

Shri Vaishnav Vidyapeeth Vishwavidyalaya
Master of Science (Environmental Science)
SEMESTER IV

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
MSES401	PG	Environmental Impact Assessment (EIA)	4	0	0	4	60	20	20	0	0

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;
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Course Objectives:

1. To understand the concept of EIA.
2. To learn key steps in the EIA process.
3. To appreciate the purpose and role of EIA in the decision-making process.
4. To understand the planning and management tasks associated with the principal stages of environmental assessment.

Course Outcomes:

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

1. Comprehensively understand of the origin and development of EIA.
2. Understand the Indian EIA process and clearance regime.
3. Understand the importance of EIA and appreciate the EIA process.
4. Quantify impacts for various developmental projects.

Syllabus:

UNIT I

INTRODUCTION

Impact of development projects – Sustainable development- Need for Environmental Impact Assessment (EIA) – Environmental Impact Statement (EIS) – EIA capability and limitations – Legal provisions on EIA-Stages of EIA, Types of EIA.

UNIT II

METHODOLOGIES

Methods of EIA – Check lists – Matrices – Networks – Cost-benefit analysis – Analysis of alternatives.

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UNIT III

PREDICTION AND ASSESSMENT

Assessment of Impact on land, water, air, social & cultural activities and on flora & fauna-
 Mathematical models- Public participation.

UNIT IV

ENVIRONMENTAL MANAGEMENT PLAN

Plan for mitigation of adverse impact on environment - Options for mitigation of impact on water, air, land and on flora & fauna - Addressing the issues related to the Project Affected People. Post project monitoring.

UNIT V

CASE STUDIES

EIA for infrastructure projects - Dams - Highways - Multi-storey Buildings - Water Supply and Drainage Projects - Waste water treatment plants, STP.

Text / Reference Books:

1. Canter, Larry W. Environment Impact Assessment. McGraw-Hill.
2. Rau, G.J. and C.D. Weeten. 1980. Environmental Impact Analysis Handbook. McGraw Hill.
3. Glasson, John, Rikki Therivel and Andrew Chadwic. 1996. Introduction to Environmental Impact Assessment, 2nd edition UCL Press.
4. Kulkarni, Vijay and T.V. Ramchandra. Date Environmental Management. Capital Publishing.
5. Mhaskar, A.K. Environmental Audits. Enviro Media Publications.
6. Eccleston, Charles H. 2011. Environmental Impact Assessment: A Guide to Best Professional Practices. CRC Press.
7. Morris, Peter and Riki Therivel. 2009. Methods of Environmental Impact Assessment (Natural and Built Environment Series). Routledge.
8. 6. Canter, R.L., "Environmental Impact Assessment", McGraw Hill Inc., New Delhi, 1996

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9. Shukla, S.K. and Srivastava, P.R., "Concepts in Environmental Impact Analysis", Common Wealth Publishers, New Delhi, 1992.
10. John G. Rau and David C Hooten "Environmental Impact Analysis Handbook", McGraw Hill Book Company, 1990.
11. "Environmental Assessment Source book", Vol. I, II & III. The World Bank, Washington, D.C., 1991. 3. Judith Petts, "Handbook of Environmental Impact Assessment Vol. I & II", Blackwell Science, 1999.

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MSES402	PG	Sustainability, Partnerships in Decade of Action	4	0	0	4	60	20	20	0	0

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Course Objectives

The objective of the course is to make students aware of sustainable development goals and understand the responsibility of corporate.

Course Outcomes

1. Students will develop an understanding about sustainable development goals
2. They will learn about the roles and responsibilities of business in modern society.

COURSE CONTENT

Unit I: History of Sustainable Development and Role of Stakeholders

1. History and Definition of Sustainable Development (Brundtland, Rio)
2. Social, Environmental, Economic Sustainability, Three Ps (People, Planet and Prosperity)
3. Role of Stakeholders in Changing Policies

Unit II: Goals by United Nations and Global Compact

1. United Nations Millenium Development Goals (8 MDGs, 17 SDGs)
2. The United Nations Global Compact and its Ten Principles
3. An overview of SDG India Index

Unit III: Corporate Governance and Corporate Responsibility

1. Corporate Governance and Corporate Responsibility
2. Stages of Corporate Responsibility
3. Challenges in implementing Corporate Responsibility

Unit IV: Legal Framework of CSR and Sustainable Business Practices

1. Legal Frameworks of CSR in India
2. Examples of Sustainable Business Practices
3. Reasons Firms, Government, NGOs adopt sustainable strategies

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Unit V: Partnerships in Decade of Action

