



**JB INSTITUTE OF ENGINEERING & TECHNOLOGY**

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**DEPARTMENT OF CIVIL ENGINEERING**

Is Organizing

**Add on Course**

**on**

**Environmental Geotechniques-Challenges and Solutions**

Day	Session	Topic
30-08-2025	Module 1 (FN)	Basic introduction, Scope and Genesis of Environmental Geotechniques
	Module 2 (AN)	Contemporary Civil Engineering, Recent Trends in Environmental Geotechniques
01-09-2025	Module 3 (FN)	Contaminant transport and Fate of contaminants, Soil- Water- Environment Interaction
	Module 4 (AN)	What is waste?, Type of wastes
02-09-2025	Module 5 (FN)	Geo-Material characterization
	Module 6 (AN)	Applications of Industrial By-products, Geo-material characterization
03-09-2025	Module 7 (FN)	Sorption & Desorption characteristics of Geo-materials
	Module 8 (AN)	Contaminant transport through porous media
04-09-2025	Module 9 (FN)	Thermal characterization of geomaterials
	Module 10 (AN)	Electrical characterization of geomaterials

**OBJECTIVES:**

Environmental Geotechniques equip the students with an interdisciplinary understanding of geoenvironmental issues, and train them in developing sustainable, environmentally sound solutions for the challenges.

**OUTCOMES:**

Students will be able to analyze geoenvironmental issues, understand the technical and scientific aspects of problems like soil and water pollution, and apply their knowledge to design environmentally conscious geotechnical solutions.

**HOD  
CIVIL ENGINEERING**

HOD, DEPARTMENT OF CIVIL ENGINEERING  
JB IET, YENKAPALLY(V), MOINABAD (M)  
R.R. Dist. Hyderabad - 500 075



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## **DEPARTMENT OF CIVIL ENGINEERING**

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**Environmental Geotechniques-Challenges and Geotechnical Solutions**

### **MODULE NUMBER 1**

**Key Topic covered:**

Basic introduction, Scope and Genesis of Environmental Geotechniques

**Resource Person: Dr. R. SURESH, Assistant Professor, Civil Engineering Department**

**Date and time of session: 30-08-2025 & 10:00 AM to 12:30 PM**

**Mode of delivery: PPT Presentation**

**Target Audience: B. Tech III<sup>rd</sup> Year Civil Engineering students**

**Number of students: 22**

**Venue: A301**

**Objectives of the course module:**

- A consideration of technical and scientific aspects of key geo-societal issues.
- Case studies and analysis of current and historic databases will be used to illustrate topics including, but not limited to, impact of climate change, energy resources, water and soil pollution, and health risks posed by heavy metals and emerging pollutants.



**Expected Learning Outcomes of the Module 1:**

The student would:

- Have an exposure to interdisciplinary issues pertaining to environment and geotechnical engineering
- Understand the sustainable and environmentally sound solutions for geotechnical problems
- Understand the relevance of various legal aspects involved in addressing environmental consequences associated with geotechnical issues



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**MODULE NUMBER 2**

**Key Topic covered:**

Contemporary Civil Engineering, Recent Trends in Environmental Geotechniques

**Resource Person: Dr. R. SURESH, Assistant Professor, Civil Engineering Department**

**Date and time of session: 30-08-2025 & 2: 30 PM to 4:00 PM**

**Mode of delivery: PPT Presentation**

**Target Audience: B. Tech III<sup>rd</sup> Year Civil Engineering students**

**Number of students: 22**

**Venue: A301**

**Objectives of the course module:**

- A consideration of advance research topics on soil saturation theories.
- Case studies and analysis of current and historic databases including water and soil pollution.

**Expected Learning Outcomes of the module 2:**

The student would:

- Be trained to develop sustainable and environmentally sound solutions for geotechnical problems.
- Understand the relevance of various soil properties involved in addressing environmental consequences associated with geotechnical issues.



