وزارة التعليم العالي والبحث العلمي
جهاز الاشراف والتقويم العلمي
دائرة ضمان الجودة والاعتماد الأكاديمي
قسم الاعتماد

وصف البرنامج الأكاديمي والمقرر الدراسي 2026-2025

اعداد
وحدة ضمان الجودة
كلية الهندسة-قسم الهندسة المدنية

وزارة التعليم العالي والبحث العلمي

جهاز الاشراف والتقويم العلمي

دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للكليات والمعاهد للعام الدراسي 2025-2026

الجامعة: شط العرب

الكلية/المعهد: كلية الهندسة

القسم العلمي: الهندسة المدنية

تاريخ ملء الملف: 2025/9/1

التوقيع

اسم رئيس القسم: م. نبيل نجم عبد الله

التاريخ:

التوقيع

اسم المعاون العلمي: د. جواد كاظم

التاريخ:

دقق الملف من قبل

شعبة ضمان الجودة والاداء الجامعي

اسم مدير شعبة ضمان الجودة والاداء الجامعي: د. جاسم محسن ياسر

التاريخ:

التوقيع

الدكتور
جاسم محسن ياسر
Dr.Jasim Al-Battat

جامعة شط العرب
كلية الهندسة
العمادة
SHATT AL-ARAB UNIVERSITY

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

مصادقة السيد العميد

نموذج وصف البرنامج الاكاديمي

وصف البرنامج الاكاديمي

يوفر وصف البرنامج الاكاديمي هذا إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ولابد من الربط بينها وبين وصف البرنامج.

1. المؤسسة التعليمية	جامعة شط العرب
2. القسم العلمي / المركز	كلية الهندسة
3. اسم البرنامج الاكاديمي	قسم الهندسة المدنية
4. الشهادة النهائية	بكالوريوس
5. النظام الدراسي	المرحلة الأولى والثانية والثالثة نظام بولونيا المرحلة الرابعة نظام فصلي
6. برنامج الاعتماد المعتمد	لم يتم تخرج دفعة لحد الان
7. المؤثرات الخارجية الاخرى	لايوجد
8. تاريخ إعداد الوصف	**2025/9/1**
9. أهداف البرنامج الاكاديمي	
يهدف هذا البرنامج ضمن برنامج الهندسة المدنية إلى تحقيق الآتي: 1. التأهيل المعرفي: تزويد الطلبة بالخلفية العلمية والنظرية الحاكمة لتصميم وتحليل وتنفيذ مشاريع البنى التحتية والإنشائية. 2. الربط التطبيقي: تمكين الطالب من ربط المفاهيم الرياضية والفيزيائية والجيولوجية بالحلول الهندسية المباشرة في المواقع الإنشائية. 3. التأهيل المهني: إكساب الطلبة مهارات التعامل مع محددات التصميم والأكواد الهندسية وحل مشكلات التنفيذ وفحص المواد بكفاءة.	

10. مخرجات البرنامج المطلوبة وطرائق التعليم والتعلم والتقييم

أ– الأهداف المعرفية:

أ1- يستذكر ويشرح النظريات، والمبادئ، والمعادلات الأساسية الحاكمة لتصرف المواد والمنشآت المدنية.

أ2- يحدد ويصنف المتغيرات والمعايير الجيوتقنية والإنشائية ذات العلاقة بالمشكلات التخصصية في الهندسة المدنية.

أ3- يفسر الآليات الفيزيائية والميكانيكية التي تحكم سلوك المواد الهندسية (كالخرسانة، الحديد، التربة، والمياه).

أ4- يستوعب الأكواد والمدونات والمواصفات القياسية (مثل مدونة البناء العراقية، الكود الأمريكي ACI, ASTM) المرتبطة بالتخصص.

ب – الأهداف المهاراتية الخاصة بالمقرر:

ب 1- يمتلك القدرة على نمذجة وصياغة وتحليل العناصر الإنشائية والأنظمة المدنية بأسلوب علمي ومنهجي رصين.

