



**Department of Civil and Environmental
Engineering
Birla Institute of Technology
Mesra, Ranchi - 835215, India**

Institute Vision

- To become a Globally Recognized Academic Institution in consonance with the social, economic and ecological environment, striving continuously for excellence in education, research and technological service to the National needs.

Institute Mission

- To educate students at Undergraduate, Post Graduate Doctoral and Post-Doctoral levels to perform challenging engineering and managerial jobs in industry.
- To provide excellent research and development facilities to take up PhD programmes and research projects.
- To develop effective teaching and learning skills and state of art research potential of the faculty.
- To build national capabilities in technology, education and research in emerging areas.
- To provide excellent technological services to satisfy the requirements of the industry and overall academic needs of society.

Department Vision

- To develop quality intellectuals through education, research and motivation so that they can bring a positive contribution to the society in area of Civil and Environmental Engineering

Department Mission

- To develop professional skills through quality education & research.
- To outreach various sectors of society through interdisciplinary programmes and practical oriented approach.
- To create dynamic, logical and effective leaders with inspiring mindsets.

Programme Educational Objectives (PEOs)

PEO1: To impart students with a strong knowledge base through theory and sessional courses to work in industries, academics, research and consultancy.

PEO2: To enable the students to identify, analyze, and solve environmental problems.

PEO3: To enable the students to develop and execute feasible solutions to the diverse ecosystem challenges.

PEO4: To inculcate in student's sensitivity towards social and corporate responsibilities on environmental issues.

PROGRAMME OUTCOMES (POs)

PO1: An ability to independently conduct investigations and solve real-life ecological and environmental problems.

PO2: Students should be able to exhibit a wide degree of skill and attributes in environmental science and management.

PO3: Acquire a degree of mastery over the area as per the program's specialization. The mastery should be higher than the requirements in the appropriate Bachelor's program.

PO4: An ability to develop environmental impact assessment and monitoring, environmental management plan

PO5: An ability to write and present scientific documents (reports, journal articles, chapters, etc.)

PO6: Be able to critically evaluate environmental sustainability, sensitize communities through effective communications, and assess alternative solutions for adequate decision-making for overall environmental management.

M.Sc. ENVIRONMENTAL SCIENCE & MANAGEMENT

Semester I

	Course Level	Course Code	Course Name	Delivery Method Lecture – L; Tutorial – T; Practical - P			Credits
				L	T	P	
Semester I	Program Core	ES501	Ecology and Biodiversity	3	0	0	3
	Program Core	ES502	Environmental Chemistry	3	0	0	3
	Program Core	ES503	Water and Wastewater Management	3	0	0	3
	Program Core	ES504	Sustainable Development	3	0	0	3
	Program Elective		PE I	3	0	0	3
	Open Elective		OE I/MOOC	3	0	0	3
	Program Core	ES505	Ecology and Biodiversity Laboratory	0	0	4	2
	Program Core	ES506	Water and Wastewater Analysis Laboratory	0	0	4	2
	Open Elective	MT132	Communication Skills I	0	0	3	1.5
Total Credits						23.5	

Semester II

	Course Level	Course Code	Course Name	Delivery Method Lecture – L; Tutorial – T; Practical - P			Credits
				L	T	P	
Semester II	Program Core	ES507	Earth Science	3	0	0	3
	Program Core	ES508	Solid Waste Management	3	0	0	3
	Program Core	ES509	Air Quality Management and Noise Pollution	3	0	0	3
	Program Core	ES510	Remote Sensing and GIS	3	0	0	3
	Program Elective		PE II	3	0	0	3
	Open Elective		OE II/MOOC	3	0	0	3
	Program Core	ES511	Air and Soil Pollution Monitoring Laboratory	0	0	4	2
	Program Core	ES512	Remote Sensing and GIS Laboratory	0	0	4	2
	Open Elective	MT133	Communication Skills II	0	0	3	1.5
	Program Core	ES513	Field Visit and Industrial Training	0	0	0	2
Total Credits						25.5	

Semester III

Semester III	Course Level	Course Code	Course Name	Delivery Method Lecture – L; Tutorial – T; Practical - P			Credits
				L	T	P	
	Program Core	ES514	Environmental Impact Assessment and Environmental Governance	3	0	0	3
	Program Core	ES515	Ecosystem Health and Restoration	3	0	0	3
	Program Core	ES516	Climate Change and Adaptation	3	0	0	3
	Program Core	ES517	Industrial Health and Safety	3	0	0	3
	Program Elective		PE III	3	0	0	3
	Program Core	ES518	Project Part I	0	0	8	8
Total Credits							23

Semester IV

Semester IV	Course Level	Course Code	Course Name	Delivery Method Lecture – L; Tutorial – T; Practical - P			Credits
				L	T	P	
	Program Core	ES519	Project Part II	0	0	8	8
Total Credits							8

Grand Total of Credits: 80

Program Electives:

MO Session:

ES520 Renewable Energy Resources
 ES521 Environmental Economics
 ES522 Environmental Biotechnology
 ES523 Environmental Statistics

SP Session:

ES524 Environmental Toxicology
 ES525 Instruments for Environmental Sample Analysis
 ES526 Advanced Wastewater Treatment
 ES527 Industrial Pollution Control