

Mark Distribution

Total Marks	CIE Marks	ESE Marks	ESE Duration
100	60	40	2.5 hrs

Continuous Internal Evaluation Pattern:

Attendance	: 5 marks
Internal Examination I	: 12.5 marks
Internal Examination II	: 12.5 marks
Project	: 30 marks

Assessment and Evaluation for Project Activity

Sl. No	Evaluation for	Allotted Marks
1	Project Planning and Proposal	5
2	Contribution in Progress Presentations and Question Answer Sessions	4
3	Involvement in the Project Work and Team Work	3
4	Execution and Implementation	10
5	Final Presentations	5
6	Project Quality, Innovation and Creativity	3
	Total	30

7. Project Planning and Proposal (5 Marks)

- Clarity and feasibility of the project plan
- Research and background understanding
- Defined objectives and methodology

8. Contribution in Progress Presentation and Question Answer Sessions (4 Marks)

- Individual contribution to the presentation
- Effectiveness in answering questions and handling feedback

9. Involvement in the Project Work and Team Work (3 Marks)

- Active participation and individual contribution
- Teamwork and collaboration

10. Execution and Implementation (10 Marks)

- Adherence to the project timeline and milestones
- Application of theoretical knowledge and problem-solving
- Final Result

11. Final Presentation (5 Marks)

- Quality and clarity of the overall presentation
- Individual contribution to the presentation
- Effectiveness in answering questions

12. Project Quality, Innovation, and Creativity (3 Marks)

- Overall quality and technical excellence of the project
- Innovation and originality in the project
- Creativity in solutions and approaches

SYLLABUS

Module 1 (14 hours)

Soil as a 3 phase system, physical and index properties of soil, grain size distribution curve, soil indices, stress distribution and diagrams; Mohr coulomb failure theory, Consolidation of soils, Terzaghi's theory of one dimensional consolidation, Calculation of void ratio, Rankine's theory of earth pressure.

Module 2 (10 hours)

Soil erosion: introduction, causes, types, factors affecting and effects of erosion; Water erosion: mechanics and forms, Soil loss estimation–USLE and MUSLE. Wind erosion- Factors affecting, mechanics and control measures, Role of soil conservation in improving crop productivity, Water erosion control measures- Agronomic practices: contour cultivation - strip cropping – tillage practices – Soil management practices – Bunding: Types and design specifications - Mechanical measures for hill slopes – Terracing: Classification and design specification of bench terrace, climate-smart soil and water conservation practices.

Module 3 (14 hours)

Gullies: classification, stages of development, Gully and ravine reclamation- principles of gully control, vegetative measures, temporary structures and grassed water way, Permanent structures for gully control: design procedures- hydrologic, hydraulic and structural design.

Module 4 (18 hours)

Landslide – Factors causing, Measures for controlling landslide, Integrated Watershed Management approach for sustainable cities, Case studies of successful watershed projects in India, Smart water management to conserve water.

Text Books

1. Suresh, R. (2023). Soil and water conservation engineering (5th ed.). Standard Publisher Distributors.
2. Murthy, V. V. N. (2018). Land and water management engineering (7th ed.). Kalyani Publishers.
3. Punmia, B. (2022). *Soil mechanics and foundations* (16th ed.). New Delhi: Laxmi Publications (P) Ltd.

Reference Books

1. Mahnot, S. C. (2014). *Soil and water conservation and watershed management*. International Books and Periodicals Supply Service.
2. Gupta, S. K. (2020). *Fundamentals of soil and water conservation engineering*. Daya Publishing House. ISBN: 9789388982979.
3. Das, P., Chakraborty, A., & Chowdhury, A. (2023). *A-Z in soil & water conservation engineering for GATE AG* (1st ed.). New Delhi Publishers. ISBN: 978-81-19006-37-3.

END SEMESTER EXAMINATION - MODEL QUESTION PAPER (STC 2025 SCHEME)

Course Code	25UAGT403
Course Name	SOIL AND WATER CONSERVATIONENGINEERING
Max. Marks: 60	Duration: 2.5 Hours

Part A				
<i>(Answer all questions. Each question carries 3 marks)</i>				
Qn No.	Question	Marks	CO	BL
1.	Explain soil as a three-phase system.	3	CO1	L2
2.	Define void ratio and porosity of a soil.	3	CO1	L2
3.	List the types of soil erosion.	3	CO2	L2
4.	State the factors in the Universal Soil Loss Equation (USLE).	3	CO2	L2
5.	Describe the stages of development of a gully.	3	CO3	L2
6.	Explain the principles of gully control using vegetative measures.	3	CO3	L2
7.	Evaluate the factors causing landslides on agricultural land.	3	CO4	L2
8.	Assess the role of remote sensing and GIS in watershed sustainability.	3	CO4	L2
Part B				
<i>(Answer any one full question from each Module. Each question carries 9 marks)</i>				
Module I				
Qn No.	Question	Marks	CO	BL
9	Explain the physical and index properties of soil and the use of the grain size distribution curve.	9	CO1	L2
OR				
10	Explain Terzaghi's theory of one-dimensional consolidation of soils.	9	CO1	L2
Module II				
Qn No.	Question	Marks	CO	BL
11	Describe the mechanics and forms of water erosion and explain the estimation of soil loss using USLE.	9	CO2	L2
OR				
12	Describe wind erosion, the factors affecting it, and the agronomic measures for water erosion control.	9	CO2	L2
Module III				
Qn No.	Question	Marks	CO	BL
13	Explain the hydrologic, hydraulic and structural design procedure of a permanent gully control structure.	9	CO3	L2
OR				
14	Explain the principles of gully and ravine reclamation using temporary structures and grassed waterways.	9	CO3	L2
Module IV				
Qn No.	Question	Marks	CO	BL
15	Evaluate the Integrated Watershed Management approach for sustainable development with reference to a successful Indian case study.	9	CO4	L5
OR				
16	Evaluate the measures for controlling landslides and conserving water in a watershed.	9	CO4	L5
