

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Foundation Engineering-1		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	CIV021		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIV	Semester of Delivery	
Administering Department	CV101	College	Civil Engineering College
Module Leader	Dr. Ahmed Hazim Abdulkareem	e-mail	Ahm1973ed@uoanabr.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Dr. Maher Zuhair Al-Rawi	e-mail	E-mail: maher.zuhair@uoanbar.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Soil Mechanics-I & Soil Mechanics-II	Semester	5 & 6
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Aims</p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. Introduce to the students, the principal types of foundations and the factors governing the choice of the most suitable type of foundation for a given solution.2. Provide the students with a basic understanding of the essential steps involved in a geotechnical site investigation.3. Develop an understanding of the behavior of foundations for engineering structures and to gain knowledge of the design methods that can be applied to practical problems.4. Familiarize the student with the procedures used for estimating bearing capacity and settlement of shallow and deep foundation.5. Perform basic analyses to solve foundation problems with the given procedures and the soil properties, and understand their limitations.
<p>Module Learning Outcomes</p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. Apply math and science principles in the design and analysis process.2. Analyze and interpret field and laboratory data to obtain design properties.3. Design major geotechnical structures from a geotechnical perspective.4. Develop semester-long interaction with students on homework and design submittals.5. Consider public safety in design for every major structure type and the impacts of the structures on society and environment.6. Conduct external research for design and creation of design tools.7. Use spreadsheets, mathematical assistants and CADD along with using current state of practice design concepts.
<p>Indicative Contents</p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p><u>Chapter one</u></p> <p>Introduction : Definitions and reviews, - Foundations: Classification and Select definitions , Foundations: General Requirements, Foundations: Additional Requirements, Foundations: Selection of Types [2 hrs]</p> <p><u>Chapter Two</u></p> <p>Subsurface Exploration: Subsurface Exploration Program, Exploratory Borings in the Field, Procedure for Sampling Soil, Undisturbed and disturbed samples, Rock sampling, Rock Quality Designation; Observation of Water Tables, SPT, CPT, PLT, Vane Shear Test ,Preparation of Boring Logs and Exploration Report [10 hrs]</p> <p><u>Chapter Three</u></p> <p>Bearing Capacity of Shallow Foundation: General Concept; Terzaghi's Bearing Capacity Theory, Factor of Safety, Modification of Bearing Capacity Equations for</p>

	<p>Water Table, Eccentrically Loaded Foundations, Bearing Capacity of Layered Soils, Foundations on Rock [14 hrs]</p> <p>Chapter Four</p> <p>Settlement of Shallow Foundations: Vertical Stress Increase in Soil, Types of Foundation Settlement, Elastic Settlement, Primary Consolidation Settlement, Secondary Compression Settlement, Allowable Bearing Pressure in Sand Bases Settlement, Field Load Test, Tolerable Settlement of Buildings [12 hrs]</p> <p>Chapter Five</p> <p>Geotechnical Design of Shallow Foundations: Types of Shallow Foundations, Geotechnical Design of Foundations, Spread, Combined, and Mat, Allowable Soil Pressure and design Loads, Depth Considerations.[18 hrs]</p> <p>Chapter Six</p> <p>Deep Foundation: Types of Pile in Use, Estimating Pile Length; Installation of Piles, Load Transfer Mechanism, Equations for Estimating Pile Capacity, Method for Estimating Q_p, Frictional Resistance (Q_s) in Sand and Clay, Group of Piles efficiency, Elastic Settlement of piles group, Consolidation Settlement of piles group, Distribution of loads on piles in group [18 hrs]</p>
--	---

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>Foundation engineering courses require effective learning and teaching strategies to ensure students develop a strong understanding of complex concepts and their practical applications. The range of strategies that can enhance the learning experience for students in foundation engineering courses. These strategies include lecture-based teaching, practical applications, problem-solving assignments, group work and discussions, technology integration, field trips and site visits, guest speakers, assessments and feedback, continuous learning, and encouraging self-directed learning. By incorporating these strategies, educators can create an engaging and comprehensive learning environment that equips students with the knowledge, skills, and critical thinking abilities necessary for success in the field of foundation engineering.</p>
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4.0
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5.8
Total SWL (h/sem)	150		

الحمل الدراسي الكلي للطلاب خلال الفصل					
Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	3, 6,10,14	LO #1, 3,5, and 7
	Assignments	2	5% (5)	2, 12	LO # 4 and 7
	Projects / Lab.				
	Report	1	5% (5)	13	LO # 2,6 and 7
Summative assessment	Midterm Exam	2 hr	20% (20)	7	LO # 1-7
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Foundations: Classification and Select definitions
Week 2	Subsurface Exploration Program
Week 3	Select drilling, sampling and field property measurement tools
Week 4	Interpret field and laboratory data to get design properties, preparation of boring logs and exploration report
Week 5	Bearing Capacity of Shallow Foundation
Week 6	Modification of Bearing Capacity
Week 7	Eccentrically Loaded Foundations
Week 8	Bearing Capacity of Layered Soils
Week 9	Predict foundation settlement (consolidation, elastic)
Week 10	Predict foundation settlement (consolidation, elastic)
Week 11	Geotechnical Design and analysis of Shallow Foundations
Week 12	Design and analysis of Spread and combined footings
Week 13	Design and analysis of Mat Foundation
Week 14	Design and analysis of Deep Foundation
Week 15	Group of Piles; efficiency; settlement
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1:
Week 2	Lab 2:
Week 3	Lab 3:
Week 4	Lab 4:
Week 5	Lab 5:
Week 6	Lab 6:
Week 7	Lab 7:

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Foundation Design – Principles and Practice, Third Edition, by Donald P. Coduto, 2014, Pearson Education, Inc.	Yes
Recommended Texts	Principles of Foundation Engineering, Ninth Edition, SI Edition Braja M. Das, Nagaratnam Sivakugan	Yes
Websites	https://www.uoanbar.edu.iq/Bank-Section.php	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

