedifferences-similarities.html>

<https://www.deepc.org.in/video-tutorials/public-health>

Food Security:

<https://www.concern.net/news/what-food-security>

Energy:

<https://www.nrdc.org/stories/renewable-energy-clean-facts>

Space Science:

<https://www.isro.gov.in/spacecraft/space-science-exploration>

<https://www.isro.gov.in/pslv-c11-chandrayaan-1>

<https://www.isro.gov.in/chandrayaan2-home-0>

<https://www.britannica.com/science/space-exploration>

Contribution of Indian Scientists & Women Scientists:

<https://www.tifr.res.in/~outreach/biographies/scientists.pdf>

<https://indiabioscience.org/media/articles/ISTI.pdf>

<https://www.thebetterindia.com/63119/ancient-india-science-technology/>

<https://ncsm.gov.in/indian-women-in-science-technology/>

Evolution:

<https://www.livescience.com/474-controversy-evolution-works.html>

<https://www.ibiology.org/evolution/origin-of-life/>

Climate change and global warming

<https://letstalkscience.ca/educational-resources/backgrounders/introductionclimate-change>

Biodiversity

<https://india.mongabay.com/2020/09/nature-in-peril-as-biodiversity-losses-mount-alarmingly-states-the-living-planet-report/>

Genomics and Modern Medicine

<https://www.nationalgeographic.com/science/article/partner-contentgenomics-health-care>

<https://www.mja.com.au/journal/2014/201/1/impact-genomics-future-medicine-and-health>

<https://www.nature.com/scitable/topicpage/pharmacogenomics-andpersonalized-medicine-643/>

Genetically modified engineered crops

<https://www.nature.com/scitable/topicpage/genetically-modified-organismsgmos-transgenic-crops-and-732/>

<https://factly.in/explainer-what-is-the-status-of-gm-crops-in-india/>

<https://www.fda.gov/food/agricultural-biotechnology/how-gmo-crops-impactour-world>

Artificial Intelligence and Robotics

<https://www.ohio.edu/mechanical-faculty/williams/html/PDF/IntroRob.pdf>

<https://nptel.ac.in/content/storage2/courses/106105078/pdf/Lesson%2001.pdf>

Big Data Analytics

https://www.researchgate.net/publication/328783489_Big_Data_and_Big_Data_Analytics_Concepts_Types_and_Technologies

Section 2. Scientific Principles, and Concepts in Daily Life Measuring buildings, earth curvature:

<https://www.youtube.com/watch?v=hrwL3u2Z4Kg>

<https://www.youtube.com/watch?v=khRMzxONpLg>

<https://www.youtube.com/watch?v=YaPa4esJJx4>

Isolation of DNA



https://melscience.com/US-en/articles/home-dnaextraction/?irclickid=2hh2pqRY8xyLTbawUx0Mo3ENUkBwIX3pGQDJSc0&utm_source=impact&irpid=2201352&irmpname=Science%20Journal%20for%20Kids&irgwc=1

Transpiration & Photosynthesis

<https://www.youtube.com/watch?v=JQvdXX7hGqI>
<https://www.youtube.com/watch?v=U4rzLhz4HHk>
<https://www.youtube.com/watch?v=pFaBpVoQD4E>

Online game on blood typing

<https://educationalgames.nobelprize.org/educational/medicine/bloodtypinggame/gamev3/1.html>

Determination of pH

https://www.youtube.com/watch?v=BEz6t_e6gpc

Plant behaviour

<https://youtu.be/KyoeCFTIXKk>
<https://youtu.be/gBGt5OeAQFk>

Migratory Birds

<https://www.scienceabc.com/nature/how-migrating-birds-geese-navigate-long-distance-earthmagnetic-field.html>

VAC 1: SOCIAL AND EMOTIONAL LEARNING

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Social and Emotional Learning	02	1	0	1	Pass in Class 12 th	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- This course aims to develop social and emotional awareness in students and initiate them towards better personal and social well-being.
- To create an awareness towards self, others, the environment and their harmonious coexistence.

Learning outcomes

The Learning Outcomes of this course are as follows:

- Students will be able to become aware of oneself and the society.
- Make informed lifestyle choices and extend the self in the joy of giving.
- Develop empathy, compassion, connect with nature and evolve emotionally to create a more harmonious society.
- Cultivate sensitivity towards discriminatory practices and explore possible solutions.

SYLLABUS OF SOCIAL AND EMOTIONAL LEARNING

UNIT – I Introduction - Self-Awareness and Happiness (3 Weeks)

- Getting to Know Each Other
- What to Expect from this Course?
- Getting to Know Oneself
- What Makes One Happy/ Unhappy? Outer vs Inner Sources of Happiness, Joy of Giving

UNIT – II Social Relationships | Mindfulness (4 Weeks)

- Sharing vs Power: Peers, Family and Society
- Going Beyond Power Relationships Through Open Conversation
- The Value of Silence and Reflection
- Practice of Mindfulness

UNIT – III Identity, Self-Image, Status, Self-Worth- Digital Identity (4 Weeks)

- Identity Construction and Expression: Individual and Collective
- Accepting and Valuing Oneself
- Understanding the Gendered World
- Identifying and transcending stereotypes
- Identity Formation and Validation in the Digital World
- Discrimination and its Forms

UNIT – IV Lifestyle Choices | Stress and Its Management (4 Weeks)

- What Choices Does One Get To Make?
- Is Choice influenced? Relationships, Career Choices
- Career Pressures, Examinations
- Dealing with Disappointment, Coping Skills, Health and Fitness
- Connect With Nature: Sensitivity Towards Other Sentient Beings

Practical component (if any) – (15 Weeks)

Unit 1

Getting to Know Each Other

In this lecture, the teacher will facilitate social engagement and personal reflection through a round of introductions. This also provides an opportunity for the teacher and students to recognise the deeper meanings that lie underneath routine exercises of introduction. For example, the adjectives that people use to describe themselves are indicative of the image that they wish others to hold of them. But do they hold the same image about themselves?

Teachers may begin the class by introducing themselves. Any introductory exercise that serves as an ice breaker and creates the classroom space as one of vibrant and open discussions, may be used. Teachers should try and ensure participation of all students in this exercise.

Activities

1. Who is in your circle?

Students may be asked to draw three concentric circles on their notebooks. The central circle is for the topic, the second for 'Love', and third for 'Like'. The space outside the circles is for 'Don't like'. The class decides on one topic, such as food, movies, web series, books, music, interests, etc. Each topic is taken up in turn and students are asked to write what they love, like, and don't like in the circles and share it with others. The exercise helps students to identify with their peers in commonalities and differences. The teacher may use prompts such as 'Why do you like this show?', 'Why do you dislike this food?' etc.

2. I am...

Students are asked to complete the sentences. The teacher may take turns and ask random students to answer it or the teacher may write these on the board and ask every student to write the answer in their notebooks. Some suggested prompt sentences are:

I am excited about.....

I wish I could.....

I am wondering.....

I am feeling anxious about....

Students can choose to share some of the answers with the class. The purpose of the exercise is to bring most students to speak in class and share their honest feelings and thoughts.

3. Introduce Yourself. Know Yourself

In this exercise, the teacher asks all students to take turns to introduce themselves. It is likely that most students will talk about their names, previous qualifications and hobbies. At the end of the introductions, the teacher can identify

commonalities such as previous courses undertaken, regional identities, age, or similar common factors. The teacher may then use the following prompts to facilitate discussion:

Do these define you? Are you something more? Would you like to change any of these qualifiers?

Is there something about you that you would like to share with us? Do you ever wonder about your identity/ identities?

What to Expect from this Course?

In this class, the focus is on understanding the relevance of the course and providing a course overview. Students will be able to explore the various dimensions of their lives and develop insights about themselves and their relationships. By discussing the outline of the course and the suggested activities, the teacher shall bring to the fore the exploratory journey that the students will embark upon. The students' questions relating to the course contents will also be addressed in this lecture.

Activities

In this class, the teacher may undertake an overview of the course, discussing each week's themes briefly. The nature of assignments and evaluation can also be detailed out. The teacher may hold a discussion with students on the following:

1. Why is social and emotional learning important?
2. What can the teacher do to make the classroom a more welcoming and open space for you?
3. What would be some of the activities that you would like to undertake during the course? Such as watching movies, reading books, maintaining a reflective journal, engagement in the field, mindfulness exercises, etc.

Self Awareness and Happiness

The aim of this module is to help students develop awareness about themselves – who they are, what their strengths and limitations are, and how they can develop themselves. This will help them to learn interlinkages and distinctions between thoughts, emotions and behaviours. This module will make them aware of the differences between happiness and pleasure and help them ponder on sources of happiness.

Self Awareness

Self-awareness is the experience and understanding of one's own personality – how an individual understands his own feelings, motives, desires, and behaviour, and the triggers for the same. Hence, self-awareness can be considered to be vital for personal development. Students would thereby become more grounded and confident. This lesson will focus on the student's intrapersonal and interpersonal awareness through discussions and activities.

Activities

1. Students are asked to make a timeline of important events in their life and how each one affected them at that time. Do they see it differently today?
2. SWOT Analysis can be done by each student – Strengths, Weaknesses, Opportunities and Threats.
3. How do they envision their ideal person – What does your ideal person look like? What characteristics do they possess? Identify the gap. How do they plan to fill/reduce the gap?

Happiness

The term 'happiness' includes pleasant and positive emotions which can range from deep satisfaction and contentment to pleasure and excitement. The focus of this session would be to discuss techniques to develop the long-lasting feelings of contentment rather than momentary and short-lived emotions of excitement and pleasure. This will encourage and foster feelings of wellbeing and life satisfaction. The teacher will use activities in order to inculcate the ways of developing and sustaining happiness.

Activities

Writing a gratitude Journal – include in it what you are grateful for. Mindfulness exercises and developing a mindful way of doing things.

"As one door closes, another door opens". A discussion based on the three opportunities that they think they lost and consider what it was they gained in the process.

Unit 2

Social Relationships

In this module, students will be asked to turn their gaze towards the society in which they are located and where they form social relations. They will be asked to introspect and understand the ways in which they connect with their immediate and extended social surroundings. In this context, peers and family exercise a significant influence on the identities of adolescents and young adults. The students will be asked to assess the nature of their relationship with friends and family and explore these negotiations in the context of sharing versus power.

The teacher will help students broaden their understanding by extending the discussion to include other social relationships, beyond peers and family. They will be encouraged to think about how they are influenced and how they in turn influence the people around them. The class shall explore the importance of open conversation as a means to resolve conflicts and contradictions.

