

**EVALUATION SCHEME**

**OF**

***M. TECH***

***ENVIRONMENTAL ENGINEERING***

***OF***

***I YEAR***

**DEPARTMENT OF CIVIL ENGINEERING**

**INTEGRAL UNIVERSITY**

**LUCKNOW**

# SYLLABUS AND EVALUATION SCHEME

**Branch: M. Tech Environmental Engineering Program**

**(w.e.f. 2020-21)**

**Year – I, Semester – I**

S. No.	Course Category	Code No	Name of Subject	Periods				Evaluation Scheme				Subject Total	Attributes						United Nations Sustainable Development Goals (SDGs)	
				L	T	P	C	Continuous Assessment (CA)			Exam ESE		Employ ability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value		Profession al Ethics
								UE	TA	Total										
1	DC	CE521	Statistics for Environmental Engineers	3	1	-	4	40	20	60	40	100	√	√	√			√		
2	DC	CE522	Environmental Chemistry	3	1	-	4	40	20	60	40	100	√	√	√			√		6
3	DC	CE523	Environmental Microbiology	3	1	-	4	40	20	60	40	100	√				√	√		6
4	DE		Elective –I	3	1	-	4	40	20	60	40	100								
<b>PRACTICAL / DRAWING / DESIGN</b>																				
5	DC	CE530	Laboratory and Field Testing	-	-	3	2	-	-	60	40	100	√		√		√	√		
<b>Total</b>				<b>12</b>	<b>4</b>	<b>3</b>	<b>18</b>					<b>500</b>								

**L** – Lecture; **T** – Tutorial; **P** – Practical; **C** – Credits; **UE** – Unit Exams; **TA** – Teacher Assessment

**Continuous Assessment (CA)** = Unit Exams + Teacher Assessment

**Subject Total** = Continuous Assessment (CA) + End Semester Examination (ESE)

**BS** – Basic Sciences                      **DC** – Departmental Core

**HM** – Humanities                         **OE** – Open Elective

**DE** – Departmental Elective   **ESA** – Engineering Science & Art (Foundation Course & Engineering Courses)

# SYLLABUS AND EVALUATION SCHEME

**Branch: M. Tech Environmental Engineering Program**

**(w.e.f. 2020-21)**

**Year – I, Semester – II**

S. No.	Course Category	Code No	Name of Subject	Periods				Evaluation Scheme				Subject Total	Attributes						United Nations Sustainable Development Goals (SDGs)	
				L	T	P	C	Continuous Assessment (CA)			Exam ESE		Employ ability	Entrepreneurship	Skill Development	Gender Equality	Environment & Sustainability	Human Value		Profession al Ethics
								UE	TA	Total										
1	DC	CE531	Solid Waste Management	3	1	-	4	40	20	60	40	100	√	√	√		√	√		6
2	DC	CE532	Design and Operations of Water and Wastewater Treatment Plants	3	1	-	4	40	20	60	40	100	√	√	√		√		√	6
3	DC	CE533	Environmental Impact Assessment	3	1	-	4	40	20	60	40	100	√	√	√		√	√		13
4	DC	CE552	Research Methodology	3	1	-	4	40	20	60	40	100								
<b>PRACTICAL / DRAWING / DESIGN</b>																				
5	DC	CE535	Seminar	-	-	3	2	-	-	60	40	100	√	√	√		√			
<b>Total</b>				<b>12</b>	<b>4</b>	<b>3</b>	<b>18</b>					<b>500</b>								

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**Elective – I**

CE524 Transport of Water and Wastewater

CE525 Industrial Wastewater Management

CE526 Air Pollution Control

CE534 Unit Operations and Processes in Water and Wastewater Treatment

**Elective – II**

CE621 Air and Water Quality Modeling

CE622 Ecological Engineering

CE623 Principles of Environmental Science

**Elective – III**

CE626 Fundamentals of Sustainable Development

CE627 Cleaner Production

CE628 Environmental Geotechnology

**Elective – IV**

CE631 Environmental Engineering Structures

CE632 Surface and Ground Water Modeling

CE633 Water Resources Systems Management

**INTEGRAL UNIVERSITY**  
**DEPARTMENT OF CIVIL ENGINEERING**

**PROGRAMME:** M. TECH. ENVIRONMENTAL ENGINEERING.

**PROGRAM SPECIFIC OUTCOMES (PSO):**

**PSO-1:** Facilitate and develop knowledge based on water/waste water, air and solid waste management and research based on Environmental Engineering.

**PSO-2:** Able to become professionals such as environmental engineer, solid waste manger, waste water expert etc.

**PROGRAM EDUCATIONAL OBJECTIVES (PEO):**

**PEO-1:** The student will become effective Environmental engineer by facilitating appropriate theoretical concepts in dealing with practical based real-life problems associated with Environmental Engineering and develop the necessary tools for the same.

**PEO-2:** Students will provide solution in Environmental Engineering problems in account for economical, societal and ethical by applying Environmental engineering knowledge.

**PEO-3:** Students will deliver effective lifelong learning and maintain the technical and professional growth.

**PROGRAM OUTCOMES (PO):**

**PO1- Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2- Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3- Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4- Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5- Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6- The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7- Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8- Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9- Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10- Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11- Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12- Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.