

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Foundation Engineering-2		Module Delivery
Module Type	Elective		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	CIV028		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGIV	Semester of Delivery	8
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
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	Semester	5
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. Understand the practical applications of analysis and design caisson, pier, drilled shaft, and drilled pier are often used in foundation engineering 2. Familiarize the student with the procedures used for estimating lateral earth pressure and retaining walls. 3. Provide the students with a basic understanding of the essential steps of sheet pile walls analysis and design. 4. Understand the practical applications of analysis and design of braced cuts. 5. Provide the students with a basic understanding of the essential steps of slope stability.
<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>Drilled-Shaft Foundations: Introduction, Types of Drilled Shafts, Construction Procedures, Other Design Considerations, Load Transfer Mechanism, Estimation of Load-Bearing Capacity, Load-Bearing Capacity in Granular Soil, Load-Bearing Capacity in Granular Soil Based on Settlement, Load-Bearing Capacity in Clay, Load-Bearing Capacity in Clay Based on Settlement [2 hrs]</p> <p><u>Chapter Two</u></p> <p>Lateral Earth Pressure: Introduction, Lateral Earth Pressure at Rest Active Pressure : Rankine Active Earth Pressure, Rankine Active Earth Pressure for Inclined Backfill, Active Pressure: Coulomb's Active Earth Pressure, Passive Pressure: Rankine Passive Earth Pressure, Rankine Passive Earth Pressure for Inclined Backfill, Passive Pressure: Coulomb's Passive Earth Pressure [10 hrs]</p> <p><u>Chapter Three</u></p> <p>Retaining Walls: Introduction, Gravity and Cantilever Walls, Proportioning Retaining Walls, Application of Lateral Earth Pressure Theories to Design, Stability of Retaining Walls, Check for Overturning, Check for Sliding along the Base, Check for Bearing Capacity Failure, Construction Joints and Drainage from Backfill [14 hrs]</p> <p><u>Chapter Four</u></p> <p>Sheet-Pile Walls: Introduction, Construction Methods, Cantilever Sheet-Pile Walls,</p>

	<p>Cantilever Sheet Piling Penetrating Sandy Soils, -Cantilever Sheet Piling Penetrating Clay, Anchored Sheet-Pile Walls, Free Earth Support Method for Penetration of Sandy Soil, Moment Reduction for Anchored Sheet-Pile, Free Earth Support Method for Penetration of Clay, Anchors [12 hrs]</p> <p>Chapter Five</p> <p>Braced Cuts: Introduction, Lateral Earth Pressure in Braced Cuts, Design of Various Components of a Braced Cut, Stability of Braced Cuts, Failure of Single Wall Cofferdams by Piping [18 hrs]</p> <p>Chapter Six</p> <p>Slope Stability: -Introduction, Factor of Safety, Stability of Infinite Slopes, Infinite Slope with Steady-state Seepage, Finite Slopes—General, Analysis of Finite Slopes with Plane Failure Surfaces (Culmann’s Method), Analysis of Finite Slopes with Circular Failure Surfaces General, Mass Procedure—Slopes in Homogeneous, Clay Soil with $\phi=0$, Ordinary Method of Slices, Bishop’s Simplified Method of Slices [18 hrs]</p>
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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>
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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	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	2.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

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	Drilled-Shaft Foundations : Introduction
Week 2	Load Transfer Mechanism
Week 3	Estimation of Load-Bearing Capacity and settlement
Week 4	Lateral Earth Pressure: Introduction
Week 5	Rankine and Coulomb's Active Earth Pressure
Week 6	Rankine and Coulomb's Passive Earth Pressure
Week 7	Retaining Walls: Introduction, Gravity and Cantilever Walls, Proportioning Retaining Walls
Week 8	Application of Lateral Earth Pressure, Theories to Design
Week 9	Sheet-Pile Walls: Introduction, Construction Methods, Cantilever Sheet-Pile Walls
Week 10	Cantilever Sheet Piling Penetrating Sandy Soils, -Cantilever Sheet Piling Penetrating Clay
Week 11	Anchored Sheet-Pile Walls
Week 12	Braced Cuts: Introduction, Lateral Earth Pressure in Braced Cuts
Week 13	Stability of Braced Cuts
Week 14	Slope Stability: -Introduction, Factor of Safety, Stability of Infinite Slopes
Week 15	Finite Slopes
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.