ب 2- يحلل البيانات الهندسية ويجري الحسابات الرياضية أو الاختبارات المختبرية للمواد بدقة وحسب المواصفات.

ب 3- يوظف البرمجيات والأدوات التقنية الحديثة المستخدمة في الممارسات المدنية (مثل AutoCAD,STAAD Pro, ETABS) لحل المعضلات التصميمية.

ج- الأهداف الوجدانية:

ج1- يطور التفكير النقدي الهندسي والقدرة على اتخاذ القرارات الميدانية المستندة إلى أسس الأمان المستدام والكلفة الاقتصادية.

ج2- يلتزم بأخلاقيات مهنة الهندسة المدنية والنزاهة الأكاديمية والمهنية (منع الاستلال، وتحري الأمانة في الفحوصات المختبرية).

ج3- يثبت القدرة على العمل بروح الفريق ضمن مجموعات عمل هندسية متعددة التخصصات (إدارة مشاريع، تنفيذ، إشراف).

د - المهارات العامة والتأهيلية المنقولة (المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي):

د1- يدير الوقت والموارد في المكتب والموقع بفعالية ويلتزم بتسليم المهام والتقارير الفنية في المواعيد المقررة.

د2- يتواصل هندسيًا بكفاءة عالية (شفهيًا وكتابيًا) من خلال صياغة التقارير الفنية، جداول الكميات، والمخططات التنفيذية.

د3- يمتلك مهارة التعلم الذاتي والمستمر لمواكبة التطورات المتسارعة في مواد البناء الذكية وتقنيات التشييد الحديثة.

طرائق التعليم والتعلم:

1- المحاضرات النظرية: عرض المفاهيم والمبادئ والنظريات الأساسية في الهندسة المدنية، مع توظيف أساليب العصف الذهني والمناقشة العلمية والحوار التفاعلي، وربط المفاهيم النظرية بالتطبيقات الهندسية في مشاريع الأبنية والمنشآت والبنى التحتية.

2- جلسات التمارين والمختبرات: تنفيذ التمارين والحسابات الهندسية وإجراء التجارب والفحوصات المختبرية المتعلقة بمواد البناء، والخرسانة، والحديد، والتربة، والركام، والمياه، وتحليل النتائج وتفسيرها وفق المواصفات والمعايير الهندسية المعتمدة.

3- التعلم القائم على المشاريع: تكليف الطلبة بإعداد مشاريع تطبيقية مصغرة تحاكي المشكلات والعمليات الواقعية في الهندسة المدنية، مثل التحليل والتصميم الإنشائي، وتصميم الطرق، وتحليل التربة والأساسات، وشبكات المياه والصرف الصحي، وإعداد جداول الكميات.

4- التعلم باستخدام البرمجيات الهندسية: تدريب الطلبة على استخدام البرمجيات المتخصصة في الهندسة المدنية لتحليل وتصميم المنشآت، وإعداد المخططات والنماذج الهندسية، وتحليل البيانات، مثل AutoCAD وETABS وSTAAD.Pro وCivil 3D، مع تنمية القدرة على تفسير النتائج واتخاذ القرارات الهندسية المناسبة.

5- دراسة الحالات التطبيقية: تحليل ودراسة مشكلات وحالات واقعية من مشاريع الأبنية والطرق والجسور والمنشآت والبنى التحتية، وربط المعرفة النظرية بالتطبيقات العملية وتنمية مهارات التفكير الهندسي وحل المشكلات.

6- التعلم التعاوني والعمل الجماعي: تنظيم الطلبة ضمن مجموعات عمل لتنفيذ المشاريع والتمارين التطبيقية، بما يعزز مهارات التواصل الهندسي والعمل الجماعي وتحمل المسؤولية المهنية.

7- الزيارات العلمية والتدريب الميداني: الاستفادة من الزيارات العلمية والتدريب العملي في مواقع المشاريع الإنشائية ومشاريع البنى التحتية والمختبرات الهندسية، لتعريف الطلبة ببيئة العمل الحقيقية وربط الجانب الأكاديمي بالممارسات المهنية.