1. The Power of Partnerships
2. Significance of Partnerships in Decade of Action
3. Government Actions for Partnerships

Text / Reference Books:

1. Blowfield, M and Murray, A. (Latest Edition). *Corporate Responsibility. A Critical Introduction.* Oxford University Press.
2. Daft, R.L. (Latest Edition). *The New Era of Management.* Cengage Learning
3. Baxi, C.V. and Prasad, A. (Edited Book). *Corporate Social Responsibility- Concepts and Cases (Indian Experience).* Excel Books. New Delhi
4. Krichewsky, D. (Latest Edition). *Corporate Social Responsibility and Economic Responsiveness in India.* Cambridge University Press. New York
5. Haski-Levanthal, D. (Latest Edition). *Strategic Corporate Social Responsibility: Tools and Theories for Responsible Management.* Sage. London
6. <https://www.unglobalcompact.org/what-is-gc/mission/principles>
7. Rogers, P.P., Jalal, K.F., Boyd, J.A. (Latest Edition). *An Introduction to Sustainable Development.* Earthscan
8. Kalam, A.P.J. (Latest Edition). *Target 3 Billion: Innovative Solutions Towards Sustainable Development.* Penguin Books
9. Kaushik, A. and Kaushik (Latest Edition). *Perspectives in Environmental Studies.* New Delhi: New Age International Publishers.
10. Wright, R. T. (Latest Edition). *Environmental Science: towards a sustainable future.* New Delhi: PHI. Learning Private Ltd.

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MSES403A	PG	Environmental Policies And Regulations	4	0	0	4	60	20	20	0	0

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Course Objectives:

1. To introduce the basic concepts and principles of environmental law and to analyze these principles as tools of environmental protection.
2. To introduce the laws and policies both at the national and international level relating to environment
3. To explain the role of law, policy and institutions in the conservation and management of natural resources as well as pollution control.
4. To equip the students with the skills needed for interpreting laws, policies and judicial decisions.

Course Outcomes:

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

1. To sensitize the students towards human activities that adversely affects the environment and the need for regulation of such activities.
2. Understand the laws and policies for environmental protection.
3. To pursue environmental litigation before the National Green Tribunal.
4. To assist industries and projects in obtaining environmental clearance and compliances with other environmental laws.

Syllabus:

UNIT I

Environment Definitions and Acts:

Environment definition in Indian law- Different environmental protection legislations- History of Environmental protection in India - Provisions in Indian Penal Code for Environmental protection-The constitutions of India - Union list- State list - Concurrent list - Panchayats and Municipalities role.

UNIT II

Water (prevention & control of Pollution) Act & Air (prevention & control of Pollution) Act:

Water pollution - definition - Water (Conservation and protection) Act 1974 - Objectives of Water Act
 Legislation to control water pollution - Functions of CPCB and SPCB - Local bodies role - Water (prevention & control of pollution) Act 1974 as amended by Amendment Act 1988. Water (prevention and control of pollution) Rules 1975 - Water (prevention & control of Pollution) Cess Act 1977 as amended by Amendment Act 1987 and relevant notifications - Tolerance limits for effluents discharge and drinking water - Constitution and Resources management and pollution control Air (prevention & control of Pollution) Act 1981-Sections of Air (prevention & control of Pollution) Act 19, 20, 21, 22-Penalties - Ambient air quality standards-Noise and the Laws.

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UNIT III

Environmental (Protection) Act 1986:

Environment and pollution - definition as per Environmental law-General powers of Central and state Government under EPA-Important Notification in EPA 1986- The Indian Forest Act 1927- Forest Conservation Act 1980 - Wild Life (Protection) Act - Constitution of Pollution Control Boards - Powers, functions, Accounts, Audit etc. - Equitable remedies for pollution control II

UNIT IV

Municipal Solid Waste Management Rules:

Solid waste management - Hazardous Wastes (Handling and Management) Rules 1998-Bio-medical Wastes (Handling and Management) Rules 1998-Recycled plastics (Manufacture and Usage) Rules, 1999-Municipal Solid Waste Management Act 2003- Rules - E.I.A and Public Hearing- Ecolabeling-Eco Mark. Recent guidelines for waste management.

