



Deccan Education Society's
Fergusson College (Autonomous)
Pune

Learning Outcomes-Based Curriculum
for 3/4 years B. Sc. /B. Sc. (Honours)
Programme as per guidelines of

NEP-2020: 2.0

for

F. Y. B. Sc. (Environmental Science)

With effect from Academic Year
2024-25

Program Outcomes (POs) for B. Sc.

PO1	Disciplinary Knowledge: Demonstrate comprehensive knowledge of the disciplines that form a part of a graduate programme. Execute strong theoretical and practical understanding generated from the specific graduate programme in the area of work.
PO2	Critical Thinking and Problem solving: Exhibit the skills of analysis, inference, interpretation and problem solving by observing the situation closely and design the solutions.
PO3	Social competence: Display the understanding, behavioural skills needed for successful social adaptation, work in groups, exhibits thoughts and ideas effectively in writing and orally.
PO4	Research-related skills and Scientific temper: Develop the working knowledge and applications of instrumentation and laboratory techniques. Able to apply skills to design and conduct independent experiments, interpret, establish hypothesis and inquisitiveness towards research.
PO5	Trans-disciplinary knowledge: Integrate different disciplines to uplift the domains of cognitive abilities and transcend beyond discipline-specific approaches to address a common problem.
PO6	Personal and professional competence: Performing dependently and also collaboratively as a part of team to meet defined objectives and carry out work across interdisciplinary fields. Execute interpersonal relationships, self-motivation and adaptability skills and commit to professional ethics.
PO7	Effective Citizenship and Ethics: Demonstrate empathetic social concern and equity centered national development, and ability to act with an informed awareness of moral and ethical issues and commit to professional ethics and responsibility.
PO8	Environment and Sustainability: Understand the impact of the scientific solutions in societal and environmental contexts, demonstrate the knowledge of, and need for sustainable development.
PO9	Self-directed and Life-long learning: Acquire the ability to engage in independent and life-long learning in the broadest context of socio-technological changes.

PSO No.	Program Specific Outcomes(PSOs) Upon completion of this programme the student will be able to
PSO1	<p>Academic competence:</p> <p>(i) Apply the knowledge, facts, and rules of basic and applied sciences (Chemistry, Biotechnology, Botany, Microbiology and Zoology) for understanding elements of Environmental Science.</p> <p>(ii) Identify basic elements and systems of the natural world and modern world.</p> <p>(iii) Gaining in-depth knowledge on natural processes that sustain life and direct economy</p>
PSO2	<p>Personal and Professional Competence:</p> <p>(i) Demonstrates the ability to understand and mitigate environmental issues</p> <p>(ii) Predicting the consequences of human actions on the web of life, global economy and quality of human life.</p> <p>(iii) Adopting sustainability as a practice in life, society and industry.</p>
PSO3	<p>Research Competence:</p> <p>i) Developing critical thinking for determining strategies (scientific, social, economic and legal) for environmental protection and conservation of biodiversity, social equity and sustainable development.</p> <p>ii) Acquiring values and attitudes towards understanding complex environmental economic-social challenges, and participating actively in solving current environmental problems and preventing the future ones.</p>
PSO4	<p>Entrepreneurial and Social competence:</p> <p>i) Employ the process of thinking independently, taking initiative, working in a team effectively, preparing project reports and developing capability to lead the team through real life situations</p> <p>ii) To augment the acumen to analyze geological and environmental research problems of social relevance</p>

NEP 2.0 Subject Credit Distribution Structure 2024-25

**Department of Environmental Science
Course Structure**

FYBSc Sem -I	Theory/ Practical	Paper Code	Paper Title	Credits	Exam type
Discipline Specific Core, DSC	Theory	EVS-1001	Introduction to Environment	2	CE +ESE
Discipline Specific Core, DSC	Practical	EVS-1011	Environmental Science Practical-1	2	CE +ESE
Open Elective-1 (For other faculty)	Theory	EVS-1021	Sustainable Development and SDGs	2	Only CE
FYBSc Sem -II	Theory / Practical	Paper Code	Paper Title	Credits	Exam type
Discipline Specific Core, DSC-3	Theory	EVS-1002	Environmental pollution and Health	2	CE +ESE
Discipline Specific Core, DSC-4	Practical	EVS-1012	Environmental Science Practical-2	2	CE +ESE
Open Elective-2 (For other faculty)	Theory	EVS-1022	Global Trends in Environment	2	Only CE
Skill Enhancement Course, SEC-1	Theory/ Practical	EVS-1032	Fundamentals of Ecotourism	2	Only CE