Sharing vs Power: Peers

Identity formation and development is significantly dependent on the peer group with which the individual interacts. During this class, the students may pose the following question to themselves and to each other- What is the nature of the relationships that they share with their peers? Adolescents and young adults like to conform to peer expectations. Students may explore whether relationships between peers are equal. What forces mediate these relationships? By posing examples from real life, the teacher will encourage the students to closely examine their relationships with their friends and family.

Activities

Ask the students to describe their close friends with fictitious names. They should then be asked why they are close to them and what is the one quality about their friends that they appreciate.

Divide students into groups of 5 each. This can vary depending on the class size. Each group can discuss how they were influenced by their friends in decision making processes.

The class/ group can share a story from their life about how they made a decision based on peer pressure. They should also share the result. Were they happy or unhappy about it? The findings can be discussed in the class.

Sharing vs Power: Family

The family is often considered to be a given and stable construct in which one is born or placed. As the relationships of adolescents with people outside the home grow, their interactions with their families evolve and take on a new and sometimes difficult character. Discussions and activities in the class should help the students objectively analyse their family space and the way in which they negotiate with it at different points of time. Through examples from day to day life, the teacher will help the students understand such spaces and the role they play.

Activities

Describe the ideal family. The students can think about the nature of the ideal created by them. What is the role played by siblings in your personal development?

Role play can be used to perform the different roles in a family so as to understand the different points of view within it.

Sharing vs Power: Society

The individuals generally extend the nature of their relationships with the family to the larger social world. In their pursuit to seek autonomy and independence, they may form new kinds of relationships in the larger social context. These relationships may be characterised by imbalances in power. This lecture will try to help the students strike a balance between self and society and stress the role of dialogue, sharing and cooperation.

Activities

The teacher can ask the students to describe any one constructive social role performed by them. (Any way in which they helped people around them). They can draw, speak, share a photograph or write a creative piece about it.

In the years to come what kind of role do you see yourself performing in society?

Share any one story about a person that has really influenced you? It can be about a public figure or anyone around you.

Going Beyond Power Through Open Conversation

In the previous lectures, the discussion has been around family, peer groups and society. In this session, the focus will be on the ways to build a more egalitarian society—one that is more collaborative, inclusive and takes into account different points of view. Open Conversation is suggested as a way by which acceptance, active listening and empathy can be encouraged.

Activities

The students can be asked to present a brief performance showing the way in which open conversation can help in conflict resolution.

Movies in line with classroom discussions held in the past few weeks can be shown to the students. Movie screening should be followed by a discussion.

A short story, poem or a play can be used to build on classroom discussions.

Mindfulness

This module focuses on the significance of silence, introspection and non-judgmental awareness of the present moment. These mental practices are for understanding and building humane connection with self and others. The students are sometimes unable to spare time for their inner growth. Mindfulness practices aim at self-awareness and self-acceptance for overall well being. Valuing and practicing silence helps in the process of deeper reflection and builds inner strength to face conflicts with calmness. It hones the ability to develop mental equanimity and equipoise.

The Value of Silence and Reflection

The students will learn to understand the value of silence in the noise around. The practice of silence helps in self-reflection and connecting the inner and outer worlds. It enables one to experience joy, contentment and peace. Silence is a way of understanding how to enjoy one's own company and not to confuse being alone with loneliness. The students will appreciate that silence and solitude are positive and constructive.

Activities

The students can be asked to maintain silence and watch the flow of thoughts and emotions. In the process of silence the students can identify what gives them happiness and what they can do to create happiness for others.

The students can visit natural spaces to understand how silence runs in the sounds of nature which can help them realise peace.

Practice of Mindfulness

Through this lesson, the students will understand the significance of mindfulness as a daily practice for understanding that happiness depends on the self-training of mind. The joy of living in the moment with full awareness and steadiness of mind are important for accepting and cherishing all experiences positively and non-judgmentally.

Suggested Activities

Mindful walk/trek in the garden/forest/mountains or at a monument. Mindful eating while enjoying all elements of tastes in different types of food can also be done.

The students can be engaged in groups for non-judgmental listening

The class can be divided to discuss what activities of the day they engage with full awareness and where the moments go unnoticed

Unit 3

Identity, Self-image, Status, Self-worth

The module is designed to help the learners revisit the constructs of identity, self and personhood. It builds on questions such as 'who am I', 'how do others and I see myself', 'does status and self-image affect my sense of self-worth'. Specifically, it deals with how one's identity takes shape and thereon begins to be an integral part of oneself. It encourages the students to think about what factors influence their self-worth, such as achievements and accumulations, wealth, career or popularity. The students learn to accept and appreciate self and others.

Identity Construction and Expression: Individual and Collective

This lesson is aimed to help the learners deconstruct their sense of identity and rechart the signifiers/ markers and processes which have played a pivotal role in constructing their sense of identity and self. It unfolds processes of socialisation within family, school, community and society at large have played a role in making students who they are. How do



these processes shape our notions of self-concept, self-evaluation, and self-esteem? The students will be able to become aware of their individual and collective sense of identity and self.

Activities

The teacher may ask the students to imagine one's identity in different contexts that are significant for identity construction. For instance, what does identity of being someone's 'child' entail; likewise what kind of an identity does one expect of oneself as a sibling, student and as a friend.

The teacher may ask the students to read from biographies/autobiographies of people from other cultures and discuss excerpts from the books. The teacher may elaborate the qualities of these people.

The teacher may organise a field visit with the students to different places. Ask the students to survey people from those locales about their experiences.

Accepting and Valuing Oneself

This lesson builds on the previous lesson by unpacking how concerns revolving around self- image and status may affect one's sense of self. It aims to make one aware why a challenge to

one's identity may lead to discomfort and conflict. Students will be encouraged to accept their physical appearance and identity and to value self-worth. This lesson invites them to undertake an inward journey.

Activities

The teacher may ask students to respond to different characters in a movie where challenges to their identity lead to different kinds of responses.

What will change after 10 years in terms of your identity and what according to you will not change?

The teacher may ask the students to identify an 'open space' and 'sit alone' and write a reflective essay on the theme, 'remember what makes you, you'.

Gender Roles

The objective of this module is to enable the students to differentiate between biological and psychological context of gender in order to understand how

their gendered identities are socially constructed. Gender refers to the characteristics of men and women and includes norms, behaviour and roles associated with being man or woman, girl or boy. Further, this will enable the students to become aware that their destiny need not be determined by biology.

Understanding a Gendered World

The objective of this lecture is to enable the students to understand that gender roles are taught by the process of socialization, beginning with the family. Everyday things that we do like eating, speaking, walking, our gestures and even the professions that we think we choose are all often influenced by societal norms.

Activities

The teacher may ask the students to list things associated under the heading; men and women. Once listed, the headings can be interchanged and a discussion may follow.

Ask students to bring an artefact from home, it can be a childhood picture. On the basis of the picture students can share childhood experiences. Through the narrative of their oral history students can share experiences of how they acquired gender.

Identifying and Transcending Stereotypes

In the previous lecture, students have been made aware that gender stereotypes are socially constructed, that the ways in which we interact with others and with ourselves are shaped by gender. The objective of this lecture is to explain the importance of thinking beyond the stereotypes and to reinforce that biological differences between genders should not lead to social discrimination.

Activities

Movie viewing: Students and teachers can choose any movie for discussion.

Quiz cards: On the cards the following can be written and the student can be asked to identify which is socially constructed and which refers to biology.

Men are Breadwinners, Women are homemakers.

Males have XY chromosomes, Females have XX chromosomes. Women give birth to babies, men don't.

Boys don't cry

Digital Identity

It may be constricting to identify exclusively with ideas like region, ethnicity, language, gender, nationality. For, in this increasingly interconnected world, students find themselves at the intersection of many ideas - evolving and fixed, dominant and marginalised. This rainbow of ideas provides an opportunity to appreciate the diversity in the constitution of an individual's identity. But what happens when one is given a chance to construct a digital identity for oneself? Digital platforms and social networking sites arguably provide an individual the choice to portray oneself the way one likes. Do we choose to present our authentic selves or do we prefer to present highly curated versions of ourselves? Do social media posts reflect self- respect and self-love?

Identity Formation and Validation in the Digital World

Through this session, students are expected to realise the ways in which they construct themselves digitally and how that construction is a manifestation of conformity, resistance and/or subversion, of the dominant ideologies. Students should be encouraged to reflect on what exactly they are seeking from engaging with social media. They need to think how the joy of sharing ideas may be different from the egoic need for compulsive validation.

Activities

Think of the digital filters that you use before sharing your photographs with others. Why do you think you need to do that?

We often feel happy about being validated in the form of 'likes' and positive comments on our social media posts. However, do you feel sad when that does not happen? What could be the possible reason for your mind to have this line of thought?

Digital Identities: Impact on the Self

The students will carry forward the learnings from the previous session and continue their inquiry in the realm of motivations for curating a digital self and its relation to self-esteem. They would be encouraged to engage in a non-judgemental conversation which would motivate them to inquire whether

their digital activities are a result of anxiety which may be emanating from their self-image.

Activities

Do you think the use of digital filters is disrespectful to your self? Is not using them a source of anxiety for you? Can this have anything to do with your self-esteem?

Think of situations that make you feel sad on social media. Note them down. Do you think not exposing yourself to such a situation is a solution or do you think you also need to locate the issue within yourself?

Try spending a day without doing any activity on social media like posting anything or surfing other people's accounts for their activities. At the end of the day observe how you feel.

Unit IV

Lifestyle Choices

How we choose to live and behave influences our social and emotional wellbeing. In this module we analyse our lifestyle choices relating to material and cultural consumption, relationships and career. Students will be encouraged to inquire whether our everyday choices are based on a culture of passive consumption and conformism. We will seek to explore possibilities of alternative forms of living premised on ethical consumption, altruism, simple and sustainable living.

What Choices Does One Get to Make?

In this session, the attempt will be to explore the extent to which consumerism impacts our lifestyle choices and the repercussions of these on our natural and social environment. Today we live in an era of mass consumption and consumer culture fostered by advanced technologies and global production systems. Overt materialism, wasteful and conspicuous consumption unmindful of the larger implications are key aspects of this phenomenon. In this lecture, we explore our lifestyle choices such as our physical image, attire, dietary choices, desire for dream homes and destination weddings. This would be the starting point for a re-imagination of a world based upon choices that would lead to simple and sustainable living.