UNIT V

Coastal Regulation Zone Notification and Green Benches:

Coastal Regulation Zone - definition-Importance of coral reef-Regulation activities in CRZ - The Biological Diversity Act 2002-Bio diversity Rules 2004- The Intellectual Property Rights (IPR)-National Environment Appellate Authority -Environmental Tribunal and Green Benches - Some Important cases on Environment - International Conventions - Protocols for protection of the Environment

Text / Reference Books:

1. Constitutional Law of India - J.N. Pandey 1997 (31st Edn.) Central Law Agency Allahabad.
2. Administrative Law U.P.D. Kesari 1998. Universal Book Trade Delhi.
3. Environmental Law H.N. Tiwari, Allahabad Law. Agency 1997.
4. Environmental, A., Divan and Noble M. Environmental Law and Policy in India (cases, Materials and Statutes) 1991 Tripathi Bombay.
5. Environmental Policy. Forest Policy. Bare Acts - Government Gazette Notificaiton.
6. Environmental Laws of India-C.P.R. Environmental Education Centre.

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MSES403B	PG	Forestry and Water Resources	4	0	0	4	60	20	20	0	0

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Course Objectives:

1. To express the need of water conservation.
2. To understand the importance of forests and its resources.
3. To make aware of the Principles of forest management and their applications.
4. To understand the Physical, Chemical and Biological Characteristics of Water and determination of important physical and chemical parameters of water quality.

Course Outcomes:

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

1. Understand systematically the water resources and their vital role.
2. Develop the understanding of the role and importance of forest in livelihood development.
3. Learn the forest and other natural resources management techniques.
4. To critically examine the participation and role of community for the management and conservation of forest with due awareness of deforestation in large scale.

Syllabus:

UNIT I

Forest Management

Introduction: definition and scope. Principles of forest management and their applications. Objects of management, purpose and policy. General definitions - management and administrative units, felling cycle, cutting section. Rotations: definition, kinds of rotations, choice of rotations, length of rotations and conversion period. Normal forest: definition and concept. Even aged and unevenaged models.

UNIT II

Introduction to Agroforestry

Agroforestry - definition, aims, objectives, need and scope. Classification of agroforestry system - structural, functional, socio-economic and ecological basis. Traditional agroforestry systems: Taungya system, Shifting cultivation, wind break, shelterbelts, Homestead gardens'. Multipurpose tree species and their characteristics. Tree architecture. Agroforestry for coastal and hilly areas.

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UNIT III

Water Resources:

Hydrology, the hydrological cycle and its components, drainage systems, classification of water resources, characteristics of water resources. Surface run-off, stream flow estimation, problems of water and ground water resource depletion, watershed types and Functions .
 Water Quality Characteristics: Physical, Chemical and Biological Characteristics of Water. Standard methods of determination of important physical and chemical parameters of water quality, eg. PH, turbidity, electrical conductivity, total Solids, alkalinity, hardness etc., Units of measurements and expression of results, Bacteriological Indicators, and determination of Coliforms.

UNIT IV

Types of Hydropower Plants:

Classification of hydropower plants, Run-of-river plants, Valley dam plants, High head diversion plants, Diversion Canal plants, Pumped storage plants, Tidal power plants.

Dams:

Selection of site, preliminary investigations, Final investigations, Types of dams:- Rigid dams, Gravity dams, Arch and buttress dams, Basic principles of design and details of construction.

UNIT V

Natural Hazards:

Flood types and causes, drainage basins, nature and frequency of floods, effects. Flood hydrographs., types and causes of landslides, coastal hazards including cyclones, tsunamis, the effects of tides and tidal effect prediction, nature of destruction, causes and consequences of forest fires.

Text Books/References

1. Ram Prakash. Forest management, 2006, IBD Publication, Dehradun
2. Osmaston, F.C. Management of Forests, 1984. IBD Publication, Dehradun B.ScSc.Forestry Syllabus, School of Forestry and Environment SHIATS-DU, Allahabad 44

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3. Speight, M.S. and D. Wainhouse 1989. Ecology and Management of Forest Insects. Clarendon Press, Oxford.
4. Brown, A. 1990. Forest Fire and its Control. Natraj Publishers, Dehra Dun.
5. Gupta, V.K. and N.K. Sharma. 1988. Tree Protection. Indian Society of Tree Scientists, Solan.
6. Herriek, G.W. 1988. Insect Enemies of Trees. Pioneer Publishers, Jaipur.
7. Khanna, L.S. 1984. Forest Protection, Khanna Bandhu, Dehra Dun.
8. Kumar, V. 1995. Nursery and Plantation practices in Forestry. Scientific Publishers Jodhpur.
9. Metcalf And Eddy, Inc.; Waste Water Engineering, Treatment, Disposal, Reuse, Tata McGrawHill.
10. Masters G.M.; Introduction to Environmental Engineering and Science, Prentice hall of India, 1994.
11. Garg, S.K." Water Supply Engineering", Vol.1, Khanna Publishers, New Delhi, 2003.

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