Teaching and Evaluation (Only for FORMAL education courses)

Course Credits	No. of Hours per Semester Theory/Practical	No. of Hours per Week Theory/Practical	Maximum Marks	CE 40 %	ESE 60%
1	15 / 30	1 / 2	25	10	15
2	30 / 60	2 / 4	50	20	30
3	45 / 90	3 / 6	75	30	45
4	60 / 120	4 / 8	100	40	60

Eligibility: As per the rules and regulations of Savitribai Phule Pune University (SPPU)

F. Y. B. Sc. Semester-I		
EVS-1001	Introduction to Environment (Major- Theory)	Credits: 02 Hours : 30
Course Outcomes (COs) On completion of the course, the students will be able to:		Bloom's cognitive level
CO1	CO-1-Students will appreciate the Knowledge about the environment and the role of human beings in shaping the environment	1
CO2	CO-2-Understand various components of the environment and interfaces	2
CO3	CO-3-Illustrate the hydrological cycle with its components. Critically appreciate the environmental concerns of today	3
CO4	CO-4-Explain different layers in atmospheric structure. Identify the change in lapse rate due to different processes of climate change and other anthropogenic impacts.	4

Unit No.	Title of Unit and Contents	No. of Lectures
Unit-1	<p>Introduction to Environment:</p> <ul style="list-style-type: none"> ● Fundamentals of Environment, Functions of Environment, Concept of Biosphere, Scope and Importance of Environment. ● Environmental Science, Multidisciplinary and dynamic nature ● Solar system formation and planetary differentiation ● History of Earth ● Theories of Geological evolution ● Geological time scale ● Age of reduction and Atmospheric equilibrium ● Holocene and the emergence of humans Role of humans in shaping landscapes 	10
Unit-2	<p>Earth & its Structural Components: Formation of the Earth:</p> <ul style="list-style-type: none"> ● Internal Structure of Earth ● Formation and composition of core, mantle, crust <p>Theories of geological evolution:</p> <ul style="list-style-type: none"> ● Wagener's Continental Drift Theory ● Plate Tectonic Theory 	10

	<ul style="list-style-type: none"> ● Sea floor spreading ● Types of Rocks – ● Igneous, Sedimentary Metamorphic. ● Rock cycle, Rock-forming minerals – quartz, feldspar, micas, clay minerals, calcite, dolomite etc. ● Weathering and Soil: ● Soil, Soil Profile ● Soil Formation ● Soil classification ● Physical & chemical properties of soil ● Macro & micro plant nutrients ● Importance and Significance of Soil ● Soil erosion Types, causes and effects 	
Unit-3	<p>Atmospheric phenomenon</p> <ul style="list-style-type: none"> ● Evolution of earth’s atmosphere ● Composition of atmosphere and its vulnerability to climate change Stratospheric Ozone ● Atmospheric temperature measurement and Instruments ● Methods (maximum, minimum, mean temperature, temperature range) ● Factors regulating atmospheric temperature/temperature controls ● Lapse rate and types ● Temperature inversion & atmospheric stability <p>Atmospheric Pressure and wind:</p> <ul style="list-style-type: none"> ● Atmospheric pressure on Earth ● Introduction ● Measurement ● Factors affecting the atmospheric pressure ● Atmospheric pressure winds ● Factors affecting wind <p>Types of wind</p>	10

Resources:

