Course Specification
(Bachelor)

Course Title:	Principles of Geology
Course Code:	CE 2201
Program:	Civil Engineering Bachelor
Department:	Civil Engineering
College:	College of Engineering and Islamic Architecture
Institution:	Umm Al-Qura University
Version:	1
Last Revision Date:	31 January 2025

Table of Contents

A. General information about the course:.....3

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods..... 4
C. Course Content.....4
D. Students Assessment Activities.....5
E. Learning Resources and Facilities.....5
F. Assessment of Course Quality.....5
G. Specification Approval.....6

A. General information about the course:

1. Course Identification

1. Credit hours: (2)					
2. Course type					
A.	☐ University	☐ College	☐ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (Level 6/ 3rd Year)					
4. Course General Description:					
This course provides an introduction to the concepts of geology. Students will explore the origin and structure of the Earth, examining the Earth's layers and its formation. Key topics include rock types and the rock cycle, focusing on the physical and chemical properties of rocks and minerals, sedimentation processes, and soil classification systems. The course introduces the basics of structural geology, covering the formation and characteristics of faults, folds, and joints. Students will gain insight into volcanic processes, studying volcanoes and volcanic rocks, and earthquake mechanisms through an exploration of tectonic plates, seismic waves, and the rebound theory. Additionally, the course will cover the formation of fossil rocks and the processes involved in their development.					
5. Pre-requirements for this course (if any)**:**					
Passed first year					
6. Co-requisites for this course (if any)**:**					
7. Course Main Objective(s):					
By the end of the Principles of Geology course, students will understand the engineering aspects of geology and their application in civil engineering, particularly in foundation design and construction. This knowledge will enable them to effectively plan, develop, and manage construction projects and related activities by applying geological principles to real-world engineering challenges. Students will gain insights into rock classification, structural geology, tectonic activity, and soil classification, all of which are crucial for making informed decisions in the construction and foundation sectors.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100
2	E-learning	Not Applicable	
3	Hybrid • Traditional classroom • E-learning	Not Applicable	
4	Distance learning	Not Applicable	

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	Not Applicable
3.	**Field**	Not Applicable
4.	**Tutorial**	Not Applicable
5.	**Others (specify)**	Not Applicable
Total		

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Knowledge of the basics of a subject.	**K.1**	Through lectures, module notes, tutorials, coursework, examinations, and group project work. Assignments, homework, quizzes, midterm and final.	Through lectures, module notes, tutorials, coursework, examinations, and group project work. Assignments, homework, quizzes, midterm and final
1.2	Knowledge of the fundamental physical and analytical principles of the subject.	K.1	Through lectures, Module notes, tutorials, coursework, examinations, and group project work.	Assignments, homework, quizzes, midterm and final.
2.0	**Skills**			
2.1	Ability to use the principles of the subject matter to identify and apply the basic laws to practical problems.	S.1	Through lectures, module notes, tutorials, coursework, examinations, and group project work.	Assignments, homework, quizzes, midterms, and finals.
2.2	Ability to use any engineering software related to the subject	S.1	Through lectures, module notes, tutorials, coursework, examinations, and group project work.	Assignments, homework, quizzes, midterms, and finals.
3.0	Values, autonomy, and responsibility			
3.1	To demonstrate Commitment to professional and academic values and standards in the engineering profession.	V.1	Lectures and training tutorials	The class works, written and oral examinations.
3.2	To demonstrate commitment to ethical	V-2	Lectures and training tutorials	Projects and reports

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	code of conduct in the field of civil engineering.			
3.3	Ability to use EXCEL for plotting engineering data and ability to interpret the graphs.	S.1	Through lectures, Module notes, tutorials, coursework, examinations, and group project work.	Assignments, homework, quizzes, midterm and final.

C. Course Content

No	List of Topics	Contact Hours
1.	Origin of the Earth and Scope of Geology in Civil Engineering	2
2.	Rocks types and cycle, Physical and chemical properties	2
3	Sedimentation and Depositional Environment	4
4	Basics of Structural Geology (Faults, Folds, Joints)	4
5	Volcano and Volcanic Rocks	4
6	Earthquake and Tectonic Plates, Seismic Waves and Rebound Theory	6
7	Fossil Rocks and processes	2
8	Clay Minerals and Application	2
9	Soil Classification System	4
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework Assignment	Bi-Weekly	5%
2.	Quizzes	Monthly	5%
3.	Mid-Term	6	30%
4.	Final Examination	13	50%
5	Class (In-Person) Attendance	-	10%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Aurele Parriaux (2009) "Geology: Basics for Engineers" Publisher: Taylor & Francis; ISBN 0415461650, 9780415461658
Supportive References	▪ Holtz, R.D. and Kovacs, W.D., "An Introduction to Geotechnical Engineering", Prentice-Hall, 1981. ▪ Dunn, I.S, Anderson, L.R., and Kiefer, F.W. "Fundamentals of Geotechnical Analysis" John Wiley & Sons, 1980. ▪ Bunn, I.S., "Fundamentals of Geotechnical Analysis for Civil & Mining Engineers". ▪ Bowles, J.E., "Foundation Analysis" ▪ Smith, G.N., "Elements of Soil Mechanics". ▪ Sowers, G.F., "Introductory Soil Mechanics and Foundations: Geotechnical Engineering", 4th Edition, Macmillan Publishing Co., 1979. Das, B. M., "Principles of Geotechnical Engineering"
Electronic Materials	The United States Geological Survey (USGS) @ https://www.usgs.gov/faq/geology
Other Learning Materials	The following softwares are helpful for applications of the subjects to engineering projects: ▪ gINT ▪ MS-Office ArcView GIS

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	White board and associated auxiliary items
Technology equipment (projector, smart board, software)	Computer with multi-media, a printer, internet connection, data show, Microsoft Office, ArcView GIS, gINT
Other equipment (depending on the nature of the specialty)	Printers and laptops for staff members with required computer software programs are required.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness teaching and assessment	Faculty members who teach this course	▪ Students questioners running at the semester end, ▪ Analysis of students` marks
Effectiveness student's assessment f	Faculty members who teach this course	Homework, Assignments quizzes, and group oral discussions
Quality of learning resources	Independent member(s) teaching staff	Frequent improvement for teaching and learning techniques

The extent to which CLOs have been achieved	Specified target achieved	A sample of students' answer sheets needs to be revised by a specified committee of the department.
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)
Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**CIVIL ENGINEERING COUNCIL**
REFERENCE NO.	**THE FIFTEENTH SESSION OF THE ACADEMIC YEAR 1446**
DATE	**30 APRIL 2025**

Course Coordinator



Yahya Bin Mahfouz, Ph.D.