8- تدريب الطلبة على تبني وتطبيق تكنولوجيا نمذجة معلومات البناء (BIM) والتوائم الرقمية في إدارة وتصميم المشاريع، مما يسهم في تعزيز قدراتهم على التنسيق بين الاختصاصات المختلفة (إنشائي، معماري، صحي، كهربائي)، وتقليل التعارضات أثناء التنفيذ، ومحاكاة دورة حياة المنشأ كاملة.

9- تطوير المهارات القيادية والإدارية للطلبة من خلال تعليمهم كيفية إعداد المخططات الزمنية للمشاريع)باستخدام Primavera أو(MS Project ، وحساب الكلف والجدوى الاقتصادية، وفهم العقود الهندسية) مثل عقود الفيدك(FIDIC ، وتطبيق تشريعات وقوانين البناء المحلية والدولية.

10- ترسيخ ثقافة السلامة في المواقع الإنشائية، من خلال تدريس معايير الصحة والسلامة المهنية، وتحليل المخاطر المحتملة أثناء تنفيذ المشاريع ووضع خطط الطوارئ والوقاية، لضمان حماية الكوادر البشرية والمعدات في بيئة العمل الحقيقية.

طرائق التقييم:

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	الاختبارات	2	10% (10)		
	المهام	2	10% (10)		
	المشاريع/المختبر	1	10% (10)		
	التقرير	1	10% (10)		
Summative assessment	امتحان منتصف الفصل الدراسي	2hr	10% (10)		
	الامتحان النهائي	2hr	50% (50)		
Total assessment			100% (100 Marks)		

طرائق التقييم:

- التفاعل والمشاركة العلمية داخل المحاضرات.
- الواجبات البيتية والمهام الهندسية.
- التقارير الفنية والمختبرية.
- الاختبارات القصيرة .(Quizzes)
- المشاريع والتطبيقات العملية.
- الامتحانات الفصلية والنهائية.
- تقييم قدرة الطالب على تحليل المشكلات النفطية والغازية وتفسير النتائج الهندسية.

11. بنية البرنامج:

المرحلة الاولى

الرمز	المادة	الكورس	الوحدات	النوع	المرحلة	عدد الساعات الأسبوعي		المجموع (SSWL(hr/sem	المجموع (USSWL(hr/sem	ساعات الامتحان النهائي	متطلبات الاعتمادية البرامجية
						نظري	عملي				
E122-1	الرياضيات 1	الأول	5	Basic	1	5	0	70	53	2	ABET
CE131-1	الميكانيك الهندسي 1	الأول	6	Core	1	6	0	84	64	2	
CE126	علم مواد البناء	الأول	6	Core	1	3	3	84	64	2	
E115	الكيمياء	الأول	3	Basic	1	1	2	42	31	2	ABET
U111-1	اللغة الانكليزية I	الأول	2	Support	1	2	0	28	20	2	
E126	الديمقراطية وحقوق الانسان	الأول	2	Basic	1	2	0	28	20	2	
CE116	علم الأرض	الأول	6	Basic	1	3	3	84	64	2	
المجموع			30			22	8	#REF!	#REF!	14	
E122-2	الرياضيات 2	الثاني	5	Basic	1	5	0	70	53	2	ABET
CE131-2	الميكانيك الهندسي 2	الثاني	6	Core	1	6	0	84	64	2	
CE118	الرسم الهندسي	الثاني	8	Core	1	8	0	112	86	2	
E125	علم الحاسوب I	الثاني	3	Basic	1	1	2	42	31	2	
E116	الورش الهندسية	الثاني	3	Support	1	1	2	42	31	2	
E128	الفيزياء	الثاني	3	Basic	1	1	2	42	31	2	ABET
U121	اللغة العربية I	الثاني	2	Support	1	2	0	28	20	2	
المجموع			30			24	6	420	316	14	16

