Course title: Integrated Impact Assessment			
Course code: MPD 145	**No. of credits:** 3	**L-T-P:** 39-0-12	**Learning hours:** 45
Pre-requisite course code and title (if any): MPD 137 or equivalent			
Department: Department of Policy and Management Studies			
Course coordinator: Dr Swarup Dutta	**Course instructor:** Prof V. Subramanian		
Contact details: swarup.dutta@terisas.ac.in			
Course type: Core	**Course offered in:** Semester 2		

Course description:

Integrated Impact Assessment (IIA) provides 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 can 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. The final module of the course is intended to strengthen students' analytical capacity and assessment skills by making them work through actual/simulated scenarios.

Course objectives:

- Exposure to the key approaches to integrated impact assessment (environmental, economic, social and health) with a focus on methodology and tools and techniques including field and lab-based approach in the key discipline areas such as industry, biodiversity, urbanization, transport, and health
- To provide a basic understanding of the strategic environmental assessment at policy and planning stage itself, Environmental Impact Assessment (EIA) process as it is used project or program evaluation, monitoring, and regulatory enforcement
- To relate the uses of scientific research to practical societal situations in project planning and decision making using various impact assessment tools such as Health/Social/ Strategic environmental impact assessment
- To familiarize students about various methods of data generation including GIS for impact studies.

Module	Topic	L	T	P

1	**Introduction and overview of Integrated Impact Assessment (IIA)**
	• Key Approaches of IIA: Environment, Social, Health and Economy
	• Current Practices and Changing Perspectives in IIA – Contribution of IIA to decision-making – prospects & constraints; Stakeholder participation in IIA – importance, methodological and practical issues
	• Approach to integrating an array of diverse specialization.
	  • Life cycle analysis, waste reduction in manufacturing processes
	  • Indicators for various studies and index and their limitation
	  • Types of assessment in Indian context; ISO, ISOTC207, EMS, Environmental Audit, MP, etc.
		4	0	0

2	**Integrated assessment of Natural resources** • Water Agriculture and Forestry • Projected IPCC model for Future Scenario • local, regional, and global scale approaches • Indian Environmental Status Assessment • Risk assessment and environmental disaster assessment	6	0	0

3	**Environmental Clearance Processes: Background and Concept** • Evolution of EIA in India • Various EIA Notifications (1994,2006 and 2020 draft notification) • Forest and Wildlife Clearance Acts and amendments • Coastal Zone Clearance Act 2014 and Exclusive Economic Zone (EEZ)	4		
4	**Environment Impact Assessment (EIA)** • Techniques, Impact prediction and analysis, Treatment of Risk and Uncertainty, EIA inputs to the project cycle and development planning, • Procedures for Strategic Environmental Assessment (SEA) – Policy, plans, project steps • Indicators for various sector specific of EIA • Projects clearance procedures- TOR and EC • Administrative and legal compliance • *Case studies:* current urban centric development projects such as Metro Rail Constructions in major cities like Bangalore, Nagpur, Ahmedabad, Pune EIA as submitted by the state agencies and as finally implemented on ground. Char Dham project approval procedures etc.	6	0	0
4	**Biodiversity Impact Assessment (BIA)** • BIA – concept and factors • 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 studies from India and elsewhere • Methodology for Biodiversity assessment through IUCN guidelines: 1) Singapore Index with special attention on Indian urban spaces. 2) Shannan Index • Case Studies: i) Railway doubling of Konkan and its Impact on biodiversity and people's resistance in Goa, Kerala and Karnataka; ii) Kerala rail project	6	0	0
5	**Health Impact Assessment (HIA)** • Developing framework for HIA Analysis- Changing concept and approach • Health Need Assessment, tools, and techniques - Case Studies from India • Concept and Protocols of Health Risk Assessment – HRA (WHO mandates) • HIA- Covid-19 pandemic case studies • Health Economic Assessment Tool (HEAT): Analysis from transport sector, health and social assessment, Dose response assessment, Pollution loads and impact on health, factors in health assessment • Case studies of Covid-19 Pandemic • Case studies: Example of application of HEAT and HIA specific to road accidents	5	2	0
6	**Social Impact Assessment (SIA)** • Concept and approaches of SIA • Methodological tools for SIA • Economic assessment of social Impact (poverty assessment) • Land acquisition- rules, implementation, and conflicts • Public-Partnership in SIA – Case studies from India	6	0	0