1. D. S. Lal 2003. Climatology Sharda Pustak Bhawan, 2003; ISBN,8186204121, 9788186204122 Bansil, P.C. 2004. Water Management in India. Concept Publishing Company, India.
2. Brebbia, C.A. 2013. Water Resources Management VII. WIT Press.
3. CEA. 2011. Water Resources and Power Maps of India. Central Board of Irrigation & Power.
4. Grumbine, R.E. & Pandit, M.K. 2013. Threats from India's Himalaya dams. Science 339:
5. Loucks, D.P., Stedinger, J.R. & Haith, D. A. 1981. Water Resource Systems Planning and
6. Analysis. Englewood Cliffs, NJ, Prentice Hall.
7. Mays, L.W. 2006. Water Resources Sustainability. The McGraw-Hill Publications. Schward & Zhang, 2003. Fundamentals of Groundwater. John Willey and Sons.
8. Souvorov, A.V. 1999. Marine Ecologonomics: The Ecology and Economics of Marine Natural Resource Management. Elsevier Publications.
9. Vickers, A. 2001. Handbook of Water Use and Conservation. Water Plow Press.
10. Bansil, P.C. 2004. Water Management in India. Concept Publishing Company, India.

F. Y. B. Sc. Semester-I		
EVS-1011	Environmental Science Practical-1 (Major- Practical)	Credits: 02 Hours : 60
Course Outcomes (COs) On completion of the course, the students will be able to:		Bloom's cognitive level
CO1	Recall laboratory safety rules for handling environmental samples while performing practicals. List different methods used for sample collection and preservation.	1
CO2	Estimate moisture content and water holding capacity of soil sample.	2
CO3	Illustrate chemicals used for estimation of organic carbon.	3
CO4	Identify and illustrate physical properties of rock and mineral samples.	4

Contents	
1.	Laboratory safety rules and introduction to laboratory equipment.
2.	Collection and preservation of water samples (Field Practical).
3.	Collection and preservation of soil samples (Field Practical).
4.	Determination of pH & Electrical Conductivity from soil sample.
5.	Estimation of the Moisture Content soil.
6.	Estimation of the Water Holding Capacity of soil.
7.	Determination of Organic Content from soil.
8.	Estimation of lapse rate.
9.	Identification of different Rock specimens from their physical properties.
10.	Identification of different Mineral specimens from their physical properties.
11.	Visit to the geology museum.
12.	Use of social media for e networking and dissemination of ideas on environmental issues.

Title of the Course and Course Code	EVS-1021 (GE/OE): Sustainable Development and SDGs	Credits-2
Course Outcomes (COs) On completion of the course, the students will be able to		
CO1	Identify, list environmental, social, and economic aspects for sustainable development	
CO2	Discuss scope, importance of sustainable development and opportunities for sustainability studies	
CO3	Examine pathways and requirements for sustainable development	
CO4	Analyze cross-cutting issues and role of international organizations towards sustainable development	

Unit	Contents	Lectures
Unit-1	<p>Sustainable Development, Sustainability</p> <ul style="list-style-type: none"> ● Development of the Concept ● Dimensions ● Critique ● Education for Sustainable Development ● Paris Agreement and Sustainable Development ● Strategies for Sustainable Development ● Public Engagement in Sustainable Development ● UN Sustainable Development Knowledge Platform ● Sustainable Forest Management ● Cultural Elements in Sustainable Development Frameworks <p>Pathways and Requirements</p> <ul style="list-style-type: none"> ● Environmental Characteristics of Sustainable Cities ● Land Use Changes, Agriculture and Food ● Materials and Waste ● Biodiversity and Ecosystem Services ● Management of Human Consumption and Impacts ● Improving on Economic and Social Aspects ● Gender and Leadership in Sustainable Development ● Barriers and Cross Cutting Issues 	15