Suggested Activities

Students may be asked to work through their consumption history right from their childhood. A discussion may then be initiated by asking the students to reflect on their consumption choices and their motives behind the same.

The teacher may identify a few products like tea, coffee, coca-cola, jeans etc and ask the students to trace product histories and geographies.

The students may be asked to discuss a strong desire to possess an object and then deconstruct that desire. Discussion may emphasise upon why they wanted it?

Is Choice Influenced? Relationships, Career Choices

In this lecture, we examine the extent to which lifestyle choices, regarding relationships and career, get influenced and by what factors. Do we really have a choice as regards the career that we intend to pursue? Often factors like family, gender, the need for security and stability influence our choices. Recognizing and mapping the space of freedom and unfreedom with respect to our choices is a necessary life skill that would enable a more self-aware and harmonious living.

Activities

Reflect on an instance where you may have inflicted pain on someone and also think of a moment when you felt someone was insensitive in their conduct of a relationship.

The teacher may divide the class into small groups and hold a discussion on what constitutes a successful career.

Reflect on the various career options available in your society and discuss what you would prefer to pursue and why?

Discrimination

The module is designed to help the learners understand the origin and nature of discrimination and the effects thereof. Discrimination can be on various grounds such as ethnicity, religion, caste, race, gender, disability, or place of birth. One's discriminatory actions can lead to social fragmentation. The module encourages the learners to introspect their actions and seeks to celebrate diversity.

Why and How? Forms of Discrimination



The objective of this lesson is to make learners aware of different forms of discrimination. On the one hand, an individual can be a victim of discrimination, and on the other, the same person

may harbour prejudice or discriminate against others. It is pertinent to understand our own biases and introspect our actions.

Activities

The teacher can ask students to count their friends who belong to different backgrounds. They can reflect on what they have learned by interacting with these friends.

Ask students to learn about their neighbourhood and document what groups live there, what has been the nature of their relationships.

An exercise on privilege using nothing but wadded up papers and a trash can.
Students Learn A Powerful Lesson About Privilege.
<https://youtu.be/2KlmvmuxzYE>

Stress and Its Management

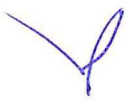
This module is designed to give students an opportunity to articulate the pressures and

challenges that one experiences in life. It gives students a chance to spell out how pressure to perform well can become a source of stress. The module is aimed to equip the learners with ways of dealing with disappointments with regard to the choice of career path and with performance related stress. It brings to fore skills of coping with stress and disappointments. It also highlights the role of physical well-being in keeping oneself mentally healthy.

Career Pressures, Examinations

This lesson is designed to help students have a relook at the challenges and pressures they have recently faced or are facing on account of career choices and examinations. It gives them a space to articulate what they might have faced while making these choices. This lesson also gives them an opportunity to highlight the uncertainties and challenges they foresee in their future lives.

Activities



The teacher may ask the students to organise themselves in groups of 4-6. Each of the groups have to do a role-play around the themes on career pressures.

Show images of different people and ask the students to quickly jot down impressions. The collective answers serve as a springboard for discussions. Students may learn about their own biases through this activity.

The teacher may ask the students to identify movies where struggles related to career and performance pressure stand out.

The teacher may ask the students to share their experiences about the following:

- First few months into an academic programmes
- 2 months before examinations
- On the day of examination
- 15 days after examinations get over

Dealing with Disappointments, Coping Skills, Health and Fitness

This session aims to equip the learners with coping skills to manage stress and deal with disappointments. Furthermore, it makes them aware of the importance of health and fitness for maintaining mental health.

Activities

The teacher can ask the students to write how they come to know they are stressed and what they do when they are stressed? The teacher may engage them in a discussion on coping skills and channelize students' energies into positive ways of resolutions of conflict and stress.

The teacher may ask the students to discuss the lives of high achievers and low achievers and

how performance pressures drive their lives. Can they draw similarities and differences in the sources of stresses and how they deal with these stresses?

Ask each of the students to share their daily regime to keep themselves physically fit. The students may also share how each one mentally 'feels/experiences' when one is engaged in physical exercises.

Connect with Nature

This module is designed to strengthen bonds with nature while understanding its intrinsic value as opposed to its instrumental value. Issues of global warming

and environmental degradation are the consequences of a disconnect between humans and nature. The aim is to cultivate environmental awareness through virtues of altruistic responsibility, empathy, cohesiveness, and mutual sustainability between nature, flora-fauna, animals and humans. The students may be engaged in activities to build bridges between the inner environment (one's self) and external environment (nature). In this way, they can celebrate oneness with nature and perceive nature not as a means but an end in itself.

Sensitivity Towards Other Sentient Beings

The students, in this session, would participate in group based environmental activities as a way of building social responsibility towards all sentient beings. Any action against even a part of nature impacts the whole. Thus, it is the responsibility of all, to create a safe environment for all sentient beings to live in harmony.

Activities

Students can be encouraged for Nature walks, nature drives, treks and hikes, nature photography, adopting natural spaces in local areas, plantation drives, visiting biodiversity parks, adopting spaces for greening etc.

Visits to animal shelters can be organised to sensitise the students.

Films can be screened on environmental sustainability, environmental consciousness etc

- Any other Practical/Practice as decided from time to time

Suggested Readings

- Black, Donna Lord (2022). Essentials of Social and Emotional Learning (SEL). NJ : Wiley.
- Goleman, Daniel (2005). Emotional Intelligence. USA: Bantam.
- Swami Vivekanand. (2016). The complete works of Swami Vivekanand. Advaita Ashrama. (<https://www.ramakrishnavivekanand.info/vivekanand/complete-works.html>)

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

VAC 1: THE ART OF BEING HAPPY

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
The Art of Being Happy	02	1	0	1	Pass in Class 12 th	NIL

Learning Objectives

- To synthesize the insights developed by Human Development experts, Psychologists, Anthropologists on one hand, and the intellectual traditions of Vedantic Philosophy and Indology on the other towards the experience of happiness.
- To illustrate various factors that determine the subjective experience of happiness in a cross cultural context.

Learning outcomes

- The students shall be able to evaluate the factors contributing to the phenomenon of happiness in the personal, familial and community life of an individual in different cultures in the Indian context.
- They will be able to develop healthy interpersonal relationships and wellbeing cherishing the values of Indian culture and philosophy.
- They will be able to relate to the global phenomenon of sustainable development and become sensitive to the needs of the planet.
- They will be able to apply the experience of *Aananda* at a personal level.

SYLLABUS OF THE ART OF BEING HAPPY

UNIT – I Human Ecology and Happiness Lectures

(3 Weeks)

- Definitions/Factors of Happiness: Environmental and Social

- Physical, emotional and psychological well-being for happiness
- Physiological and hormonal basis of happiness
- Coping with Stress: A life saving skill

UNIT – II Indological Theories of Happiness

(4 Weeks)

- *Panch Kosh* Theory & Idea of Well-Being
- Idea of Self and other
- Hierarchy and stages of happiness

UNIT – III Happiness: Cross-cultural Contexts

(4 Weeks)

- Culture and Happiness
- Interpersonal Relationship: Comparative Perspective
- Towards Self-Actualization

UNIT – IV Local and Global Perspective of Happiness

(4 Weeks)

- Measuring happiness: Key indicators
- Happiness Index
- India in Global Happiness Indices

Practical component (if any) –

(15 Weeks)

The course will be based on students' identification and operationalization of the concept of happiness and well-being. Students will explore the indicators and actualization of these concepts in everyday life.

- Community surveys on the facilities promoting positive mental health practices such as Yoga and Meditation Centres, Recreation clubs, and Parks for youth and senior citizens shall be carried out by the students.
- Extending help and social service by visiting old age homes/ hospitals/slum areas or any other disadvantaged groups.
- Students can undertake a field work / project independently or work as an Intern with NGOs working in the area of happiness and well-being.
- Critical appreciation of a documentary/ film based on Happiness and Well-being can be undertaken by the students.
- Workshops/ Sessions for the actualization of innate creative potential- (Music, Drawing, Calligraphy, Dramatics)

- Hands-on Happiness: Gardening, Cleaning, Washing, Cooking, etc.
- If required, students can share their experiences in the form of a Project Report.
- Students may share their experiences in the form of Audio-video presentations of 15-20 minutes.
- Any other Practical/Practice as decided from time to time

Essential/recommended readings

- Banavathy, Vinayachandra & Choudry, Anuradha. (2013). Understanding Happiness: A Vedantic Perspective. Psychological Studies. 59. 141-152. 10.1007/s12646-013-0230-x.
- Leontiev, Dmitry. (2012). Anthropology of Happiness: the state of Well-Being and the way of Joy, In Social Science, Vol 43. No 2 P93-104.
- Snyder .C.R. S.J. Lopez & J.T. Pedrotti. (2015). Positive Psychology (The Scientific and Practical Explorations of Human Strengths): Sage Publication. (Chapter 5: Subjective Well-being: The Science of Happiness and Life Satisfaction, Page 63 to 73)
- World Development Indicators 2016. (2016). United States: World Bank Publications.
- Zelenski, John. (2019) Positive Psychology: The Science of Well-Being, Carleton University, Ottawa, Canada, Sage Publications Chapter 3: Happiness; page (77 to 110)

Suggestive readings

- Baumgardner, S & Crothers, M. (2014). Positive Psychology. New Delhi: Pearson Education, India.
- Goleman, D. (2007). Social Intelligence: The new science of human relationships, RHUK
- Mathews, Gordon and Carolina Izquierdo (eds). (2010). Pursuits of Happiness: Well being in Anthropological Perspective. Berghan Books
- Seligman, M. (2002). Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment. New York: Free Press.
- Sri Aurobindo, The Synthesis of Yoga, Part Three: The Yoga of Divine Love, Chapter 7, The Ananda Brahman, pp. 569-570

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

VAC 1: Yoga: PHILOSOPHY AND PRACTICE

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Yoga: Philosophy and Practice	02	1	0	1	12 th Pass	NIL

Learning Objectives

The Learning Objectives of the course are:

- To learn the fundamentals of Yoga for harmonising the body, mind and emotions.
- To demonstrate the value and the practice of holistic living.
- To value the heritage of Yoga for self and society.

Learning outcomes

The Learning Outcomes of the course are:

- Understanding ways to harmonise the body and mind through Yoga.
- Disciplining the mind through practicing Yoga.
- Understanding of consciousness through practical training.