المرحلة الثانية

الرمز	المادة	الكورس	الوحدات	النوع	المرحلة	عدد الساعات الأسبوعي		المجموع (SSWL(hr/sem	المجموع (USSWL(hr/sem	ساعات الامتحان النهائي	متطلبات الاعتمادية البرامجية
						حضوري	عملي				
E212-1	الرياضيات التطبيقية	الأول	7	Basic	2	6	0	84	89	2	ABET
CE214-1	ميكانيك الموائع I	الأول	5	Core	2	3	2	70	53	2	
CE213-1	مقاومة المواد I	الأول	5	Core	2	5	0	70	53	2	
CE228	انشاء المباني	الأول	3	Core	2	2	0	28	45	2	
CE217	علم الحاسوب II	الأول	3	Basic	2	1	2	42	31	2	
CE215-1	المساحة الهندسية I	الأول	5	Core	2	3	2	70	53	2	
U221	اللغة العربية II	الأول	2	Support	2	2	0	28	20	2	
المجموع			30			22	6	364	324	12	
CE214-2	ميكانيك الموائع II	الثاني	5	Core	2	3	2	70	53	2	
CE213-2	مقاومة المواد II	الثاني	5	Core	2	5	0	70	53	2	
CE215-2	المساحة الهندسية II	الثاني	5	Core	2	3	2	70	53	2	
CE227	الإحصاء	الثاني	4	Basic	2	2	0	28	70	2	
CE216	تكنلوجيا الخرسانة	الثاني	7	Core	2	3	4	98	75	2	
U212	جرائم حزب البعث	الثاني	2	Support	2	2	0	28	20	2	
U211-2	اللغة الإنكليزية II	الثاني	2	Support	2	2	0	28	2	30	
المجموع			30			20	8	364	324	12	7

المرحلة الثالثة

الرمز	المادة	الكورس	الوحدات	النوع	المرحلة	عدد الساعات الأسبوعي		المجموع (SSWL(hr/sem	المجموع (USSWL(hr/sem	ساعات الامتحان النهائي	متطلبات الاعتمادية البرامجية
						نظري	عملي				
CE311-1	التحليلات الهندسية	الأول	5	Core	3	5	0	70	53	2	ABET
CE312-1	نظرية الانشاءات I	الأول	6	Core	3	6	0	84	64	2	
CE314-1	تصاميم الخرسانة المسلحة I	الأول	6	Core	3	6	0	84	64	2	
CE313-1	ميكانيك التربة I	الأول	5	Core	3	3	2	70	53	2	
CE315-1	هندسة الري	الأول	4	Core	3	4	0	56	42	2	
CE316	إدارة مشاريع	الأول	4	Core	3	4	0	56	42	2	
المجموع			30			28	2	420	318	12	
CE311-2	التحليل العددي والتطبيقات الهندسية	الثاني	5	Core	3	2	3	70	53	2	ABET
CE312-2	نظرية الانشاءات II	الثاني	6	Core	3	6	0	84	64	2	
CE314-2	تصاميم الخرسانة المسلحة II	الثاني	6	Core	3	6	0	84	64	2	
CE313-2	ميكانيك التربة II	الثاني	5	Core	3	3	2	70	53	2	
CE317	هندسة المرور والمواصلات	الثاني	4	Core	3	2	2	56	42	2	
CE315-2	هندسة البز ل	الثاني	4	Core	3	4	0	56	42	2	
المجموع			30			23	7	420	318	12	10

