TISHK INTERNATIONAL UNIVERSITY
FACULTY OF ENGINEERING
Department of CIVIL ENGINEERING,
2020-2021 Spring
Course Information for CE 224 GEOLOGY FOR CIVIL ENGINEERING

Course Name:	GEOLOGY FOR CIVIL ENGINEERING

Code	Regular Semester	Theoretical	Practical	Credits	ECTS
CE 224	2	3	-	3	

Name of Lecturer(s)-Academic Title:	Yousif Abduallah -
Teaching Assistant:	N/A
Course Language:	English
Course Type:	Main
Office Hours	Sunday 9:00-11:00
Contact Email:	yousif.abdullah@tiu.edu.iq Tel:07501380640
Teacher's academic profile:	Ph.D. in Geotechnical Engineering
Course Objectives:	Understanding the geological process in formation of various types of rocks (igneous, metamorphic, and sedimentary rocks) and how soil is eventually formed. and how these rock are transformed from one type another (rocks cycle). Also this course gives basic knowledge to distinguish various rock types and their general and engineering properties. Also it gives the knowledge about drawing and understanding geological maps and hence understanding geological structures for a certain construction site when road and railway cuttings, and excavations are constructed. Also students will understand ground water flow in rocks and soils, and understanding confined and unconfined aquifers. And finally understanding rock strength properties and compressibility and how they are measured and applied in civil engineering design.
Course Description (Course overview):	Structure of the earth, geological cycles, minerals and rocks. Magmatic, sedimentary and metamorphic rocks. Geologic structure and its importance in civil engineering. Geologic maps and cross-sections. Dams and reservoir geology. Geological concepts in landslides, hydrogeology and tunnels. Quarries and dimension stone. External processes on land and in the sea. Internal processes including deformation of rocks and earthquakes.

COURSE CONTENT

Week	Hour	Date	Topic
1	2	31/1-4/2/2021	Introduction, structure of the earth, Plate tectonics
2	2	7-11/2/2021	Plate boundaries (Constructive, destructive and conservative boundaries)
3	2	14-18/2/2021	igneous rocks, Geological classifications of igneous rocks
4	2	21-25/2/2021	Color and texture identification key for igneous rocks
5	2	28/2-4/3/2021	sedimentary rocks, (weathering, erosion)
6	3	7-11/3/2021	sedimentary rocks, (transportation, deposition, burial, Diagenesis)
7	3	28/3-1/4/2021	Metamorphic rocks, (Types of metamorphism)
8	3	4-8/4/2021	Classification and identification of metamorphic rocks
9	3	11-15/4/2021	Midterm Exam
10	3	18-22/4/2021	Midterm Exam
11	3	25-29/4/2021	Ground structure: maps, unconformity, faults and folds
12	3	2-6/5/2021	Rock deformation, faults, joints, folds
13	3	9-13/5/2021	Groundwater flow in rocks and soils

14	3	16-20/5/2021	Confined and unconfined aquifers
15	3	23-27/5/2021	rock strength and compressibility
16	3	30/5-3/6/2021	Interpretation of rock properties, Intact rock properties
17	3	6-10/6/2021	Final Exam
18	3	13-17/6/2021	Final Exam

COURSE/STUDENT LEARNING OUTCOMES

1	Understanding various factors affecting the formation of different types of rocks (igneous, sedimentary and metamorphic rocks)
2	Ability to distinguish various rock types and their engineering, physical and chemical properties.
3	Ability to draw and read the geological maps and their importance in civil engineering
4	Understanding the nature and properties of flow in rock mass
5	Understanding the testing on rocks such as point loading and Brazilian tests

COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES

(Blank : no contribution, I: Introduction, P: Profecient, A: Advanced)

	Program Learning Outcomes	**Cont.**
1	Apply principles of mathematics, science, and engineering	I
2	Design and conduct experiments, as well as analyze and interpret data accurately.	I
3	Design an engineering system, component, or process to meet desired industrial needs.	I
4	Identify, formulate and solve complex engineering problems	P
5	Apply, in design and construction, the most modern design codes, standards and specifications such as; AISC, ACI, ASCE 7, IBC, etc.	I
6	Use the techniques, skills, and modern engineering tools, such as surveying instruments, and designing software that are necessary for engineering practices.	P
7	Apply knowledge and skills in construction project management and recognition of international standards and methodologies	I
8	Manage to work with multi-disciplinary teams and communicate effectively.	I
9	Identify the moral values that ought to guide the Civil Engineering profession and resolve the moral issues in the profession.	I
10	Apply the principles of sustainable development in their professional duties which go in line with the paramount safety, health and welfare of the public.	P
11	Analyze the impact of engineering solutions in a global and social context	P
12	Identify the need and have the ability to engage in lifelong learning and knowledge of contemporary issues.	P

Prerequisites (Course Reading List and References):	Basic knowledge about physics and chemistry, and general knowledge about engineering drawing
Student's obligation (Special Requirements):	Lecture notes Attending all the classes.
Course Book/Textbook:	• M. C. Matthews, N. E. Simons, Bruce Keith Menzies (2008) “A Short Course in Geology for Civil Engineers” Thomas Telford Pub., 302 pages. • David George Price (2009) “Engineering Geology: Principles and Practice”, Springer Science & Business Media, 450 pages. • C. Gribble, A. McLean (2017) “Geology for Civil Engineers”, CRC Press, 336 pages. • P. C. VARGHESE (2001) “Engineering Geology For Civil Engineers” PHI Learning Pvt. Ltd., 264 pages
Other Course Materials/References:	• Tony Waltham (2009) “Foundations of Engineering Geology”, CRC Press, 98 pages • Fred G. Bell (2004) “Engineering Geology and Construction”, CRC Press, 816 pages • Geological Society of London (2002) “Mapping in Engineering Geology”, Geological Society of London, 287 pages. • F G Bell (2007) “Engineering Geology”, Elsevier, 592 pages
Teaching Methods (Forms of Teaching):	Lectures, Excersises, Presentation, Assignments, Case Studies

COURSE EVALUATION CRITERIA

Method	**Quantity**	**Percentage (%)**
Attendance	1	2

Participation	1	4
Quiz	3	8
Midterm Exam(s)	1	30
Final Exam	1	40
Total		**100**

Examinations: True-False, Fill in the Blanks, Multiple Choices, Short Answers

Extra Notes:

ECTS (ALLOCATED BASED ON STUDENT) WORKLOAD

Activities	**Quantity**	**Workload Hours for 1 quantity***	**Total Workload**
Theoretical Hours	18	3	54
Practical Hours	18	0	0
Final Exam	1	8	8
Attendance	1	2	2
Participation	1	1	1
Quiz	3	2	6
Midterm Exam(s)	1	6	6
Total Workload			**77**
ECTS Credit (Total workload/25)			**3.08**

Peer review

Signature:	Signature:	Signature:
Name:	Name:	Name:
Lecturer	Head of Department	Dean