SYLLABUS OF YOGA: PHILOSOPHY AND PRACTICE

UNIT – I Yoga: *Asana*, *Prāṇāyāma* and *Dhyana*

(5 Weeks)

- History of Yoga
- Significance of Asana
- Effect of Prāṇāyama
- Importance of Dhyana

UNIT – II Patanjali's *Yogasūtra* and *Chakra*

(6 Weeks)

- Patanjali's *Yogasūtra*: a summary
- First sutra
- Second sutra
- Chakras (psychic centres)

UNIT – III Understanding *Asana* and *Pranayama*

(4 Weeks)

- Asana: the basics
- Surya Namaskara
- Nadishodhana Pranayama

Practical component (if any)

(15 Weeks)

- Surya Namaskar
- Selected Asana
- Pranayama
- Relaxation exercises for the eyes (7 steps) neck (4 steps)
- Concentration on Bhramadhy
- Project Work (effect of everyday concentration on breath for 15 minutes: reflections to be compiled in the form of a Project report.
- Any other Practical/Practice as decided from time to time

Essential Readings

- Āsanas, Prāṇāyāma and Mudra Bandh , Swami Satyananda Saraswati, Yoga Publications Trust, Munger, Bihar, India, 2004.
- Patanjali Yogasutras, Commentary by Swami Vivekanand, Rajyoga

Suggested Reading

- Patanjali Yog Pradeep- Swami Omanand Saraswati, Gita Press, Gorakhpur, 2013.
- Science of Pranayama-Swami Sivananda, Edition by David De Angellis, 2019, All Rights Reserved.
- Udayveer Shastri Granthavali, 4, Patanjali- Yoga Darshanam, Udayavir Shastri, Govindram Hasanand, Delhi 6.

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time.

VAC 1: भारतीय भक्ति परंपरा और मानव मूल्य**Credit distribution, Eligibility and Pre-requisites of the Course**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
भारतीय भक्ति परंपरा और मानव मूल्य	02	1	0	1	Pass in Class 12 th	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- भारतीय भक्ति की महान परंपरा, प्राचीनता और इसके अखिल भारतीय स्वरूप से छात्रों का परिचय कराना
- भारतीय भक्ति परंपरा के माध्यम से छात्रों में मानव मूल्यों और गुणों को जगाकर उनका चारित्रिक विकास करना और एक अच्छे मनुष्य का निर्माण करना।
- छात्रों को भारतीय नैतिक, सांस्कृतिक और सामाजिक मूल्यों के प्रति जागरूक करना।
- भारतीय भक्ति परंपरा के माध्यम से राष्ट्रीयता और अखिल भारतीयता की भावना जागृत करना।

Learning outcomes

The Learning Outcomes of this course are as follows:

- भारतीय भक्ति परंपरा के माध्यम से छात्रों में मानव मूल्यों और गुणों को विकास होगा और वे एक अच्छे और चरित्रवान मनुष्य बन सकेंगे।
- भारतीय भक्ति परंपरा के सांस्कृतिक और सामाजिक पक्षों की जानकारी हो सकेगी।
- भक्ति की प्राचीनता और अखिल भारतीय स्वरूप की जानकारी से राष्ट्रीयता और अखिल

भारतीयता की भावना जागृत और मजबूत होगी।

- प्रमुख भक्त कवियों का परिचय और उनके विचारों की जानकारी हो सकेगी।

SYLLABUS OF परंपरा और मानव मूल्य

UNIT – I भारतीय भक्ति परंपरा

(5 Weeks)

- भक्ति : अर्थ और अवधारणा
- भक्ति के विभिन्न संप्रदाय और सिद्धांत
- भारत की सांस्कृतिक एकता और भक्ति
- भक्ति का अखिल भारतीय स्वरूप

UNIT – II भारत के कुछ प्रमुख भक्त और उनके विचार

(5 Weeks)

संतति रुक्मिण, आण्डाल, अक्कमहादेवी, ललदयद, मीराबाई, तुलसीदास, कबीरदास, रैदास, गुरु नानक, सूरदास, जायसी, तकुाराम, नामदेव, नरसिंह मेहता, वेमना, कंचन, नम्बियार, चतैन्य महाप्रभु, चंडीदास, सारला दास, शंकरदेव

UNIT – III मानव मूल्य और भक्ति

(5 Weeks)

मानव मूल्य का अर्थ

चयनित भक्त कवियों की जीवन मूल्यपरक कविताएँ

Practical component (if any) –

(15 Weeks)

- पाठ्यक्रम में उल्लिखित कवियों में से किसी एक कवि की रचनाओं में विभिन्न मानव मूल्यों के आधार पर प्रोजेक्ट
- वर्तमान समय में भक्ति की प्रासंगिकता को समझना; सर्वे और साक्षात्कार पद्धति के आधार पर.
- जीवन में मानव मूल्यों के प्रति पालन पर सर्वे और साक्षात्कार के आधार पर एक रिपोर्ट बनाना.

- उल्लिखित कवियों में से किसी एक कवि से संबंधित किसी मठ, आश्रम या मंदिर आदि, अथवा कोई फिल्म/ डॉक्यूमेंट्री के आधार पर रिपोर्ट बनाना.
- आवश्यक हो, तो छात्र प्रोजेक्ट रिपोर्ट के रूप में अपने अनुभव साझा करें
- Any other Practical/Practice as decided from time to time

Essential/recommended readings

- 'भक्ति का उद्भव और विकास तथा वैष्णव भक्ति के विविधरूप, भारतीय साहित्य का समेकित इतिहास, संपादक- डॉ नगेंद्र, हिंदी माध्यम कार्यान्वयन निदेशालय, दिल्ली विश्वविद्यालय, दिल्ली, पृष्ठ संख्या 215-250
- कुछ प्रमुख कवियों के चयनित पद
- 'भक्ति आंदोलन और भक्ति काव्य', शिव कुमार मिश्र, अभिव्यक्ति प्रकाशन, इलाहाबाद, 1994
- 'मानव मूल्य और साहित्य, डॉ धर्मवीर भारती, भारतीय ज्ञानपीठ, नई दिल्ली, 1999

Suggested readings

- 'भक्ति के आयाम', डॉ. पी. जयरामन, वाणी प्रकाशन, नई दिल्ली
- 'हिंदी साहित्य का इतिहास, आचार्य रामचंद्र शुक्ल, लोक भारती प्रकाशन, इलाहाबाद
- 'मध्यकालीन हिंदी काव्य का स्त्री पक्ष', डॉ. पूनम कुमारी, अनामिका पब्लिशर्स एंड डिस्ट्रीब्यूटर्स, नई दिल्ली
- 'मध्यकालीन हिंदी भक्ति काव्य: पुनर्मूल्यांकन के आयाम', डॉ. पूनम कुमारी, अनामिका पब्लिशर्स एंड डिस्ट्रीब्यूटर्स, नई दिल्ली

Examination scheme and mode: Subject to directions from the Examination Branch/University of Delhi from time to time

BIOINOCULANTS FOR AGRICULTURE AND SUSTAINABLE DEVELOPMENT

Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
BIOINOCULANTS FOR AGRICULTURE AND SUSTAINABLE DEVELOPMENT	2	0	0	2	None	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- The objective of this course is to make students aware of the role of microorganisms in sustainable development and remediation.
- This course will train students to develop their own biofertilizers and other kinds of bio-inoculants for use in agriculture and environment.
- The course is designed for skill development in initiating a bioinoculant-based low cost startup.

Learning outcomes

The Learning Outcomes of this course are as follows:

- The student will be aware of the role of microbes in sustainable development and how microbes can be used in remediation of damaged environments.
- The student will be skilled in isolating microorganisms from a variety of different sites. Will learn Selection, purification and preservation of useful cultures.
- The student will be skilled in formulating bioinoculants and test its efficacy.

SYLLABUS

Practical

UNIT – I (5 Weeks)

Introduction and scope of bioinoculants: Biofertilizers: success story – biofertilizer production under ICAR - How Biofertilizers for Corn Went Commercial. Biopesticides: success story of using biopesticides for nematode management in horticultural crops. Bioinoculants as a solution to the problem of parali (stubble) burning: case study of “PUSA Decomposer”. Bioinoculants for reforestation. Bioinoculants for the reclamation of waste lands having alkaline, acidic, heavy metal-contaminated soils. Bioinoculants for clearance of oil spills. Mycorrhizal inoculants. Some important commercially available bioinoculants.

UNIT – II (7 Weeks)

Isolation of microorganisms for the preparation of bioinoculants: Isolation of phosphate solubilizers, free-living nitrogen fixers, heavy metal-accumulating microbes, alkalophiles, acidophiles from suitable soil samples. Observation of colony morphology and microscopic structure of selected microbes and preservation of these cultures in slants and glycerol stocks.

UNIT – III (3 Weeks)

Formulation of bioinoculant using selected microbes (student group project): Culturing of selected microbes from those isolated, and formulating them into a bioinoculant. Preparation of workflow for evaluating efficacy in potted plants and in fields, for determining shelf life, and stability.

Essential/recommended readings

1. Microbiology: A Lab Manual by J. G. Cappuccino and C. T. Welson. 12th edition.
2. Pearson. 2020.
3. Bio-inoculants as prospective inputs for achieving sustainability: Indian Story by C. Gupta et al. Economic Affairs. Vol. 65, No. 1, pp. 31-41. 2020.
4. Bioinoculants for bioremediation applications and disease resistance: Innovative Perspectives by T. Chaudhary and P. Shukla. Indian J Microbiol. 59 (2): 129–136. 2019.
5. Remediation of metalliferous soils through the heavy metal resistant plant growth promoting bacteria: paradigms and prospects by M. Ahemad. Arabian Journal of Chemistry, 12 (7);1365-1377. 2019.
6. Laboratory manual of Microbiology and Biotechnology by K.R. Aneja. 2nd edition. Scientific International Pvt. Ltd., Delhi. 2018.
7. Online resource: <https://www.jaivikkheti.in/DMS/Waste-Decomposer%20Book-Eng.pdf>
8. Online resource: <https://www.iihr.res.in/success-story-using-biopesticides-nematode-management-horticultural-crops>.
9. Biofertilizer Production under ICAR All India Network Project on Soil Biodiversity Biofertilizers DOI: 10.13140/RG.2.2.26840.42244
10. Online resource: <https://blog.teamtrade.cz/the-story-of-how-biofertilizers-for-corn-went-commercial-part-one/>
11. Online resource: https://en.wikipedia.org/wiki/Microbial_inoculant

Suggestive readings (if any)

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Healthy and Sustainable Food Choices

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical /Practice		
Healthy and Sustainable Food Choices	2	-	-	2	Class 12	

