

Ministry of Higher Education and Scientific Research
Supervision and Scientific Evaluation Authority
Department of Quality Assurance and Academic Accreditation

Academic Program Description Form for Colleges and Institutes Academic Year

University: Shatt Al-Arab
College/Institute: Engineering
Scientific Department: Civil
Date of Form Completion: 01/09/2025



Signature

Name of Head of Department:

Lecturer Nabeel Najm Abdullah



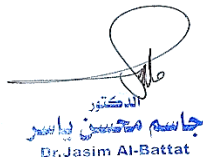
Signature

Name of Scientific Assistant

Dr. Jawad Kadhim

Reviewed by:
Quality Assurance and University Performance Division
Name of Division Director: Dr. Jasem Mohsen Yasser

Signature:



الدكتور
جاسم محمد باقر
Dr. Jasim Al-Battat



أ.م.د. احسان قاسم محمد
عميد كلية الهندسة

Dean's Approval

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Foundation engineering I		Module Delivery
Module Type	Core		☐ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CE412		
ECTS Credits	10		
SWL (hr/sem)	250		
Module Level	4	Semester of Delivery	1
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Dr. Jasim Al-Battat		e-mail
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	1/09/2025	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Soil Mechanics Concrete Design	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	This course is intended to; 1. To evaluate the general suitability of the site and enable adequate and economical design for the proposed project 2. Calculate the safe bearing capacity of soils. 3. Estimate the settlement of shallow foundations 4. Estimate the size of shallow foundations to satisfy bearing capacity and settlement criteria. 5. Provide the steps of structural design for shallow foundations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	When the student complete studying this course, he should be able to: 1. Understand the importance of soil investigations and be able to plan a soil investigation. 2. Estimate the bearing capacity and settlement of structures founded on soils. 3. Calculate stresses in soils from external loads. 4. Calculate one-dimensional consolidation settlement and time rate of settlement for foundations. 5. Estimation of elastic and secondary settlement for foundations. 6. Analyze and design shallow foundations.
Indicative Contents المحتويات الإرشادية	• Chapter 1; Foundations: Their Importance and Purpose, Foundation Classification, Requirements of Foundations • Chapter 2; Soil Exploration; CHAPTER 2; Purpose of Subsurface Exploration, Planning for Subsurface Exploration, Methods of Soil Exploration, Soil Samples, Causes of Disturbance, Soil Samplers, Number of Borings, Depth of Borings, In-Situ (Field) Tests, Standard Penetration Test - ASTM-D1586, Cone Penetration Test (CPT) - ASTM-D5778, Vane Shear Test (VST) - ASTM D 2573M, Plate Loading Test (PLT) - ASTM-D1194, Soil Exploration Report

	- Chapter 3; Bearing Capacity of Shallow Foundations; Introduction, Bearing Capacity, Modes of Soil Failure, Terzaghi's Bearing Capacity Equation, Factor of Safety, Effect of Water Table on B.C., Meyerhof's Bearing Capacity Equation, General (Hansen's) Bearing Capacity Equation, Skempton's Method [$\phi = 0$], Footings with Eccentric Loadings, Footing on Layered Soils, Bearing Capacity of Footings Adjacent to a Slope, Bearing Capacity from Field Tests - Chapter 4; Foundation Settlement; Introduction, Contact Pressure, Stresses in a Soil Mass, Consolidation Settlement, Secondary Settlement, Allowable Settlement - Chapter 5; Spread Footing Design; Ultimate Strength Design Method (USD) (ACI: 318 - 19), Design of R.C. Spread Footings, Design of Plain Concrete Spread Footings, Rectangular Footings, Eccentrically Loaded Spread Footings - Chapter 6; Combined Footing Design; Introduction, Rectangular Combined Footing, Trapezoidal Combined Footing, Strap (or Cantilever) Footing - Chapter 7; Mat Foundation Design; Introduction, Types of Mat Foundations, Bearing Capacity of Mat Foundations, Mat Settlements, Design of Mat Foundations
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	I view teaching as a process of encouraging students to make connections between their own experience and to foster critical thinking skills and problem-solving. I am more concerned with the student's understanding of fundamental course concepts and their ability to apply them in new problem-solving situations. Exams should be