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**MODULE NUMBER 3**

**Key Topic covered:**

Contaminant transport and Fate of contaminants, Soil- Water- Environment Interaction

**Resource Person: Dr. R. SURESH, Assistant Professor, Civil Engineering Department**

**Date and time of session: 01-09-2025 & 10:00AM to 12:30 PM**

**Mode of delivery: PPT Presentation**

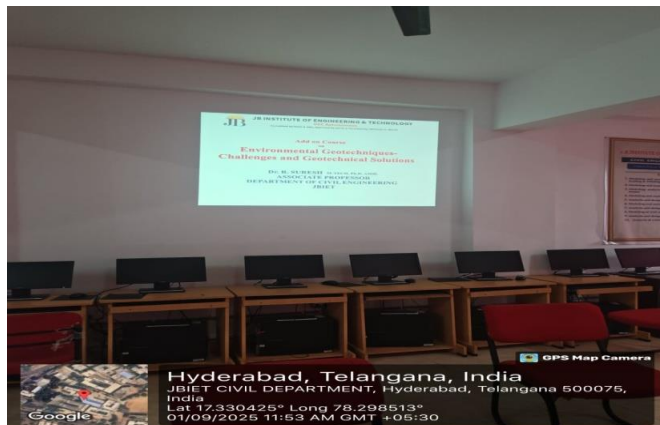
**Target Audience: B. Tech IIIrd Year Civil Engineering students**

**Number of students: 20**

**Venue: A301**

**Objectives of the course module:**

- A consideration of technical and scientific aspects of Soil- Water- Environment Interaction issues.
- Case studies and analysis of current and historic databases to be used to illustrate topics including Soil- Water- Environment Interaction.



**Expected Learning Outcomes of the Module: 3**

The student would:

- Have an exposure to contaminant transport in soils, and Soil- Water- Environment Interaction.
- Be trained to develop sustainable and environmentally sound solutions for geotechnical problems.
- Understand the relevance of various Fate of contaminants, Soil- Water- Environment Interaction aspects involved in addressing environmental consequences associated with geotechnical issues.



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**MODULE NUMBER 4**

**Key Topic covered:**

What is Soil waste? Type of Soil wastes.

**Resource Person: Dr. R. SURESH, Assistant Professor, Civil Engineering Department**

**Date and time of session: 01-09-2025 & 2: 30 PM to 4:00 PM**

**Mode of delivery: PPT Presentation**

**Target Audience: B. Tech III<sup>rd</sup> Year Civil Engineering students**

**Number of students: 20**

**Venue: A301**

**Objectives of the course module:**

- A consideration of waste contamination issues in soil.
- Case studies and analysis of current and historic databases will be used to illustrate of soil pollution and wastes generated by industry.

**Expected Learning Outcomes of the module 4:**

The student would:

- Have an exposure of soil pollution and wastes generated by industry.
- Be trained to develop sustainable and environmentally sound solutions for geotechnical problems.
- Understand the relevance of various types of soil pollution.



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**MODULE NUMBER 5**

**Key Topic covered:**

Geo-material characterization

**Resource Person: Dr. R. SURESH, Assistant Professor, Civil Engineering Department**

**Date and time of session: 02-09-2025 & 10:00 AM to 12:30 PM**

**Mode of delivery: PPT Presentation**

**Target Audience: B. Tech III<sup>rd</sup> Year Civil Engineering students**

**Number of students: 18**

**Venue: A301**

**Objectives of the course module:**

- A consideration of technical and scientific aspects of key geomaterials issues.
- Case studies and analysis of water and soil pollution, and health risks posed by heavy metals and emerging pollutants.



**Expected Learning Outcomes of the module 5:**

The student would:

- Have an exposure to interdisciplinary issues pertaining to environment and geotechnical engineering.
- Be trained to develop sustainable and environmentally sound solutions for geotechnical problems.
- Understand the relevance of various legal aspects involved in addressing environmental consequences associated with geotechnical issues





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**MODULE NUMBER 6**

**Key Topic covered:**

Applications of Industrial By-products, Geo-material characterization

**Resource Person: Dr. R. SURESH, Assistant Professor, Civil Engineering Department**

**Date and time of session: 02-09-2025 & 2: 30 PM to 4:00 PM**

**Mode of delivery: PPT Presentation**

**Target Audience: B. Tech III<sup>rd</sup> Year Civil Engineering students**

**Number of students: 18**

**Venue: A301**

**Objectives of the course module:**

- A consideration of technical and scientific aspects of key geomaterials issues.
- Case studies and analysis of water and soil pollution, and health risks posed by heavy metals and emerging pollutants.