Learning Objectives

The Learning Objectives of this course are as follows:

- To identify healthier food options
- To understand portion control for foods
- To demonstrate skill for preparing healthy and nutritious dishes
- To link sustainability with healthy food choices

Learning Outcomes

The Learning outcomes of this course are as follows:

- To be able to select and prepare healthier food options
- To relate the influence of food environment on food choices
- To comprehend the importance of sustainable food choices

SYLLABUS

Unit 1: Healthy food choices

(3 weeks)

Identification of healthy and unhealthy foods and Understanding the immediate food environment

- Food labels and basics of nutrient profiling models to classify foods as HFSS
- Nutrient profiling of commonly consumed food items
- Exploring the food environment by mapping the food outlets and food available near home and college

Unit 2: Food portion sizes and related factors

(3 weeks)

Understanding food portion sizes and its relation to nutrient density

- The concept of portion/serving sizes and portion control
- Estimation of energy and nutrient density of selected food products using nutrient composition database

Unit 3: Basics of food preparation (5 weeks)

Planning and preparation of healthy and nutritious dishes

- Planning and preparation of the following:
 - Snacks
 - Soups and Salads
 - Desserts
 - Meal combinations

Unit 4: Sustainability and healthy food

(4 weeks)

Linking the concept of healthy eating with sustainability

- Identification of nutritious food sources which have minimal impact on the environment
- Case study on understanding food supply chain and carbon footprints of any commonly consumed foods

Essential readings

- Chadha R and Mathur P (2015). Nutrition - A Lifecycle Approach. New Delhi: Orient Blackswan Pvt Ltd.
- Longvah T, Ananthan R, Bhaskarachary K and Venkaiah K (2017). Indian Food Composition Tables. National Institute of Nutrition, Indian Council of Medical Research, Department of Health Research, Ministry of Health and Family Welfare, Government of India, Hyderabad.
- Khanna K, Gupta S, Seth R, Mahna R, Rekhi T (2004). The Art and Science of Cooking: A Practical Manual, Revised Edition. New Delhi: Elite Publishing House Pvt Ltd.
- Raina U, Kashyap S, Narula V, Thomas S, Suvira, Vir S, Chopra S (2010). Basic Food Preparation: A Complete Manual, Fourth Edition. Hyderabad: Orient Black Swan.

Recommended readings

- HLPE. 2017. Nutrition and food systems. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome. <https://www.fao.org/3/i7846e/i7846e.pdf>

- Agarwal P and Mathur P (2021). Eat Right - A Food Systems Approach . New Delhi: Food Future Foundation
- NIN-ICMR. Food Based Dietary Guidelines for Indians

Note: Learners are advised to use the latest edition of readings.

Examination scheme and mode:

Total Marks: 50

Internal Assessment: 25 marks

Practical Exam (Internal): 25marks

End Semester University Exam:

The Internal Assessment for the course may include Class participation, Assignments, Class tests, Projects, Field Work, Presentations, amongst others as decided by the faculty

WORKING WITH PEOPLE

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
WORKING WITH PEOPLE	2	1	0	1	Class XII from any discipline as per University guidelines	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To inculcate values in strengthening knowledge and skills in field work practice learning
- To develop aptitude and attitude to work in the field
- To enhance skills of self-awareness, self-development, goal setting and time management

Learning outcomes

At the end of the semester the students will be able to

- Develop a practical understanding of using different skills while working with individuals and groups
- Develop skills and competencies to work effectively in field settings
- Acquire understanding about self, goal setting, networking, and communication

SYLLABUS

Course Content

Unit I: Developing Personal and Professional Self Unit Description: This unit will provide a conceptual understanding of Self-awareness and sensitivity. The students will learn about goal setting, time management and ethics in social work practice.	(No. of lectures) 7 Weeks: I-IV
Subtopics: <ul style="list-style-type: none"> • Understanding personal self and professional self. • Professional Ethics: Responsibility, accountability, loyalty, commitment, cultural sensitivity and competence. • Goal setting and time management 	
Unit II: Planning for Field Work Practice Unit Description: This unit will introduce the students to strategic learning plans required for field work, thematic modules for different target groups and importance of rapport building and communication while working in community.	(No. of lectures) 8 Weeks: V-VIII
Subtopics: <ul style="list-style-type: none"> • Preparation of Field work learning plans and strategies. • Rapport building, initiating dialogues and sustaining communication. • Thematic learning modules for targeted populations: Children, adolescent, youth and elderly. 	
Unit III: Documentation in Field Work Unit Description: This unit will focus on documentation and maintaining records while working with individuals, groups and communities. The students will also learn to develop community profile.	(No. of lectures) 7 Weeks: IX-XI
Subtopics: <ul style="list-style-type: none"> • Case records • Group work records • Community profile 	
Unit IV: Application of Skills and Techniques Unit Description: This unit will introduce various skills and techniques required in understanding self and mobilising support.	(No. of lectures) 8 Weeks: XII-XV
Subtopics: <ul style="list-style-type: none"> • Understanding Self: Johari Window • Strength and Weakness- SWOT Analysis • Mobilising Community Support: Networking, Advocacy and Public Relation 	

Practical component (if any) – Unit III & IV application based

Essential readings

- Datar,S. et al. (2010). Skill Training for Social Workers: A Manual. New Delhi: Sage Publications
- Kumar, S. (2002).Methods for Community Participation: A Complete Guide for Practitioners. London: ITDG Publishing.
- Nair,R., Juvya,S., & Nadkarni,V. (2020). Field Instructions in Social Work Education, The Indian Experience. Routledge India.

- Subhedar, I. S. (2001). Field Work Training in Social Work. New Delhi: Rawat Publications.
- Trevithik, P. (2000). Social Work Skills: A Practice Handbook. Buckingham, Philadelphia: Open University Press.
- Verma, R.B.S. & Singh, A.P. (2013). Standard Manual for Field Work Practicum in Social Work. Lucknow: New Royal Book Company.

Suggested readings

- NAPSWI. (2016). NAPSWI's Code of Ethics for Professional Social Workers in India. New Delhi: National Association of Professional Social Workers in India

ASSESSMENT

Internal Assessment: 50 Marks

The students are required to prepare project work/assignments/case studies/ presentations/reports. The social work students will fulfil requirements of project work etc based on 2 hours spent weekly in field work in a social welfare organisation and/or skill labs. The student from course other than social work will fulfil requirement of project work etc through workshops/skill labs/guided field visits. It is compulsory to maintain at least 80% attendance for field work based project work.

Semester End Examination: 50 Marks as per University academic calender

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

LIFE SKILL EDUCATION

Credit distribution, Eligibility and Prerequisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
LIFE SKILL EDUCATION	2	1	0	1	Class XII from any discipline	NIL

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Learning Objectives

The Learning Objectives of this course are as follows:

- To impart life skills education in field work practice
- To strengthen life skills for career building, critical thinking, attitudinal base for innovate leadership
- To learn the application of life skills in diverse field work settings

Learning outcomes

At the end of the semester the students will be able to

- Focus on development of values in strengthening knowledge and life skills, bringing high quality standards in field work practice-learning
- Understand the strength-based life skill development, team work, innovate leadership, design thinking and career building skills
- Develop universal human values while utilizing life skills in field work

SYLLABUS

Unit I: Life Skills Introduction Unit Description: To introduce students to the basic concepts of life skill management.	(No. of lectures) 7 Weeks: I-IV
Subtopics: <ul style="list-style-type: none">● Basic Life Skills: Concept, Components and Significance● Life Skills Development: National Perspective● Universal Human Values – Love, Compassion, Truth, Non-violence, Peace, Gratitude, Patience and Tolerance	
Unit II: Basic Life Skills Unit Description: To learn the set of essential life skills that can lead to high employability and good work culture.	(No. of lectures) 8 Weeks: V-VIII
Subtopics: <ul style="list-style-type: none">● Team Work Skills: Social Etiquettes, Democratic Decision, and Collaboration● Innovative Leadership: Initiative taking, Time Management, Capacity building, Life Coaching● Career Building Skills: Exploring Career Opportunities, Mentoring, Resume Preparation, facing Interview & Group Discussion,	

Presentation Skills, Creating social media profile	
Unit III: Significant Life skills and Techniques Unit Description: To understand potential changes that can be brought about by employing essential life skills	(No. of lectures) 7 Weeks: IX-XI
Subtopics: <ul style="list-style-type: none"> Developing Strategies for enhancing Life Skills Life Skills (Cognitive based): Critical Thinking, Knowledge construction, Evaluating reasoning, Solution Focused Thinking, Life Skills (Behavioural Based): Ethics, Integrity, Problem Solving, Decision making 	
Unit IV: Application of life skills in Field Work Unit Description: To learn the application of essential life skills in diverse settings through case studies about interventions	(No. of lectures) 8 Weeks: XII-XV
Subtopics: Developing specific life skills intervention plan for <ul style="list-style-type: none"> Stress Management and Coping strategies Simulation exercises: Brainstorming, Role plays for Team building Case Management 	

Practical component (if any) – Unit III & IV application based

Essential readings

- Bandyopadhyay and Subrahmanian (2008), Gender Equity in Education: A Review of Trends and Factors
- Brinkman, F. J. (2016). Environment, Religion and Culture in the Context of the 2030 Agenda for Sustainable Development, (April).
- Brown, T. (2012). Change by Design. Harper Business
- Care, E., Kim, H., Anderson, K., & Gustafsson-Wright, E. (2017). Skills for a Changing World: National
- Census of India. (2011), Registrar General of India
- Clarke, D., Bundy, D., Lee, S., Maier, C., Mckee, N., Becker, A., Paris, F. (n.d.). Skills for Health Skills-based health education including life skills: An important component of a Child-Friendly/Health-

- Dewan S, Sarkar U (2017) From education to employability: Preparing South Asian Youth for the world of work, UNICEF ROSA
- International Youth Foundation. (2014). Strengthening life skills for youth : A practical guide to quality programming.
- Kwauk C & Braga. (2017) Life skills education is more than teaching skills, Brookings institution Washington DC
- LIFESKILLS EDUCATION. (n.d.). Retrieved from, http://www.cbse.nic.in/cce/life_skills_cce.pdf
- Perspectives and the Global Movement. Retrieved from <https://www.brookings.edu/wp-content/uploads/2017/03/global-20170324-skills-for-a-changing-world.pdf>

Suggested readings

- Martin, R. (2007). How Successful Leaders Think. Harvard Business Review, 85(6): 60.
- Govt. of India. (2014 & 2016) Educational Statistics at a glance, MHRD,
- Murphy-Graham (2012), Opening Minds, Improving Lives: Education and Women's Empowerment in Honduras
- Sen Madhucchanda (2010), An Introduction to Critical Thinking, Pearson, Delhi
- South, T., Life, A., & Forum, E. (2005). Life Skills-Based Education in South Asia.
- Street, C. (2012). Global Life Skills Education Evaluation, (February).
- WHO (1997). Life Skills Education for Children and Adolescents in Schools. Geneva: WHO.

