

<b>Course title:</b> Integrated Impact Assessment				
<b>Course code:</b> NRE 145		<b>No. of credits:</b> 4	<b>L-T-P:</b> 42-14-0	<b>Learning hours:</b> 56
<b>Pre-requisite course code and title (if any):</b>				
<b>Department:</b> Department of Energy and Environment				
<b>Course coordinator:</b>			<b>Course instructor:</b> Prof. Suresh Jain	
<b>Contact details:</b>				
<b>Course type:</b> Elective			<b>Course offered in:</b> Semester 3	
<b>Course Description</b>				
<p>There is growing realization that the multi-dimensional nature of sustainable development targets requires the use of different disciplinary approaches, in an integrated framework, to the impact assessment of development projects/programmes. Integrated Impact Assessment (IIA) provides such a framework for a balanced consideration of the economic, environmental, social and health impacts of development interventions at the project, sector and economy levels. The course in Integrated Impact Assessment (IIA) is designed to build detailed knowledge, understanding and skills among students for conducting IIA, so that they are able to identify sustainable modes of environmental operation. The course starts with an overview of IIA—the different methodologies on which it draws the state of the art, current practices, constraints and future directions. This is followed by in-depth exposure to the key approaches to IIA—environmental, social and health—with a focus on methodology and tools in the key discipline areas. Social CBA is introduced as a possible tool for the integrated analysis of the environmental, social and health impacts of development projects or programmes. AHP is introduced as an easily understood multiple-criteria decision-making technique. Technology assessment, risk assessment, etc are discussed at the conceptual level to provide students with a flavour of the emerging dimensions of IIA. The final module of the course is intended to strengthen students’ analytical capacity and assessment skills by making them work through actual/simulated scenarios.</p>				
<b>Course objectives</b>				
<ol style="list-style-type: none"> <li>1. Exposure to the key approaches to integrated impact assessment (environmental, social and health) with a focus on methodology and tools in the key discipline areas.</li> <li>2. To provide a basic understanding of the Environmental Impact Assessment (EIA) process as it is used for research, planning, project or program evaluation, monitoring, and regulatory enforcement.</li> <li>3. To relate the uses of scientific research to practical situations in project planning and decision making using various impact assessment tools such as Health/Social/ Strategic environmental impact assessment</li> </ol>				
<b>Course content</b>				
SNo	Topic	L	T	P
1.	<b>Introduction &amp; an Overview of IIA</b> Defining IIA; Sustainable Development challenges and need for IIA; Key Approaches of IIA: Environment, Social Health and Economic; Current Practices, Changing Perspectives & Debate in IIA	3		
2.	<b>Assessing Environmental Impacts: The EIA Approach</b> Environmental Impacts—examples, need for assessment, difficulties; The EIA Approach—Background, Objectives, Components & Techniques, Impact prediction & analysis, Treatment of Risk and	6	1	