المرحلة الرابعة

الرمز	المادة	الكورس	الوحدات	النوع	المرحلة	عدد الساعات الأسبوعي		المجموع (SSWL(hr/sem	المجموع (USSWL(hr/sem	ساعات الامتحان النهائي	متطلبات الاعتمادية البرامجية
						نظري	عملي				
CE411	تصاميم خرسانية	الأول	6	Core	4	6	0	84	64	2	
CE412-1	هندسة الاسس I	الأول	6	Core	4	6	0	84	64	2	
CE416-1	امدادات المياه	الأول	5	Core	4	3	2	70	53	2	
CE417	طرق الانشاء والتخمين	الأول	5	Core	4	5	0	70	53	2	
CE418	الهيدرولوجيا الهندسية	الأول	4	Core	4	4	0	56	42	2	
CE413-1	تصاميم الحديد I	الأول	4	Core	4	4	0	56	42	2	
المجموع			30			28	2	420	318	12	
CE412-2	هندسة الاسس II	الثاني	6	Core	4	6	0	84	64	2	
CE414	منشآت هيدروليكية	الثاني	5	Core	4	5	0	70	53	2	
CE416-2	هندسة الصرف الصحي	الثاني	5	Core	4	3	2	70	53	2	
CE415	هندسة الطرق	الثاني	6	Core	4	4	2	84	64	2	
CE420	المشروع الهندسي و اخلاقيات هندسية	الثاني	4	Core	4	4	0	56	42	2	
CE413-2	تصاميم الحديد II	الثاني	4	Core	4	4	0	56	42	2	
المجموع			30			26	4	420	318	12	

12. تخطيط التطوير الشخصي:

1-التعليم الالكتروني- .

2-استخدام وسائل الشبكة العنكبوتية والانترنيت- .

3-استخدام وسائل الاتصال الحديثة.

13.معيار القبول (وضع الأنظمة المتعلقة بالالتحاق بالكلية أو المعهد) :

1القبول المركزي.

2-معدل الطالب ضمن قوائم القبول المركزي حيث يتم قبولهم حسب (الرغبة) لتوزيعهم على الأقسام.

14. اهم مصادر المعلومات عن البرنامج:

موقع جامعة شط العرب https://www.sa-uc.edu.iq

15. خطة تطوير المقرر الدراسي:

- المواءمة مع سوق العمل: مراجعة محتوى المحاضرات والتمارين دورياً لربطها بمتطلبات الشركات الإنشائية ومشاريع البنى التحتية القائمة في العراق.
- التحول الرقمي: تكثيف إدخال برمجيات النمذجة وبرامج التحليل الإنشائي والجيوتقني لتقليل الاعتماد على الحلول اليدوية التقليدية فقط.
- تطوير البيئة المختبرية: تحديث تقارير الفحوصات المختبرية لتعكس المواصفات القياسية العراقية والأمريكية المحدثة، واستخدام التغذية الراجعة من استبيانات الطلبة لتطوير أداء التدريس.

مخطط مهارات المنهج للعام الدراسي 2025-2026

وضع اشارة في المربعات المقابلة لمخرجات التعلم الفردية من البرامج الخاضعة للتقييم

مخرجات التعلم المطلوبة من البرامج

المرحلة الدراسية	اسم المقرر	نوع المقرر	الأهداف المعرفية				الأهداف المهاراتية الخاصة بالبرنامج			الأهداف الوجدانية والقيمية			المهارات العامة والتأهيلية المنقولة (أو المهارات الأخرى المتعلقة بقابلية التوظيف والتطور الشخصي		
			أ1	أ2	أ3	أ4	ب1	ب2	ب3	ج1	ج2	ج3	د1	د2	د3
الاولى	الرياضيات 1	Basic	√	√	√			√	√	√	√			√	√
	الميكانيك الهندسي 1	Core	√		√	√	√	√			√	√	√	√	√
	علم مواد البناء	Core			√	√	√	√	√	√	√				√
	الكيمياء	Basic	√			√	√	√	√		√	√	√	√	√
	اللغة الانكليزية I	Support	√	√	√			√	√	√	√			√	√
	الديمقراطية وحقوق الانسان	Basic	√	√	√	√			√	√	√	√	√	√	√
	علم الأرض	Basic	√	√	√	√	√	√			√	√	√	√	√
	الرياضيات 2	Basic	√	√			√	√	√	√	√			√	√
	الميكانيك الهندسي 2	Core	√	√			√	√	√	√			√	√	√
	الرسم الهندسي	Core	√	√	√	√	√			√	√	√	√	√	√
	علم الحاسوب I	Basic	√	√	√	√	√			√	√	√	√	√	√
	الورش الهندسية	Support	√			√	√	√			√	√	√		
	الفيزياء	Basic	√	√	√			√	√	√	√	√	√	√	√
	اللغة العربية I	Support	√			√	√	√	√			√	√		√
	الرياضيات التطبيقية	Basic			√	√	√	√	√			√	√	√	√