Unit-2	<p>Sustainable Development Goals</p> <ul style="list-style-type: none"> ● Contents of the 17 Goals ● No poverty, Zero Hunger, Good Health and Well-Being, Peace ● Quality Education, Gender Equality, Reduced Inequalities, Justice and Strong Institutions ● Clean Water and Sanitation, Affordable Clean Energy, Climate Action, Life Below Water, Life on Land ● Decent Work and Economic Growth, Industry, Innovation and Infrastructure ● Sustainable Cities and Communities, Responsible Consumption and Production, Partnership for Sustainable Development <p>Reporting and Measurements</p> <ul style="list-style-type: none"> ● Challenges for Sustainable Development International Organizations and Sustainable Development ● Monitoring Mechanism ● Reporting and Progress ● Sustainable Development Goal Targets and Indicators ● Communication and Advocacy ● Corporate Sustainability ● Sustainability Metrics and Indices <ul style="list-style-type: none"> ● Ecological and Carbon Footprint for Sustainability Measurement ● Sustainability Measurement and Reporting Tool ● Sustainability Case Studies Examples 	15
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F. Y. B. Sc. Semester-II		
EVS-1002	Environmental pollution and Health (Major- Theory)	Credits: 02 Hours : 30
Course Outcomes (COs) On completion of the course, the students will be able to:		Bloom's cognitive level
CO1	Identify various sources and types of pollutants and study their effects on human health and environment. Describe the nature of environmental pollutants and specifically outline the impacts of pollutants on human health.	1
CO2	Classify various environmental pollutants. Discuss the mechanism of transportation and their impact on various components of environment and human	2
CO3	Apply the analytical ability to link cause and effect of pollution.	3
CO4	Distinguish the critical issues of handling pollution vis a vis human being	4

Unit No.	Title of Unit and Contents	No. of Lectures
Unit-1	<p>Water pollution:</p> <ul style="list-style-type: none"> ● Introduction to concept of water pollution ● Classification of water pollution: Surface water and groundwater pollution ● Sources and Types water pollutants: organic pollutants, pesticides, heavy metal, detergents etc. ● Eutrophication ● Geogenic Contamination – problems of As and F- in ground water and ● Case studies of river, lake and groundwater pollution ● Effects of water pollution : human health and other problems ● Diseases caused by polluted water: Minamata disease, itai itai disease etc. Diseases caused by pathogens 	10
Unit-2	<p>Air Pollution:</p> <ul style="list-style-type: none"> ● Introduction to the concept of air pollutants and pollution. Definition as per Environment Protection Act 1986. ● Types and sources of air pollution. <p>Mechanism of atmospheric transport of air pollutants:</p> <p>Role of atmospheric factors and processes.</p> <p>Air pollution and effects on Health :</p> <p>Particulate matter, Heavy metals (Pb in particular), Sulphur dioxide (SO₂), Nitrogen dioxide (NO₂), Volatile organics, Surface Ozone</p>	10

	<p>Air pollution and effects on environment: acid rain, ozone depletion, ecosystem impacts</p> <p>History of air pollution episodes: London smog, Bhopal Gas Tragedy</p>	
Unit -3	<p>Noise pollution:</p> <ul style="list-style-type: none"> ● Introduction and Sources ● Noise measurement ● Effects of Noise pollution: hearing loss, Cardiovascular effects, Psychological impacts, Stress, Annoyance etc. ● Prevention and Control of noise pollution, regulation <p>Radioactive and Thermal pollution:</p> <ul style="list-style-type: none"> ● Radioactive material and sources of radioactive pollution ● Effect of radiation on human health: (somatic and genetic effects) ● Thermal pollution and its effects <p>Marine Pollution:</p> <ul style="list-style-type: none"> ● Marine Resources and their Importance ● Sources of Marine Pollution: Oil Spill and Its Effects, Deep Sea Mining, Marine Debris, Ocean Acidification, Nutrient Pollution, Toxicants, Plastics. ● Threats to marine ecosystems and resources 	10
<p>References:</p> <ol style="list-style-type: none"> 1. Environmental Science; Santra S.C.; New Central Book Agency (P) Ltd.; 2 Edt.. 2. Environmental Chemistry, Dey A. K.; New Age International Publishers; 6 Edt.. 3. Air Pollution; Rao M.N. & Rao H.V.N.; Tata McGraw Hill; New Delhi; 1989. 4. Environmental Pollution Control & Environmental Engineering; Rao C. S.; Tata McGraw Hill; New Delhi; 1994. 5. Pollution Management; Agarwal S.K. 6. Environmental Science; Daniel Chiras. 7. Waste Water Engineering, Treatment, Disposal & Reuse; Metcalf & Eddy. 8. Textbook of Noise Pollution & Its Control – S.C. Bhatia 9. Chemical & Biological Methods for Water Pollution Studies; Trivedi R. K. & Goel P. K.; Environmental Publications; Karad; 1986. 10. Advanced Air and Noise Pollution Control - L. K. Wang & N. C. Pereira 11. Environmental Chemistry - B.K. Sharma 12. Environmental Chemistry –H.Kaur 13. Fundamental Concepts of Environmental Chemistry: G S Sodh 		