	• Public hearings in assessment approach • Special Economic Zone (SEZ) and SIA • Case studies: Various Hydro, Railway and other development projects in Uttarakhand, Current Crisis in Joshimath etc.			
7	**Group field work:** The students will conduct fieldwork in different parts of Delhi in groups. Census and observation methods will be employed to assess any one of the five above mentioned areas of assessment and will finally submit an Evaluation Report.	0	0	12
	Total	**37**	**2**	**12**

Evaluation Criteria

- **Minor 1 Exam-** (10%): the minor test will specifically focus on students' overall understanding on Module 1 and 2.
- **Minor 2 Exam-** (15%): the minor test will specifically focus on students' overall understanding on research process covering Module 3, 4 and 5.
- **Fieldwork report and Viva** - (15%)
- **Assignment Submission** – 10%
- **Major Exam**– 50%

Learning outcomes

- After attending the course, the students shall have acquired knowledge to conduct integrated impact assessment across many sectors of human activities, so that they are able to identify sustainable modes of environmental operation.
- Students would be able to understand the key elements of BIA, HIA, EIA, Urban biodiversity index and its processes by which they can apply to relevant ground level projects.
- Able to understand various tools and techniques, including GIS, used in identification and analysis of impacts suggest appropriate mitigation measures and prepare environmental management plans.

Pedagogical approach:

- The course will be delivered through classroom lectures, discussion of case studies from original relevant research articles and field visits. Data collection via observations, questionnaire, presentation as groups in class and finally examined with written report and viva as well.

Suggested Readings:

Books

- Rossini, Frederick (2020) Integrated Impact Assessment Paperback, Routledge- London
- Singh RK and Dutta, Ritwick (2006) Environment Impact Assessment, Other India Press
- Cave, Bane; Jha-Thakur, Urmila; Rao, Mala; Labhasetwar, Pawan; Fischer, Thomas B. (2013) Health in impact assessment and emerging challenges in India. In *Integrating Health Impact Assessment with the Policy Process: Lessons and experiences from around the world* by Monica O'Mullane (ed.), Oxford University Press: New Delhi
- Raman, N.S.; Gajbhiye, A.R.; Khandeshwar, S.R. (2006) Environmental Impact Assessment. Willey India
- Singh, Mahesh Prasad; J. K. Mohanka; Reena Forest (2007) Environment and Biodiversity Daya Books.
- Emmeline Lars (ed) (2006) Effective Environmental Assessment Tools - Critical Reflections on Concepts and Practice
- Jonathan Randall, (2010) Environmental Impact Assessment Tools and Techniques Green Recovery And Reconstruction: Training Toolkit For Humanitarian Aid. World Wildlife Fund Inc.

Other readings:

- Abaza H., Bisset R. and Sadler B. (2004) Environmental Impact Assessment and Strategic Environmental

Assessment: Towards an Integrated Approach. Economics and Trade Branch, UNEP, Geneva

- Adhikari A.P. and Khadka R.B. (eds.) (1998). Strategic Environmental Assessment: Proceedings of the South and Southeast Asian Regional Training Workshop on Strategic Environmental Assessment. Jointly organized by AREAP, IUCN Nepal and the Netherlands Commission for EIA, September 18-20, 1997, Kathmandu, Nepal. Asian Regional Environmental Assessment Program, IUCN, Nepal.
- Integrated Impact Assessment for Sustainable Development: A Case Study Approach June 2001, World Development 29(6):1011-1024 DOI:10.1016/S0305-750X(01)00023-7
- Lebret E. (2016) Integrated Environmental Health Impact Assessment for Risk Governance Purposes; Across What Do We Integrate? International Journal of Environmental Research and Public Health 13(1): 71. doi: 10.3390/ijerph13010071
- City Biodiversity Index (or Singapore Index: (Conference on biological diversity CBD), IUCN publicati0n. 2000
- Therivel, Riki and Wood, Graham (2017) Social Impact Assessment Natural and Built Environment Routledge; 4th edition (15 Sept. 2017)
- The Singapore Index on Cities' Biodiversity Dr Lena Chan National Parks Board, Singapore Global Platform for Sustainable Cities Monitoring and Reporting Urban Ecological Performance 3 November 2021

Additional information: NA

Student responsibilities Attendance: At-least 75% attendance will be necessary to be able to appear for the final exam.

Course Reviewers:

- Prof. Dr. Dhiraj Mohan Banerjee, FNA, Alexander von Humboldt, British Council & JSPS Fellow, Former Professor & Head, Center of Advanced Study in Geology, University of Delhi
- Prof. N. J. Raju, Alexander von Humboldt Fellow, Hydrogeology and Environmental Geology, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi