



Course Descriptor

ENGR110 ENGINEERING LABORATORIES

ACADEMIC YEAR	2018-2019	SEMESTER	
Course Code	ENGR110	Course Title	Engineering Laboratories
Credit hours	3	Level of study	Undergraduate
College / Centre	Engineering	Department	Civil Engineering
Co- & Pre-requisites	None	Co-requisites	None

1. COURSE OUTLINE

This course will introduce students to Transportation Engineering, Structural Engineering, Materials Engineering, Environmental Engineering, Geotechnical Engineering and Thermo-Fluids Engineering labs. This course introduces the key elements of the core civil engineering disciplines and gives you an appreciation for the industry, along with a broad yet thorough introduction to various aspects of the discipline.

2. AIMS

The aim of this course is to lay a firm foundation for students in basic experimental principles of various civil engineering course of study. It will develop experimental techniques, in particular, skills of data analysis, laboratory safety protocols, and the development of graphical visualization of data.

3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS (Indicative)

Learning Outcomes (Definitive)	Teaching and Learning methods (Indicative)	Assessment (Indicative)
1. Develop an understanding of various civil engineering laboratory tests through hands-on experience coupled with personal observation.	Lecture & Practical Exercise	Technical Reports
2. Develop skills in engineering data collection, processing and presenting in the form of standardized technical reports.	Lecture & Practical Exercise	Technical Reports
3. Understand the importance of laboratory safety, conduct experiments adopting all safety measures.	Lecture & Practical Exercise	Technical Reports
4. Comparing the technical reports to Industrial standards and understanding the physical significance of results obtained	Lecture & Practical Exercise	Technical Reports



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4. ASSESSMENT WEIGHTING

Assessment	Percentage of final mark (%)
Lab Participation & Technical Reports	60%
Comprehensive Viva	10%
Final Exam	30%
TOTAL	100%

5. ACHIEVING A PASS

Students will achieve 3 credit hour for this course by passing ALL of the course assessments (*Lab participation, Technical reports, Comprehensive Viva, Final Exam*) and achieving a **minimum overall score of 50%**

6. COURSE CONTENT (Indicative)

WEEK	LECTURE TOPIC	TIME (HOURS)
1	Introduction to Engineering Labs & Laboratory Safety Protocols	3
2	Technical Report Writing	3
3-5	<u>Structures & Material Lab:</u> 1. Slump Cone Test 2. Compressive Test of Concrete Cubes 3. Shear Force & Bending Moment Tests	9
6-8	<u>Environmental Lab:</u> 4. pH Test, Conductivity Test 5. Total Dissolved Solids, Total Hardness 6. Turbidity, Dissolved Oxygen Tests	9
9-11	<u>Transportation Lab:</u> 7. Los Angle's Abration Test 8. Sand equivalence Test 9. Skid Resistance Test	9
12-13	<u>Geo-Technical Lab:</u> 10. Compaction Test 11. Sieve Analysis Test	6
14	<u>Thermofluids Lab:</u> Francis Turbine Demonstration	3
15	Final Exam + Comprehensive Viva	3
	TOTAL HOURS	45
1 - 15	Plus RECOMMENDED INDEPENDENT STUDY HOURS	45



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6. COURSE CONTENT (Indicative)		
WEEK	LECTURE TOPIC	TIME (HOURS)
	TOTAL COURSE HOURS	90

7. RECOMMENDED READING

Core text:

ASU Laboratory Manual

Library+Online resources:

NPTEL