F. Y. B. Sc. Semester-II		
EVS-1011	Environmental Science Practical-2 (Major- Practical)	Credits: 02 Hours : 60
Course Outcomes (COs) On completion of the course, the students will be able to:		Bloom's cognitive level
CO1	Recall laboratory safety rules for handling waste water samples while performing practical. List water quality monitoring techniques.	1
CO2	Understands the basic concepts of air quality monitoring	2
CO3	Illustrate chemicals used for estimation of physicochemical parameters of water	3
CO4	Measure and illustrate the noise levels from different residential and commercial zones	4

Contents
<ol style="list-style-type: none"> 1. Demonstration of air sampling with RDS/handy sampler 2. Measurement of particulate matter in air by grab sampling and gravimetric method. 3. Determination of pH & Electrical Conductivity from water. 4. Determination of Alkalinity from water. 5. Determination of Turbidity in water by Secchi disc (Field practical). 6. Determination of TDS, TSS & TS from water by gravimetric method 7. Determination of Total Hardness (Ca & Mg) from water. 8. Determination of Chlorides from water. 9. Understanding and comparing noise levels of localities 10. Field visit: Visit to a local polluted site (Urban/Rural/Industrial/Agricultural) 11. Collection and characterization of planktons / plant bio-indicators from Eutrophic Lake(Field Practical). 12. Use of social media for e-networking and dissemination of ideas on environmental issues

Title of the Course and Course Code	EVS-1022 (GE/OE): Global Trends in Environment	Credits-2
Course Outcomes (COs) On completion of the course, the students will be able to		
CO1	Identify, list environmental, social, and economic aspects for sustainable development	
CO2	Discuss scope, importance of sustainable development and opportunities for sustainability studies	
CO3	Examine pathways and requirements for sustainable development	
CO4	Analyze cross-cutting issues and role of international organizations towards sustainable development	

Unit	Contents	Lectures
Unit 1: An Overview of the Trends	<p>A) Environmental Challenges</p> <ul style="list-style-type: none"> ● Global Commons and Environmental Protection ● Production and Consumption Issues ● Agriculture and Future Development of the World ● Resources and Biodiversity at Risk ● Global Sustainability Trends ● Global Environmental Governance ● Environmental Impact Assessment <p>B) Industrial Environment Sustainability</p> <ul style="list-style-type: none"> ● Green Policies, CSR and Sustainability Report ● Supply Chain and Environmental Impacts ● Investments in Green Sectors and Cost-Benefit Analysis ● Hybrid Equipment's and Energy Solutions ● Decarbonization Technologies ● Digital Technologies and Sustainability ● Environment Management System ● Low-Carbon World and Future of Industrial Sectors <p>C) Role of International Organizations</p> <ul style="list-style-type: none"> ● United Nations Development Programme (UNDP) ● United Nations Environment Program (UNEP) ● United Nations Industrial Development Organization (UNIDO) ● World Bank (WB) ● Global Alliance on Health and Pollution (GAHP) ● Intergovernmental Panel on Climate Change (IPCC) ● International Union for Conservation of Nature (IUCN) ● United Nations Environment Programme (UNEP) 	15