Internal Assessment: 50 Marks

The students are required to prepare project work/assignments/case studies/ presentations/reports. The social work students will fulfil requirements of project work etc based on 2 hours spent weekly in field work in a social welfare organisation and/or skill labs. The student from course other than social work will fulfil requirement of project work etc through workshops/skill labs/guided field visits. It is compulsory to maintain at least 80% attendance for field work based project work.

Semester End Examination: 50 Marks as per University academic calender

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Innovation and Entrepreneurship

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical /Practice		
Innovation and Entrepreneurship	2			2	NIL	NIL

Learning Objectives

The primary objectives of the course will be to:

- Encourage the process of creative thinking and innovation
- Build an entrepreneurial perspective to identify and tackle problems and explore new opportunities
- Gain insight into building business models and plans
- Identify tools and strategies that entrepreneurs may use for start-up, innovation and reinvention
- Understand how to go from an idea to product and scale it up for sustainability
- Develop skills to work in teams and build connections, collaborations and social networks .

Learning Outcomes

By the end of the course students should be able to:

- Identify and comprehend the concepts of creativity, innovation and invention in various contexts.
- Enrich their theoretical and conceptual foundations in entrepreneurship.
- Gain hands-on experience that shall empower them to identify business and social opportunities and venture in the entrepreneurial landscape.
- Prepare themselves to take informed decisions in establishing start-ups and ongoing innovation in organisations
- Work as a team

PEDAGOGY

While suitable concepts and theory will be utilized, the emphasis of the course will be on inquiry driven hands-on activities and experiential learning in a team setting. As this is essentially a group activity based course, the two lectures scheduled for each week shall be held

together. The class to be split up ideally in groups of 5 – 7 students each, who will work together for the rest of the semester on identifying a specific problem and by semester-end present a feasible innovative prototype capable of being funded as a start-up.

SYLLABUS

Unit I: Understanding Creativity

- Understanding the concept and process of creativity; students exploring within themselves the nature of the creative process; approaches to understanding creativity (Ref. B1)
- Differentiate between invention and innovation (Ref. OR1)
- Understanding entrepreneurial mindset and skills (creativity, decision making, risk taking behaviour, networking) and entrepreneurship in different contexts (eg. Social, Cooperative, Commercial, Public, Not for Profit organisations) (Ref. B1)
- Case studies of some successful innovations/start-ups – Different group can be given a different Case Study and the groups can have a discussion on same (Ref. Suggestive Case Studies A)

(12 practical hours)

Unit II: Ideation

- Identifying a specific problem through observation, contemplation, networking and research (Ref. B2)
- Generating ideas for problem solving using mind mapping, brainstorming, focus groups, idea generation tool kit (SCAMPER) (Ref. B1)
- Learning through failures of others – case studies of some ventures that could not sustain – Different group can be given a different Case Study and the groups can have a discussion on same (Ref. Suggestive Case Studies B)

(12 practical hours)

Unit III: Understanding the business

- Building a business plan using the lean canvas model (Ref. OR2)
- Understanding customers/stakeholders and evaluating the business plan through survey/questionnaire/interview/secondary research (Ref. B1 and B2)
- Designing, prototyping and iteration (Ref. B2)
- Networking and growth strategies (Ref. B3)
- Building and managing organisations (Ref. B3)
- Role of leadership and team based culture (Ref. B3 and OR4)

(16 practical hours)

Unit IV: Venturing Forth

- Financing the innovation: pitching and communicating the idea
- Sources of finance: crowdfunding, venture capital, equity funds, angel investing, borrowing (including government initiatives, bank and public funded schemes) (Ref. OR5 and OR6)
- Various forms of IPR (patent, copyright, trademark, geographical indication, industrial design) (Ref. OR7 and OR8)
- Setting and scaling up (Ref. B3)
- Entrepreneurial resilience and ongoing creativity (Ref. B1)

(8 practical hours)

Suggested Readings: Books

B1. The Innovator's DNA: Mastering the Five Skills of Disruptive Innovators, Jeff Dyer, Hal Gregersen, C.M. Christensen, Harvard Business Review Press, 2011

B2. Design Thinking: Business Innovation, Maurício Vianna, Ysmar Vianna, Isabel K. Adler, Brenda Lucena, Beatriz Russo, MJV Press, 1st Electronic Edition, 2011
(also available at https://cdn2.hubspot.net/hubfs/1701231/Documents/Design_Thinking_-_The_Book/Design_Thinking_The_Book.pdf)

B3. Contemporary Strategy Analysis: Text and Cases, Robert M Grant, Wiley, 9th Edition, 2016 (Chapter 6 and Chapter 9)

Online Resources

OR1. Discovery, Innovation and Invention
<https://www.laits.utexas.edu/~anorman/long/DII.html>

OR2. How to create your lean canvas
https://leancanvas_production.s3.amazonaws.com/cms/LeanCanvas.pdf

OR3. Organisational behaviour and human relations, Module 12, Creativity in decision making
<https://courses.lumenlearning.com/wm-organizationalbehavior/>

OR4. Organisational behaviour and human relations, Module 13, Leadership
<https://courses.lumenlearning.com/wm-organizationalbehavior/>

OR5. Sources of Funding Innovation and Entrepreneurship
https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020-chapter4.pdf

OR6. Government Schemes for Startups
<https://www.startupindia.gov.in/content/sih/en/government-schemes.html>

OR7. Intellectual Property Rights in India
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627956/IP-Rights-in-India.pdf

OR8. What is Intellectual Property? WIPO 2020 doi:10.34667/tind.42176
<https://www.wipo.int/publications/en/details.jsp?id=4528>

Suggestive Case Studies A

1. Amul
2. Goonj
3. Aravind Eye care systems
4. Apple
5. Pixar
6. ISRO
7. Khan Academy
8. Nyka
9. Swiggy

10. Sulabh International
11. OYO
12. Mumbai's Dabbawalas
13. Lijjat Papad
14. Jaipur Rugs
15. WOW! Momo
16. Biryani by Kilo

Suggestive Case Studies B

1. Nokia
2. Cafe Coffee Day
3. HMT watches
4. Atlas Cycles
5. Jet Airways
6. Kodak
7. Stayzilla
8. SKS Microfinance IPO
9. Satyam Computers
10. Groupon Inc.

Weekly Plan:

Week I: Understanding the concept and process of creativity; Approaches to understanding creativity; differentiate between invention and innovation.

Week II: Activity week - Students exploring within themselves the nature of the creative process in groups (eg. exploring the surroundings for possible problems and challenges that may have innovative solutions).

Week III: Understanding entrepreneurial mindset and skills (creativity, decision making, risk taking behaviour, networking) in different contexts through discussion of a case study (may select one case study from Suggestive Case Studies A).

Weeks IV - IX: Activity Weeks - The class to be split up ideally in groups of 5 – 7 students each, who will work together for the rest of the semester on identifying a specific problem and by semester-end present a feasible innovative prototype capable of being funded as a start-up.

Week IV: To begin with, each group shall identify a problem through observation, contemplation, brainstorming, networking and research.

Week V: Each group to generate ideas for solving their identified problem using mind mapping, focus groups, idea generation tool kit (SCAMPER).

Week VI: Each group to critically assess the feasibility of the proposed ideas by learning through the failures of others – case studies of some ventures that could not sustain (may use a case study from Suggestive Case Studies B).

Week VII: Each group to build a business plan using the lean canvas model and survey/questionnaire/interview/secondary research.

Week VIII: Each group to design and prototype their proposed business solution/model/product.

Week IX: The groups evaluate their proposed business plan/model using feedback from networking. Submission of formal business plan (written) by each group.

Week X: Formulating growth/scaling up strategies; building and managing organisations; role of leadership and team based culture, entrepreneurial resilience and ongoing creativity.

Week XI: Financing the innovation: pitching and communicating the idea. Sources of finance: crowdfunding, venture capital, equity funds, angel investing, borrowing (including government initiatives, bank and public funded schemes)

Week XII: Various forms of IPR (patent, copyright, trademark, geographical indication, industrial design)

Week XIII and Week XIV: Activity weeks - Submission of final project report (written) and presentation (oral) by each group, Viva.

Assessment: The evaluation shall be done in continuous assessment mode based on assessing the quality of participation shown by the students and the skill developed. The rationale behind this scoring scheme is to assess students on their effort, enthusiasm and participation rather than merely the final outcome achieved. The suggestive assessment modes are Class participation,, Creativity; Group projects in form of business model development and its presentation.

SEC-11: Green Belt Development for Smart Cities

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution Of The Course			Eligibility Criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Green Belt Development for Smart Cities	2	0		2	Nil	Nil

Learning objectives:

- To introduce students with one of the key green skill development programs under the Skill India mission by the Government of India.
- To acquaint students with various methods and techniques used in development of green infrastructure for smart cities

Learning Outcomes:

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

- measure factors (biotic and abiotic) contributing to sustainable, healthy environment.
- Assess, describe and use the appropriate plants for restoring polluted environment.
- use their skills enhancing for green infrastructure development (UN-SDG).

Practicals:

1. Methods of vegetation sampling and calculation of importance value index 01 Week
2. Measuring Tree Basal Area, Height and Canopy Cover to estimate green cover of an area.
02 Weeks
3. Understanding of Instruments for measuring microclimatic variables viz., light, wind, temperature, humidity and precipitation 01 Week
4. Estimation of Total Carbon stock of an area. 02 Weeks
5. Understanding methods for selection of plants according to pollutant load of both air and water (includes field survey) 01 Week
6. Assessing air pollution tolerance of plant species using APTI (Air pollution tolerance index).
02 Week

- | | |
|---|----------|
| 7. Use Open Source Softwares for mapping the GPS points and generating a cover map. | 01 Week |
| 8. Measurement of Dissolved Oxygen (DO) from treated wastewater. | 02 Weeks |
| 9. Measurement of BOD and TDS from tank and treated pond. | 02 Weeks |
| 10. Determination of total dissolved and suspended solids in water. | 01 Week |

Suggested Readings:

1. Bell, J. R., Wheater, C. P., Cook, P. A., Bell, J. R., Wheater, C. P., Cook, P. A. (2011). Practical Field Ecology: A Project Guide. United Kingdom: Wiley.
2. Singh J.S., Singh S.P. & Gupta S.R. · 2014. Ecology, Environmental Science & Conservation. (2014). India: S. Chand Pvt. Limited.
3. Measurements for Estimation of Carbon Stocks in Afforestation and Reforestation Project Activities under the Clean Development Mechanism, A field Manual UNFCCC.
4. Slingsby, D., Cook, C., Slingsby, D., Cook, C. (2016). Practical Ecology. United Kingdom: Macmillan Education UK.
5. Mukerji, K. G. (2013). Laboratory Manual of Food Microbiology. India: I.K. International Publishing House Pvt. Limited.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

Communication in Everyday Life

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Communication in Everyday Life	2	0	0	2	12 th Pass	Nil.

