



THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE

Department of Civil Engineering

CVE 310 – CIVIL ENGINEERING MATERIALS

COURSE PARTICULARS

Course Code: CVE 310

Course Title: Civil Engineering Materials

No. of Units: 3

Course Duration: Two hours of Lecture and three hours of practical per week for 12 weeks.

Status: Compulsory

Course Email Address:

Course Webpage:

Prerequisite: NIL

COURSE INSTRUCTORS

1. Engr. Mrs. B.D Oluyemi-Ayibiowu (MNSE)

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COURSE DESCRIPTION

It is important to understand the types, properties and importance of the materials used in civil engineering construction in order to be able to assess their behaviour in service. In this course students will be thought the different materials with their areas of applicability. The material aspects to be covered are Concrete technology – this will include the constituent materials - Cements, aggregates, admixtures e.t.c; Concrete mix design: properties and their determination. Steel technology: production, fabrication and properties, corrosion and its prevention. Test on Steel and quality control. Timber technology: types of wood, properties defects, stress grading, preservation and fire protection, Timber products, Rubber plastics. Asphalt, tar, glass, lime pricks mud, etc. application to buildings, roads and bridges

COURSE OBJECTIVES

The objectives of this course are to:

- introduce students to basic civil engineering materials
- aid civil engineering student's selection of suitable materials for construction works
- understand fundamental properties of civil engineering materials,
- understand concrete mix design, mix ratios and their respective characteristics strength.
- promote awareness in students of the importance of material behaviour in both design and construction.

COURSE LEARNING OUTCOMES / COMPETENCIES

Upon successful completion of this course, the student will be able to:

(Knowledge based)

- understand basic civil engineering materials and their properties,
- select suitable materials for construction works
- design concrete mixes based on site conditions and work criteria
- understand basic quality control measures for civil engineering materials and construction activities

(Skills)

- carry out concrete mix design and production
- start a small scale industry and specialize in the manufacturing of any of the civil engineering materials for self reliance.
- Carry out quality control tests for overall durability of civil engineering projects.

GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

Practical	20%
Assignments	10%
Test(s)	10%
<u>Final Examination</u>	<u>60%</u>
<u>TOTAL</u>	<u>100%</u>

GENERAL INSTRUCTIONS

Attendance: It is expected that every student will be in class for lectures and also participate in all practical exercises. Attendance records will be kept and used to determine each person's qualification to sit for the final examination. In case of illness or other unavoidable cause of absence, the student must communicate as soon as possible with any of the instructors, indicating the reason for the absence.

Academic Integrity: Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances are prohibited. You are not allowed to make copies of another person's work and submit it as your own; that is plagiarism. All cases of academic dishonesty will be reported to the University Management for appropriate sanctions in accordance with the guidelines for handling students' misconduct as spelt out in the Students' Handbook.

Assignments, Tests, Practical's and Group Work: Students are expected to submit all these as scheduled. Failure to submit as at when due will earn the student zero for that work. Only under extenuating circumstances, for which a student has notified any of the instructors in advance, will late submission of any part of the continuous assessment be permitted.

Code of Conduct in Lecture Rooms and Laboratories: Students should turn off their cell phones during lectures. Students are prohibited from engaging in other activities (such as texting, watching videos, etc.) during lectures. Food and drinks are not permitted in the laboratories.

READING LIST

- ¹Dominick. V Rosato, Donald V. Rosato and Mathew V, Rosato (2004). Plastic Product Material and Process Selection Handbook.
- ¹Jackson, N and Dhir, R.K (1988). Civil Engineering Materials. 4th Edition. Macmillan Education Ltd. Houndmills, UK.
- ¹Neville A.M (1963). Properties of Concrete, 3rd Edition. Longman Scientific and Technical, Longman Group, UK
- ¹Reinhaust H.W (1990). Testing During Concrete Construction, Chapman and Hall, London

Legend

- 1- Available in the University Library
- 2- Available in Departmental/School Libraries
- 3- Available on the Internet.
- 4- Available as Personal Collection
- 5- Available in local bookshops.

COURSE OUTLINE

Week	Topic	Remarks
1	Introductory	This is the introductory class. During this period, the course outline and necessary requirements for the course will be given to the students.
2 & 3	Concrete technology – type of cements, aggregates properties. Concrete mix design: properties and their determination	Practical exercise will be carried out on concrete. Students will be divided into groups for the laboratory test and will be expected to submit reports.
4 & 5	Steel technology: production, fabrication and properties, corrosion and its prevention.	Students will be taught different methods and steps involved in the production, fabrication of steel, types of corrosion and their preventions. Students will be exposed to zinc plating for corrosion protection of steel in the corrosion laboratory Metallurgical and material Department.
6	Test on Steel and quality control.	Students will be exposed to tests such as tensile test, to determine the following properties like ultimate tensile test, yield test, toughness and ductility.
7 & 8	Timber technology: types of wood, properties defects, stress grading, preservation and fire protection, Timber products	Students will be grouped to visit forestry laboratory of forestry and wood technology and report will be written on the experience gathered from the visit.
9 & 10	Rubber plastics	

11 & 12	Asphalt, tar, glass, lime pricks mud, etc. application to buildings	
13 & 14	Asphalt, tar, glass, lime pricks mud, etc., roads and bridges	
15	REVISION	This is the week preceding the final examination. At this time, evaluation will be done to assess how far the students' expectations for the course have been met.