Unit 2: Approach towards Solutions	<p>A) Solutions to Global Environmental Issues</p> <ul style="list-style-type: none"> ● Environment, Social and Governance ● Smart Cities and Future Urban World ● Water and Wastewater Treatment ● Air Pollution Control Technologies ● Solid Waste Management Technologies ● Renewable Energy Production ● Science and Engineering for Clean Technology ● International Collaborations and Agreements <hr/> <p style="text-align: center;">B) Applications of Technology Environmental Protection</p> <ul style="list-style-type: none"> ● International Agencies and Development of Software ● Artificial Intelligence and Machine Learning in Environmental Management ● Remote Sensing and GIS Applications ● Online Carbon Emission Measurements ● Software for Data Analysis ● Sustainability Measurement Software, Life Cycle Assessment ● FAO CopWat/ClimWat software and other Software ● Sustainability Assessment of Food and Agriculture <hr/> <p>C) Efforts by India to Protect Environment</p> <ul style="list-style-type: none"> ● Environmental Governance in India ● National Environmental Policy ● Pollution Control Standards ● Constitutional Provisions for Environmental Protection ● Public Interest Litigation ● National Action Plan on Climate Change (NAPCC) ● Climate Change, Paris Agreement and India ● Role of ISRO, CPCB, MoEFCC etc. 	15
References	<ol style="list-style-type: none"> 1. Recent Trends in Environmental Science and Technology Hardcover-1 January 2017, by Singh Ram Pratap <i>et al.</i>, Write and Print Publications; 1st edition (1 January 2017). 2. Environmental Technologies and Trends: International and Policy Perspectives (Environmental Science and Engineering) Paperback – Import, 16 October 2012, by Ravi K. Jain (Editor), <i>et al.</i>, Springer; Softcover reprint of the original 1st ed. 1997 edition (16 October 2012); SPRINGER. 3. Environmental Education Paperback – 1 January 2019, by S. Samuel Ravi , Atlantic Publishers and Distributors Pvt Ltd (1 January 2019). 4. Environmental Enrichment: A Prospective of Captive Felid Management Paperback - 4 March 2021, by Arun Kumar Mishra, <i>et al.</i>, Notion Press (4 March 2021); Notion Press Media Pvt Ltd No,50, Chettiyar Agaram Main Road, Vanagaram , Chennai. 5. Cambridge Igcse® And O Level Environmental Management Coursebook Paperback – 9 March 2017, by Gary Skinner, et al., Cambridge University Press (9 March 2017). 6. Environmental Management, Economy and Technology Paperback – Import, 17 October 2022, by Hasan Karimzadegan , LAP Lambert Academic Publishing (17 October 2022). 7. Environmental Pollution and Environmental Management Hardcover – 1 	

December 2004, by Padmanabh Dwivedi, Scientific Publishers Journals Dept (1 December 2004).

8. Environmental Management Paperback - 29 June 2015, by Unknown (Author, Contributor), Oxford University Press; Illustrated edition (29 June 2015).

9. Environmental Technology Hardcover – 1 January 2013, by Prof. D. R. Matta, et al., Daya Publishing House (1 January 2013).

10. Environmental Management Paperback – 15 May 2004, by N.K. Uberoi, Excel Books; New edition (15 May 2004). a. Information Technology & Environmental Management [Print Replica] Kindle Edition, by Dr. Jagbir Singh, Prints Publications Pvt Ltd; 1st edition (7 July 2022).

F. Y. B. Sc. Semester II

Teaching and Evaluation

Sem.	Subject Code	Title	No. of Hrs. per Week (Total-30 Hrs.)	Max. Marks	CE 40 %	ESE 60%	Credits
I	EVS-140	Fundamentals of Ecotourism	2	50	20	30	2

Evaluation Process	
1.	Student must attend weekly Skill Enhancement Course conducted by the college.
2.	Internal marks (20 Marks) and External marks (30 Marks) will be based on skills imparted.
3.	External examiner will do end Semester Evaluation.
4.	No formal written examination will be conducted.
5.	Evaluation methods will vary as per the requirements of the course.
6.	Student is responsible to complete the required number of credits.