Learning Objectives

The Learning Objectives of this course are as follows:

- To lay down a basic foundation for basic communication that is a part of a student's everyday life.
- To inculcate the fundamentals of communication with the aim to enhance listening, speaking and writing skills.
- To hone practical skills that can be used in day-to-day affairs.

Learning outcomes

The Learning Outcomes of this course are as follows:

- After studying this course, students will be able to improve mediation skills.
- After studying this course, students will be able to building human relationships.
- After studying this course, students will be able to foster societal understanding & develop an independent perspective.
- After studying this course, students will be able to enhance social communications skills of students.

SYLLABUS

UNIT 1

(2 Weeks)

Theory of Communication

- Meaning, Features, Uses, Cycle, Feedback, Advantages
- Barriers
- 7 C's of Communication

UNIT 2

(3 Weeks)

Listening Skills

- Netiquettes
- Audio-book Listening & Discussions
- Note-taking

UNIT 3

(4 Weeks)

Speaking Skills

- Oral Presentation- Audio-Visual aids, Audience & Feedback, Delivery of Presentation, Handling Questions
- Group Discussion- Culture & History, Current Affairs, Society-related
- Public Speaking- Public Speech, Extempore
- Interview- Personal, Conversational, Public

UNIT 4

(2 Weeks)

Reading Skills

- Close Reading
- Skimming
- Scanning

UNIT 5

(4 Weeks)

Writing Skills

- Summarising
- Paraphrasing
- Note-making
- Essays- Expository Essay, Descriptive Essay, Narrative Essay
- Letter Writing- Formal Letter, Informal Letter
- Reports- Incidence, Newspaper, Organisational Report
- Analysis & Interpretation- Textual
- Intra & Inter-personal Skills - Monologue, Dialogue

Suggested Readings

- Chaudhary, Shoma. "Understanding Interviews, Billy Elliot is my Story, Only LessHappy". Tehelka: The People's Paper, 18 February 2006.
- Kumar, Dinesh. "Understanding Values, Our Muddled Generation". The Hindu, 26March 2006.
- Learning to Write I, "Free Writing". In Fluency in English II, ed. Varma, Pramodiniand Mukti Sanyal, pp. 1-5, Oxford, New Delhi, 2015.
- Learning to Write II, "Editing". In Fluency in English II, ed. Varma, Pramodini andMukti Sanyal, pp. 25-27, Oxford, New Delhi, 2015.
- Learning to Write III, "What makes Good Writing Good". In Fluency in English II, ed. Varma, Pramodini and Mukti Sanyal, pp. 48-51, Oxford, New Delhi, 2015.

Examination scheme and mode:

Total Marks: 100

Internal Assessment: 25 marks

Practical Exam (Internal): 25 marks

End Semester University Exam: 50 marks

The Internal Assessment for the course may include Class participation, Assignments, Class tests, Projects, Field Work, Presentations, amongst others as decided by the faculty.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.



Negotiation and Leadership

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Negotiation and Leadership	2	0	0	2	12 th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To introduce the students to the importance of negotiation skills
- To expose the students to diverse contexts and situations that require negotiation skills
- To learn about the management of critical and crisis situations
- To evolve relationship building skills

Learning outcomes

The Learning Outcomes of this course are as follows:

- After studying this course, students will be able to apply negotiation skills to obtain desired results
- After studying this course, students will be able to understand the various aspects of a crisis situation for appropriate management.
- After studying this course, students will be able to learn how to manage complex negotiation situations.
- After studying this course, students will be able to understand the process of relationship building.
- After studying this course, students will be able to test and judge the legitimacy of the terms of negotiation



SYLLABUS

Unit 1

(3 weeks)

Negotiation Fundamentals Key concepts and core vocabulary of negotiation process, deal-making and dispute resolution, Assumptions and biases that are barriers to effective negotiation, Collaborative approaches, risk & opportunities to achieve win-win outcomes

Negotiation Canvas Introduction of a framework for negotiation preparation and how to use it, Elements of negotiation canvas i.e. relationship, alternatives, legitimacy, options, interests among others, Difference between position and interests

Unit 2

(4 weeks)

Managing critical moments

Types of negotiation approaches used by negotiators Critical moments that can make or break the deal How to identify these critical moments, Strategies to manage critical moments in the negotiation

Effective Communication and Relationship Building

Role of communication and relationship in negotiation, Understanding the other party's psychology to understand their interests, build trust and improve the scope of the negotiation, Unconditionally constructive behaviours, Methods of building trust, and empathy, Overcoming communication barriers, difficult behaviours and information asymmetry

Unit 3

(4 weeks)

Discovering, creating and claiming value

Methods of value discovery during negotiation, How is value divided and claimed between the negotiating parties?, What are the tradeoffs, mutual gains and contingencies?, Concept of distributive bargaining, equitable solutions, and ZOPA (zone of possible agreement), Biases and enemies of value creation

Complex Negotiations

Strategies for negotiations are not straightforward, involve several issues, include multiple stakeholders, and /or involve powerful parties, Hofstede's Culture dimensions, Dealing with people with difficult behaviours

Unit 4

(4 weeks)

Managing Alternatives

Concept of BATNA (Best Alternative to Negotiated Agreement), Methods to evaluate alternative options/offers, Management of one's alternatives and other party's alternatives during negotiation.

Legitimacy and Building Commitment

When to say yes to agreed terms, and when to walk away, Criteria for decision-making on negotiated terms, Assessment of the legitimacy of negotiated terms, Leading all parties to commit to the negotiated agreement, Steps from plan to execution

Essential/Recommended Readings

- Getting to Yes: Negotiating Agreement Without Giving in by Roger Fisher, William L. Ury, and Bruce Patton. Penguin Books
- Difficult Conversations: How to Discuss What Matters Most by Douglas Stone, Bruce Patton, Sheila Heen. Penguin Books
- Value Negotiation: How to Finally Get the Win-Win Right by Horacio Falcão. Pearson Education

Articles

- The Seven Myths of Win-Win Negotiations, by Horacio Falcão
- Control the Negotiation before it begins by Deepak Malhotra

Examination scheme and mode:

Total Marks: 100

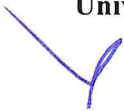
Internal Assessment: 25 marks

Practical Exam (Internal): 25 marks

End Semester University Exam: 50 marks

The Internal Assessment for the course may include Class participation, Assignments, Class tests, Projects, Field Work, Presentations, amongst others as decided by the faculty.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.



Personal Financial Planning

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Personal Financial Planning	2	1	0	1	12th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To familiarize students with different aspects of personal financial planning like savings, investment, taxation, insurance, and retirement planning
- To develop the necessary knowledge and skills for effective financial planning.

Learning outcomes

The Learning Outcomes of this course are as follows:

- After studying this course, students will be able to understand the meaning and appreciate the relevance of financial planning.
- After studying this course, students will be able to understand the concept of investment planning and its methods.
- After studying this course, students will be able to examine the scope and ways of personal tax planning.
- After studying this course, students will be able to analyse insurance planning and its relevance.
- After studying this course, students will be able to develop insight into retirement planning and its relevance.

SYLLABUS

Unit 1: Introduction to Financial Planning: (3 weeks)

Financial goals, steps in financial planning, budgeting incomes and payments, time value of money. Introduction to savings, benefits of savings, management of spending & financial discipline, Setting alerts and maintaining sufficient funds for fixed commitments.

Unit 2: Investment Planning: (3 weeks)

Process and objectives of investment, concept and measurement of return & risk for various asset classes, measurement of portfolio risk and return, diversification & portfolio formation. Gold bond; Real estate; Investment in greenfield and brownfield Projects; Investment in fixed income instruments, financial derivatives & commodity market in India. Mutual fund schemes; International investment avenues. Currency derivatives and digital currency.

Unit 3: Personal Tax Planning: (3 weeks)

Tax structure in India for personal taxation, Scope of personal tax planning, exemptions and deductions available to individuals under different heads of income and gross total income. Comparison of benefits - Special provision u/s 115 BAC vis-à-vis General provisions of the Income-tax Act, 1961, tax avoidance versus tax evasion.

Unit 4: Insurance Planning: (3 weeks)

Need for insurance. Life insurance, health insurance, property insurance, credit life insurance and professional liability insurance.

Unit 5: Retirement Benefits Planning: (3 weeks)

Retirement planning goals, process of retirement planning, Pension plans available in India, Reverse mortgage, Estate planning.

Practical Exercises: (15 Weeks)

The learners are required to:

- Perform electronic fund transfers through net banking and UPI.
- Identify certain recent Ponzi schemes in the market.
- Prepare tax planning for a hypothetical individual.

Suggested Readings:

- Halan, M. "Let's Talk Money: You've Worked Hard for It, Now Make It Work for You" Harper Collins Publishers, New York.
- Indian Institute of Banking & Finance. "Introduction to Financial Planning" Taxmann Publication, New Delhi.
- Keown A.J. "Personal Finance" Pearson, New York.
- Madura, J. "Personal Finance", Pearson
- Pandit, A. "The Only Financial Planning Book that You Will Ever Need" Network 18 Publications Ltd., Mumbai.
- Sinha, M. "Financial Planning: A Ready Reckoner" McGraw Hill Education, New York.
- Tripathi, V. "Fundamentals of Investment" Taxmann Publication, New Delhi.

Note: Learners are advised to use the latest edition of readings.

Examination scheme and mode:

Total Marks: 100

Internal Assessment: 25 marks

Practical Exam (Internal): 25 marks

End Semester University Exam: 50 marks

The Internal Assessment for the course may include Class participation, Assignments, Class tests, Projects, Field Work, Presentations, amongst others as decided by the faculty

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.



