THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE

Department of Applied Geology

AGY 210 – Geology for Engineers II

COURSE PARTICULARS

Course Code: AGY 210
Course Title: Geology for Engineers II
No. of Units: 2
Course Duration: One hour of theory and three hours of practicals per week for 15 weeks.
Status: Compulsory
Course Email Address: agy210_2013@gmail.com
Course Webpage: http://www.agy.futa.edu.ng/courseschedule.php?coursecode=AGY%20210
Prerequisite: NIL

COURSE INSTRUCTORS

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COURSE DESCRIPTION

The focus is to expose the civil engineering students to basic and applied geological principles for solving earthwork problems often encountered while executing civil engineering projects. Topics to be covered include: Principles of stratigraphic classification, terminology and correlation. Facies analysis, origin and evolution of sedimentary basins; deformation behaviour of rock materials; rheology in the earth's crust; fold mechanics; brittle fracture and failure, brittle and ductile shear zones, foliations. Crystal defects and dislocations; deformation mechanisms and development of textures and preferred orientation by plastic flow and recrystallization; solution of structural problems by stereographic projection. Maps – Topographical map and its elements; Geological maps and their features; Geological cross-section and its construction; Principles of geological map interpretation.

COURSE OBJECTIVES

The objectives of this course are to:

- introduce students to the application of geological knowledge to solve earthwork (civil engineering projects) problems encountered on the field; and
- provide students with geological map interpretation skills.

COURSE LEARNING OUTCOMES / COMPETENCIES

Upon successful completion of this course, the student will be able to:
(Knowledge based)

- explain some basic geological principles especially on stratigraphy and map interpretation;
- identify some basic geological structures in field occurrences;
- understand various forms of deformation behaviour of rock materials;

(Skills)

- solve structural problems by stereographic projections;

- identify various features on any geological map, draw cross-sections and interpret geological maps correctly.

GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

Assignments	20%
Test(s)	20%
Final Examination	60%
TOTAL	**100%**

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 (65% minimum attendance) 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 and Group Work: Students are expected to submit assignments as scheduled. Failure to submit an assignment as at when due will earn you zero for that assignment. Only under extenuating circumstances, for which a student has notified any of the instructors in advance, will late submission of assignments 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

[1]Blyth, F.G.B. and De Freitas, M.H. (2005). A geology for Engineers. Published by Elsevier Buterworth-Heinemann, USA. 348p.

[2]Bell, F.G. (2007). Engineering Geology. 2nd Edition. Published by Elsevier Ltd, USA. 593p.

Legend
1- Available in the University Library; Also available on the Internet.
2- Available on the Internet.

COURSE OUTLINE

Week	Topic	Remarks
1	Principles of stratigraphic classification, terminology and correlation.	During this first class, the expectation of the students from the course will noted.
2 & 3	Origin and evolution of sedimentary basins. Sedimentary facies	Students' will be given a reading assignment to prepare them for the next class.
4 & 5	Deformation of rocks. Rheology. Folds, folding mechanisms.	Sufficient illustrative diagrams and field photographs will be shown by projection on screen to aid students' understanding of the topic.
6	Brittle fracture and failure. Faults. Brittle and ductile shear zones. Foliations.	Photographs of structures will be projected on screen for better

		understanding while teaching this topic.
7 & 8	Crystal defects and dislocations; deformation mechanisms and development of textures and preferred orientation by plastic flow and recrystallization	Field photographs of structures will be projected on screen for better understanding while teaching this topic
		MID-SEMESTER TEST
9	Solution of structural problems by stereographic projection.	Exercises will be given for better understanding during practical sessions.
10	Maps – Topographical map and its elements. Geological maps and their features	Different topographic and geological maps will be used for teaching the topic.
11&12	Geological cross-section and its construction	Students will be exposed to the techniques for drawing geological cross-sections for both dipping and non-dipping beds. This will be achieved by teaching and giving of exercises.
13 & 14	Principles of geological map interpretation.	Topographic and geological maps will be used to explain this topic and assignment will be given in groups.
15	REVISION	This week preceeding the final examination will be used to evaluate the realization of the students' expectations for the course.