Skill Sets:

EVS-140	Components and Tools	Credits: 2 Hours: 30
Students will acquire the following skills on completion of the course:		
1.	Identification of social and environmental impacts of tourism	
2.	Learning to involve all stakeholders in eco-tourism planning and management	
3.	Arranging eco-tour to any given area natural/cultural/restoration sites.	
4.	Interpretation of nature and identification of tracks and signs, call and species	
5.	Estimation of Carrying capacity of protected area.	
6.	Develop ability to transfer ethics across masses/tourists during the tours	
7.	Understanding importance of protected area network in nearby areas	
8.	Appreciation of various values associated with the conservation concept	
9.	Understanding the importance of community participation in conservation	
10.	Understanding the importance of Efforts to avoid threats to natural sites	

F. Y. B. Sc. Semester II		
EVS-140	Fundamentals of Ecotourism (SEC-1)	Credits-2
Course Outcomes (COs) On completion of the course, the students will be able to		Bloom's Cognitive level
CO1	Enumerate concepts of ecotourism and its management	1
CO2	Understand values of wildlife and minimizing impact on natural ecosystem due to tourism	2
CO3	Learn basic concepts of ecotourism, facility management and hospitality needs.	3
CO4	Appreciate sustainability in ecotourism	4

Unit	Contents	Lectures
Unit I	<ul style="list-style-type: none"> Introduction Ecotourism: concepts and definitions; Evolution and characteristics of ecotourism; Ecotourism guidelines: National and State level ecotourism guidelines; Laws, Tourism bill of rights; code for environmentally responsible tourism; World Ecotourism Summit Tourism Impacts, Economic, social, political and environmental impacts, Sustainable Ecotourism - prospects and Challenges 	15
Unit II	<ul style="list-style-type: none"> Geography of India India's biodiversity, Parks and Sanctuaries, Environmental concerns Community based Ecotourism, Significance of ecotourism planning Carrying capacity and development Benefits of sustainable tourism; Peoples' initiatives on Ecotourism, Community Education and Public Awareness (CEPA) Case study- ecotourism development in a hill station 	15

References

- Holden A. Environment and Tourism, Routledge, London, 2008.
- Sharma S.P., Tourism and Environment, Kanishka, New Delhi, 2006
- Weaver D. Eco-Tourism, John Wiley and sons Australia Ltd, 2008.
- Wood M., Eco Tourism – Principles, Practices and Policies for Sustainability, UNEP and TIES
- Beddard F.E., A text book of Zoogeography, BiblioLife
- Bulbeck, C. (2005). *Facing the wild : ecotourism, conservation, and animal encounters*. London: Earthscan.
- Ceballos- Lascurain, H. (1996). *Tourism, ecotourism, and protected areas*. Gland: IUCN
- Diamantis, D. (2004). *Ecotourism: Management and Assessment*, London: Thomson.
- Fennell, D.A. (1999). *Ecotourism: an introduction*. London: Routledge.
- Lindberg, K. and D.E. Hawkins. (eds). (1993). *Ecotourism: a guide for planners and managers*.
- North Benninton: The Ecotourism Society.
- Page, S.J. and R.K. Dowling. (2002). *Ecotourism*. New York: Prentice Hall.
- Patel Prima, (2020). A Study on Eco-Tourism and its Sustainability in India: Research gate. DOI:[10.13140/RG.2.2.18651.80160](https://doi.org/10.13140/RG.2.2.18651.80160)
- Wood, M.E. (2002). *Ecotourism: Principle, practices and Policies for Sustainability*:UNEP.
- Wearing, S. and J. Neil. (1999). *Ecotourism: impacts, potentials, and possibilities*. Oxford: Butterworth- Heinemann.
- Weaver, D. (2001). *Ecotourism*. Milton: John Wiley & Sons.

Proposed Evaluation Methods:

1. Visit based on ecotourism principles/aspects –biodiversity monitoring/ Ethics/ Awareness/
2. Visit to any one ecosystem –Forest / Grassland/ Wetland / Urban parks to understand ecotourism opportunities
3. Evaluation of carrying capacity of protected area/ Ecosystem values/ service
4. Developing ecotourism plan for any given area involving all stakeholders and identifying their roles and responsibilities.
5. SWOT analysis of any given area for ecotourism.
6. Case study presentation / Cantastoria
7. Project /Training
8. Report writing