	designed to bring together different concepts from individual examples and homework problems and combine them. My intent in developing exam questions is not to evaluate whether a student can solve a given problem, but to determine whether they understand and can apply the concepts required to solve this problem. After all, the chance that they will face the exact problem in practice is negligible, but the interaction of concepts to solve new problem is vital. As a result, students work is graded with respect to the process used in solving the problem rather than the final answer they will get. A professor should be sensitive to the background and preparation of the students. The way the students are treated has a great influence on the student's performance. I strive to demonstrate to each student my respect for them as individuals and for their contributions to the learning process. Thus, I try to learn every student's name and maintain a high level of classroom interaction. The class atmosphere is very relaxed, so students feel comfortable contributing and asking questions. To further facilitate students learning, I like to provide opportunities for reflection and feedback from students via after-class and office discussions, peer-to-peer feedback on assignments and learning activities and formal and informal evaluations. Students' responses and inputs are very helpful for improving my teaching skills.
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	142	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	108	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	250		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3 , 7	All
	Assignments	2	10% (10)	2,4,6,8,10,12	All
	Class activity	0	10% (10)		
	Report	0	10% (10)		
Summative assessment	Midterm Exam	1 hr	10% (10)	10	1-5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Chapter 1; Foundations: Their Importance and Purpose, Foundation Classification, Requirements of Foundations Chapter 2; Soil Exploration; CHAPTER 2; Purpose of Subsurface Exploration, Planning for Subsurface Exploration, Methods of Soil Exploration, Soil Samples, Causes of Disturbance, Soil Samplers, Number of Borings, Depth of Borings,
Week 2	Chapter 1; Foundations: Their Importance and Purpose, Foundation Classification, Requirements of Foundations Chapter 2; Soil Exploration; CHAPTER 2; Purpose of Subsurface Exploration, Planning for Subsurface Exploration, Methods of Soil Exploration, Soil Samples, Causes of Disturbance, Soil Samplers, Number of Borings, Depth of Borings,
Week 3	Chapter 1; Foundations: Their Importance and Purpose, Foundation Classification, Requirements of Foundations Chapter 2; Soil Exploration; CHAPTER 2; Purpose of Subsurface Exploration, Planning for Subsurface Exploration, Methods of Soil Exploration, Soil Samples, Causes of Disturbance, Soil Samplers, Number of Borings, Depth of Borings,
Week 4	In-Situ (Field) Tests, Standard Penetration Test - ASTM-D1586, Cone Penetration Test (CPT) - ASTM-D5778, Vane Shear Test (VST) - ASTM D 2573M, Plate Loading Test (PLT) - ASTM-D1194, Soil Exploration Report Chapter 3; Bearing Capacity of Shallow Foundations; Introduction, Bearing Capacity, Modes of Soil Failure, Terzaghi's Bearing Capacity Equation, Factor of Safety, Effect of Water Table on B.C., Meyerhof's Bearing Capacity Equation,
Week 5	In-Situ (Field) Tests, Standard Penetration Test - ASTM-D1586, Cone Penetration Test (CPT) - ASTM-D5778, Vane Shear Test (VST) - ASTM D 2573M, Plate Loading Test (PLT) - ASTM-D1194, Soil Exploration Report Chapter 3; Bearing Capacity of Shallow Foundations; Introduction, Bearing Capacity, Modes of Soil Failure, Terzaghi's Bearing Capacity Equation, Factor of Safety, Effect of Water Table on B.C., Meyerhof's Bearing Capacity Equation,
Week 6	General (Hansen's) Bearing Capacity Equation, Skempton's Method [$\phi = 0$], Footings with Eccentric Loadings, Footing on Layered Soils, Bearing Capacity of Footings Adjacent to a Slope, Bearing Capacity from Field Tests

Week 7	General (Hansen's) Bearing Capacity Equation, Skempton's Method [$\phi = 0$], Footings with Eccentric Loadings, Footing on Layered Soils, Bearing Capacity of Footings Adjacent to a Slope, Bearing Capacity from Field Tests
Week 8	Chapter 4; Foundation Settlement; Introduction, Contact Pressure, Stresses in a Soil Mass,
Week 9	Consolidation Settlement, Secondary Settlement, Allowable Settlement
Week 10	Chapter 5; Spread Footing Design; Ultimate Strength Design Method (USD) (ACI: 318 - 19), Design of R.C. Spread Footings, Design of Plain Concrete Spread Footings,
Week 11	Chapter 5; Spread Footing Design; Ultimate Strength Design Method (USD) (ACI: 318 - 19), Design of R.C. Spread Footings, Design of Plain Concrete Spread Footings,
Week 12	Rectangular Footings, Eccentrically Loaded Spread Footings Chapter 6; Combined Footing Design; Introduction, Rectangular Combined Footing,
Week 13	Rectangular Footings, Eccentrically Loaded Spread Footings Chapter 6; Combined Footing Design; Introduction, Rectangular Combined Footing,
Week 14	Trapezoidal Combined Footing, Strap (or Cantilever) Footing Chapter 7; Mat Foundation Design; Introduction, Types of Mat Foundations, Bearing Capacity of Mat Foundations, Mat Settlements, Design of Mat Foundations
Week 15	Trapezoidal Combined Footing, Strap (or Cantilever) Footing Chapter 7; Mat Foundation Design; Introduction, Types of Mat Foundations, Bearing Capacity of Mat Foundations, Mat Settlements, Design of Mat Foundations
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

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

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Foundation Analysis and Design By; Joseph E. Bowles	Yes
Recommended Texts	Principles of Foundation Engineering – Ninth Edition By; Braja M. Das and Nagaratnam Sivakugan	No
Websites		

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 (فقد 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.