**Expected Learning Outcomes of the module 6:**

The student would:

- Have an exposure to interdisciplinary issues pertaining to environment and geotechnical engineering.
- Be trained to develop sustainable and environmentally sound solutions for geotechnical problems.
- Understand the relevance of various legal aspects involved in addressing environmental consequences associated with geotechnical issues



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**MODULE NUMBER 7**

**Key Topic covered:**

Sorption & Desorption characteristics of geomaterials

**Resource Person: Dr. R. SURESH, Assistant Professor, Civil Engineering Department**

**Date and time of session: 03-09-2025 & 10:00 AM to 12:30 PM**

**Mode of delivery: PPT Presentation**

**Target Audience: B. Tech III<sup>rd</sup> Year Civil Engineering students**

**Number of students: 18**

**Venue: A301**

**Objectives of the course module:**

- A consideration of technical and scientific aspects of key soil sorption potential.
- Case studies and analysis of soil sorption potential in geomaterials.



**Expected Learning Outcomes of the module 7:**

The student would:

- Have an exposure to soil sorption potential in geomaterials.
- Understand the relevance of various aspects involved in addressing soil sorption potential in geomaterials.





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**MODULE NUMBER 8**

**Key Topic covered:**

Contaminant transport through porous media

**Resource Person: Dr. R. SURESH, Assistant Professor, Civil Engineering Department**

**Date and time of session: 03-09-2025 & 2: 30 PM to 4:00 PM**

**Mode of delivery: PPT Presentation**

**Target Audience: B. Tech III<sup>rd</sup> Year Civil Engineering students**

**Number of students: 20**

**Venue: A301**

**Objectives of the course module:**

- A study on Contaminant soil transport system in geoenvironmental engineering.
- A Case studies and analysis of Contaminant soil transport system in geoenvironmental engineering.



**Expected Learning Outcomes of the module 8:**

The student would:

- Have an exposure to contaminant soil transport system in geomaterials.
- Understand the relevance of various aspects of Contaminant soil transport system.



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**MODULE NUMBER 9**

**Key Topic covered:**

Thermal characterization of geomaterials

**Resource Person: Dr. R. SURESH, Assistant Professor, Civil Engineering Department**

**Date and time of session: 04-09-2025 & 10:00 AM to 12:30 PM**

**Mode of delivery: PPT Presentation**

**Target Audience: B. Tech IIIrd Year Civil Engineering students**

**Number of students: 20**

**Venue: A301**

**Objectives of the course module:**

- A study on Thermal characterization of geomaterials
- A Case studies and analysis of Thermal characterization of geomaterials

**Expected Learning Outcomes of the module 9:**

The student would:

- Have an exposure to Thermal characterization of geomaterials
- Understand the relevance of various aspects of Thermal characterization of geomaterials.



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**MODULE NUMBER 10**

**Key Topic covered:**

Electrical characterization of geomaterials

**Resource Person: Dr. R. SURESH, Assistant Professor, Civil Engineering Department**

**Date and time of session: 04-09-2025 & 2: 30 PM to 4:00 PM**

**Mode of delivery: PPT Presentation**

**Target Audience: B. Tech III<sup>rd</sup> Year Civil Engineering students**

**Number of students: 20**

**Venue: A301**

**Objectives of the course module:**

- A study on Electrical characterization of geomaterials
- A Case studies and analysis of electrical characterization of expansive soil in geoenvironmental engineering.



**Expected Learning Outcomes of the module 10:**

- Have an exposure to Electrical characterization of geomaterials
- Understand the relevance of various aspects of Electrical characterization of expansive soil in geoenvironmental engineering.

**SUMMARY OF THE COURSE:**

Students are able to analyse the environmental Geotechniques issues, understand the technical and scientific aspects of problems like soil and water pollution, and apply their knowledge to design environmentally conscious geotechnical solutions.

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