PERSONALITY DEVELOPMENT AND COMMUNICATION

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Personality Development	2	1	0	1	12 th Pass	NIL

Learning Objectives

The Learning Objectives of this course are as follows:

- To develop inter personal and effective communication skills.
- To develop problem solving skills and understand its influence on behaviour and attitudes of individuals.

Learning outcomes

The Learning Outcomes of this course are as follows:

- After studying this course, students will be able to understand the importance of oral and written communication in day-to-day working of the organisation.
- After studying this course, students will be able to develop inter personal skills and problem-solving skills.
- After studying this course, students will be able to understand the role of body language in effective communication.

SYLLABUS

Unit 1

(4 Weeks)

Introduction, need for Communication, Process of Communication, Written and Verbal Communication, Visual communication, Signs, Signals and Symbols, Silence as a Mode of Communication, Inter-cultural, Intra-cultural, Cross-cultural and International communication, Communication through Questionnaires, Business Letter Writing, Electronic Communication.

Unit 2

(4 Weeks)

Business Cases and Presentations, Letters within the Organizations, Letters from Top Management, Circulars and Memos, Business Presentations to Customers and other stakeholders, presenting a Positive Image through Verbal and Non-verbal Cues, Preparing and Delivering the Presentations, Use of Audio-visual Aids, Report Writing.

Unit 3**(4 Weeks)**

Barriers to Communication, Improving Communication Skills, Preparation of Promotional Material, Non-verbal communication, Body language, Postures and gestures, Value of time, Organizational body language, Importance of Listening, Emotional Intelligence. Working individually and in a team, Leadership skills, Leadership Lessons, Team work and Team building, Feedback, Feed forward Interpersonal skills – Delegation, Humour, Trust, Expectations, Values, Status, Compatibility and their role in building team – work Conflict Management – Types of conflicts, how to cope with conflict.

Unit 4**(3 Weeks)**

Negotiation Skills, Types of Negotiation, Negotiation Strategies, Selling skills – Selling to customers, Selling to Superiors Selling to peer groups, team mates and subordinates, Conceptual selling, Strategic selling, Selling skills – Body language.

Essential/recommended readings

- Kushal Jin – Business Communication, VK India.
- Krishnamacharyulu, C. S. G, Ramakrishnan Lalitha – Personality Development, Interpersonal Skills and Career Management, Himalaya Publishing.
- Corvete Budjac – Conflict Management: A Practical Guide to Developing Negotiation Strategies, Pearson.

Suggestive Readings

- Mitra, B. K., Personality Development and Soft Skills, Oxford University Press.
- Kumar Sanjay and Pushplata, Communication Skills, Oxford University Press.
- Mandal S. K., Effective Communication and Public Speaking, Jaico Publishing.

Note: Latest edition of the readings may be used

Examination scheme and mode:

Total Marks: 100

Internal Assessment: 25 marks

Practical Exam (Internal): 25 marks

End Semester University Exam: 50 marks

The Internal Assessment for the course may include Class participation, Assignments, Class tests, Projects, Field Work, Presentations, amongst others as decided by the faculty.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

पटकथा लेखन

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
पटकथा लेखन	2	0	0	2	12 th Pass	NIL

Course Objective:

- पटकथा लेखन का परिचय कराना।
- विद्यार्थी की लेखन-क्षमता और भाषा-कौशल को बढ़ावा देना।
- विद्यार्थी को लेखन में रोजगार सम्बन्धी क्षेत्रों के लिए तैयार करना।

Course Learning Outcomes:

- पटकथा लेखन तथा उसके तकनीकी शब्दों से विद्यार्थी अवगत हो सकेगा।
- पटकथा लेखन की जानकारी मिलने के उपरान्त विद्यार्थी के लिए रोजगार की संभावनाएँ बनेंगी।
- विद्यार्थी भाषायी सम्प्रेषण को समझते हुए लेखन से सम्बन्धित विभिन्न पक्षों से अवगत हो सकेगा।
- विद्यार्थी में अभिव्यक्ति कौशल का विकास हो सकेगा।

SYLLABUS

यूनिट 1

(4 सप्ताह)

- पटकथा लेखन: परिचय
- पटकथा के तत्व
- पटकथा के प्रकार
- पटकथा की शब्दावली

यूनिट 2

(4 सप्ताह)

- पटकथा लेखन में शोध का महत्व
- चरित्र की निर्मिति और विकास
- एक दृश्य का लिखा जाना
- तीन अंक (थ्री एक्ट) और पाँच अंक (फाइव एक्ट) को समझना

यूनिट 3

(4 सप्ताह)

- वेबसीरीज के लिए पटकथा लेखन
- लघु फ़िल्म के लिए पटकथा लेखन
- वृत्तचित्र के लिए पटकथा लेखन
- विज्ञापन फ़िल्म के लिए पटकथा लेखन

यूनिट 4

(3 सप्ताह)

- पटकथा का पाठ और विश्लेषण
- किसी आईडिया को स्क्रीन प्ले के तौर पर विकसित करना

सन्दर्भ पुस्तकें:

- पटकथा कैसे लिखें: राजेंद्र पांडेय - वाणी प्रकाशन, दिल्ली, संस्करण 2015
- पटकथा लेखन : एक परिचय - मनोहर श्याम जोशी - राजकमल प्रकाशन, दिल्ली संस्करण 2000
- कथा-पटकथा: मन्नु भंडारी - वाणी प्रकाशन, दिल्ली, संस्करण 2014
- व्यावहारिक निर्देशिका: पटकथा लेखन: असगर वज़ाहत - राजकमल प्रकाशन, दिल्ली संस्करण 2011
- आईडिया से परदे तक: रामकुमार सिंह - राजकमल प्रकाशन, दिल्ली संस्करण 2021

Examination Scheme & Mode:

Total Marks: 100

Internal Assessment: 25 marks

Practical Exam (Internal): 25 marks

End Semester University Exam: 50 marks

The Internal Assessment for the course may include Class participation, Assignments, Class tests, Projects, Field Work, Presentations, amongst others as decided by the faculty.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

रचनात्मक लेखन

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
रचनात्मक लेखन	2	0	0	2	12th Pass	NIL

Learning Objectives

- विद्यार्थियों के मौखिक और लिखित अभिव्यक्ति कौशल को विकसित करना।
- उनमें कल्पनाशीलता और रचनात्मकता का विकास करना।
- साहित्य की विविध विधाओं और उनकी रचनात्मक शैली का परिचय कराते हुए लेखन की ओर प्रेरित करना।
- प्रिंट एवं इलेक्ट्रानिक माध्यमों के लिए लेखन की प्रवृत्ति को विकसित करना।

Learning outcomes

The Learning Outcomes of this course are as follows:



इस पाठ्यक्रम के अध्ययन के पश्चात् विद्यार्थियों में:

- मौखिक और लिखित अभिव्यक्ति कौशल को विकसित होने में मदद मिलेगी।
 - उसमें कल्पनाशीलता और रचनात्मकता का विकास हो सकेगा।
 - साहित्य की विविध विधाओं और उनकी रचनात्मकता शैली का परिचय होगा जिससे वे स्वयं भी इन विधाओं में लेखन की अग्रसर हो सकेंगे।
-
- प्रिंट एवं इलेक्ट्रॉनिक माध्यमों के लिए लेखन की ओर भी ये अग्रसर होंगे।

SYLLABUS

इकाई 1

(5 सप्ताह)

रचनात्मक लेखन: अवधारणा: स्वरूप आधार एवं विश्लेषण

- भाव एवं विचार की रचना में अभिव्यक्ति की प्रक्रिया
- अभिव्यक्ति के विविध क्षेत्र: साहित्य पत्रकारिता, विज्ञापन, भाषण
- लेखन के विविध रूप: मौखिक-लिखित, गद्य-पद्य, कथात्मक-कथेतर
- अर्थ निर्मिति के आधार: शब्द और अर्थ की मीमांसा शब्द के पुराने-नए प्रयोग, शब्द की व्याकरणिक कोटि

इकाई 2

भाषा भंगिमा और साहित्य लेखन

(5 सप्ताह)

- भाषा की भंगिमाएँ: औपचारिक-अनौपचारिक, मौखिक-लिखित, मानक भाषिक संदर्भ: क्षेत्रीय, वर्ग-सापेक्ष, समूह-सापेक्ष
- रचना-सौष्ठव: शब्दशक्ति, प्रतीक, बिम्ब, अलंकारवक्रता
- कविता: संवेदना, भाषिक सौष्ठव, छंदबद्ध-छंदमुक्त, लय, गति, तुक
- कथा-साहित्य: वस्तु, पात्र, परिवेश, कथ्य और भाषा

Unit III

(5 weeks)

विविध विधाओं एवं सूचना माध्यमों के लिए लेखन

- नाट्य-साहित्य: वस्तु, पात्र, परिवेश, कथ्य, रंगमंच और नाट्य-भाषा
- विविध गद्य विधाएँ: निबंध, संस्मरण, आत्मकथा, व्यंग्य, रिपोर्टाज, यात्रा-वृत्तांत
- प्रिंट माध्यम के लिए लेखन: फीचर, यात्रा-वृत्तांत, साक्षात्कार, विज्ञापन

- इलेक्ट्रानिक माध्यम के लिए लेखन: विज्ञापन, पटकथा, संवाद

Practical Exercises if any:

नोट: उपर्युक्त का परिचय देते हुए इनका अभ्यास भी करवाया जाए।

References and suggested Readings

1. साहित्य चिंतन: रचनात्मक आयाम: रघुवंश
2. शैली: रामचंद्र मिश्र
3. रचनात्मक लेखन: सं. रमेश गौतम
4. कविता क्या है: विश्वनाथ प्रसाद तिवारी
5. कथा-पटकथा: मन्नू भंडारी
6. पटकथा लेखन: मनोहर श्याम जोशी
7. कला की जरूरत: अर्नेस्ट फिशर: अनुवादक: रमेश उपाध्याय
8. साहित्य का सौंदर्यशास्त्र: रवींद्रनाथ श्रीवास्तव
9. कविता: रचना-प्रक्रिया: कुमार विमल

Examination scheme and mode:

Total Marks: 100

Internal Assessment: 25 marks

Practical Exam (Internal): 25 marks

End Semester University Exam: 50 marks

The Internal Assessment for the course may include Class participation, Assignments, Class tests, Projects, Field Work, Presentations, amongst others as decided by the faculty.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.


REGISTRAR