	Uncertainty, EIA inputs to the project cycle and development planning; EIA in India-Legislative aspects, Current practices & Constraints, EIA case study			
3.	<b>Assessing Environmental Impacts: Biodiversity Impact Assessment (BIA)</b> Role of BIA in the existing EIA process, Identification, prediction and evaluation of impacts on biodiversity, techniques of biodiversity impact assessment and monitoring, threat reduction methods; Case study	2	1	
4.	<b>Incorporating Health Concerns: the HIA Approach</b> Impact of environment on health, Morbidity Pattern in India; Developing framework for HIA Analysis, Changing concept and approach in Health Impact Assessment; Health Need Assessment, tools and techniques in HIA, HIA Case Study	4	1	
5.	<b>Handling Social Issues: the SIA Approach</b> Overview and scope of Social Impact Assessment (SIA), SIA and community, marginalized/vulnerable groups, indigenous people, resettlement & rehabilitation and development; SIA and Gender Impact Assessment, SIA and NRM; SIA Case Studies	4	2	
6.	<b>Integrated Analysis of Environmental, Social &amp; Health Impacts</b> Challenges for IIA: Removing inconsistencies and differences between different approaches; other methodological and practical issues; Scope for integrated approach in economic analysis: concept of economic analysis, Cost-Benefit Analysis (CBA), Social CBA, Cost Effectiveness Analysis (CEA); The Analytic Hierarchy Process (AHP) based approach to project appraisal	6	2	
7.	<b>Mapping Tools and Techniques in IIA</b> Role and relevance of GIS Techniques in IIA	2	1	
8.	<b>Public Participation in IIA and its relevance to decision-making</b> Contribution of IIA to decision-making-prospects & constraints; Stakeholder participation in IIA-importance, methodological and practical issues	2		
9.	<b>Emerging Dimensions &amp; Future Directions</b> Strategic Environmental Assessment (SEA), Technology Assessment, Risk Assessment	4	1	
10.	<b>Monitoring and Evaluation</b> Basic concepts of monitoring and evaluation, guidelines tool for M&E (logic model, monitoring plan, evaluation plan), measures and indicators, evaluation designs and its applications-case study	6	2	
	<b>IIA Case Studies</b>	3	3	
	<b>Total</b>	<b>42</b>	<b>14</b>	
<b>Evaluation criteria</b>				
<ul style="list-style-type: none"> <li>▪ 2 Minor tests: 15% each</li> <li>▪ Assignments/field visit: 20%</li> <li>▪ Final examination: 50%</li> </ul>				
<b>Learning outcomes</b>				
1. After attending the course the students shall have acquired knowledge to conduct				

integrated impact assessment, so that they are able to identify sustainable modes of environmental operation.

2. Students would be able to understand the key elements of EIA and its processes by which they can apply to relevant projects.
3. Able to understand various tools and techniques used in identification and analysis of impacts suggest appropriate mitigation measures and prepare environmental management plans.

### **Pedagogical approach**

#### **Materials**

##### Required text

1. Bathwal R.R. (1988) *Environmental Impact Assessment*, New Age, International Publishers.
2. Canter L.W. (1996) *Environmental Impact Assessment*, 2<sup>nd</sup>Edn. New York, McGraw Hill.
3. Dale R. (2004) *Evaluating Development Programme and Project*, Second Edition, Sage Publication.
4. Lee N. and Kirkpatrick C. (Eds) (2000) *Integrated Appraisal and Sustainable Development in a Developing World*, Cheltenham, Edward Elgar.
5. Vanclay F. and Bronstein D.A. (1995) *Environmental and Social Impact Assessment*, Wiley Publishers.

##### Suggested readings

1. Asian Development Bank (1997) *Environmental Impact Assessment for Developing Countries in Asia*, Vol I & II, ADB Publication.
2. Briggs D., Corvalan C. and Nurminen M. (Edited) (1996) *Linkage Methods for Environment and Health Analysis-General Guidelines*, World Health Organization, Geneva.
3. British Medical Association (1998) *Health and Environmental Impact Assessment-An Integrated Approach*, Earthscan.
4. CISHME (2011) *Environmental Feasibility Report of Hironong H.E. Project on Siyom River in Arunachal Pradesh*, New Delhi, CISMHE.
5. Dahlgren G. and Whitehead M. (1991) *Policies and Strategies to Promote Social Equity in Health*, Stockholm.
6. Glasson J., Therivel R. and Chadwick A. (1994) *Introduction to Environmental Impact Assessment*, London, UCL Press.
7. Goodland R. and Mercier J.R. (1999) *The Evolution of Environmental Assessment in the World Bank: From 'Approval' to Results*, Environment Department Papers No. 67, World Bank, Washington D.C.
8. Kemm J. (2000) *Can Health Impact Assessment Fulfill the Expectations it Raises?* Public Health, 114, 431-433.
9. Morrison-Saunders A. and Arts J. (2004) (eds.) *Assessing Impact: Handbook of EIA and SEA Follow-up*, Earthscan James & James, London.
10. The World Bank (2009) *Strategic Environmental Assessment in East and Southeast Asia, A Progressive and Comparison Country Systems and Cases*, Washington D.C.

##### Case studies

##### Websites

##### Journals

1. Journal of Environmental Impact Assessment Review

2. Journal of Journal of Environmental Management
<b>Additional information (if any)</b>
<b>Student responsibilities</b> Attendance, feedback, discipline, guest faculty etc