الثانية	ميكانيك الموائع I	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	مقاومة المواد I	Core			√	√	√	√	√	√	√	√	√	√	√	√
	انشاء المباني	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	علم الحاسوب II	Basic	√			√	√	√	√	√	√	√	√	√	√	√
	المساحة الهندسية I	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	اللغة العربية II	Support	√	√			√	√	√	√	√	√	√	√	√	√
	ميكانيك الموائع II	Core	√	√	√		√	√	√	√	√	√	√	√	√	√
	مقاومة المواد II	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	المساحة الهندسية II	Core			√	√	√	√	√	√	√	√	√	√	√	√
	الإحصاء	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	تكنلوجيا الخرسانة	Core	√	√		√	√	√	√	√	√	√	√	√	√	
	جرائم حزب البعث	Support		√	√	√	√	√	√	√	√	√	√	√	√	√
	اللغة الإنكليزية II	Support	√		√	√	√	√	√	√	√	√	√	√	√	√
الثالثة	التحليلات الهندسية	Core	√	√			√	√	√	√	√	√	√	√	√	√
	نظرية الانشاءات I	Core	√	√	√	√	√	√	√			√	√	√	√	√
	تصاميم الخرسانة المسلحة I	Core			√	√	√	√	√	√	√	√	√	√	√	√
	ميكانيك التربة I	Core	√			√	√	√	√	√	√	√	√	√	√	√
	هندسة الري	Core	√		√	√	√	√	√			√	√	√		√
	إدارة مشاريع	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	التحليل العددي والتطبيقات الهندسية	Core	√			√	√	√	√	√	√	√	√	√	√	√
	نظرية الانشاءات II	Core	√	√			√	√	√	√	√	√	√	√	√	√
	تصاميم الخرسانة المسلحة II	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	ميكانيك التربة II	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	هندسة المرور والمواصلات	Core				√	√	√	√	√	√	√	√	√		
	هندسة البز ل	Core	√		√	√	√	√	√	√	√	√	√	√	√	√
الرابعة	تصاميم خرسانية	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	هندسة الاسس I	Core	√	√		√	√	√	√	√	√	√	√	√	√	√
	امدادات المياه	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	طرق الانشاء والتخمين	Core	√	√		√	√	√	√	√	√	√	√	√	√	√
	الهيدرولوجيا الهندسية	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	تصاميم الحديد I	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	هندسة الاسس II	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	منشآت هيدروليكية	Core	√		√	√	√	√	√	√	√	√	√	√	√	√
	هندسة الصرف الصحي	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	هندسة الطرق	Core	√	√	√	√	√	√	√	√	√	√	√	√	√	√

	المشروع الهندسي و اخلاقيات هندسية	Core	√	√	√			√	√	√		√	√	√	√	√	√	√	√
	تصاميم الحديد II	Core	√	√		√	√		√	√		√	√		√	√	√		√

نماذج وصف المقرر الدراسي-المرحلة الأولى-قسم الهندسة المدنية

Module Information
معلومات المادة الدراسية

Module Title	**Computer Science**			**Module Delivery**	
Module Type	**Basic**			☐ **Theory** ✓ ☐ **Lecture** ✓ ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ✓ ☐ **Seminar**	
Module Code	**E125**				
ECTS Credits	6				
SWL (hr/sem)	75				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	None		**e-mail**	None	
Scientific Committee Approval Date	01/09/2025		**Version Number**	1.0	

Relation with other Module
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	• To knowledge of the most important components and basics of a computer • To understand algorithms and flowcharts • To learn how to use computer software (Word, Excel, and Power point)
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Knowledge of computer basics • Building an integrated algorithm for any program • Draw a flowchart for any program • Using Word and creating a Word file • Drawing charts using Excel • Perform all calculations and obtain results using Excel • Preparing a presentation using PowerPoint

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
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**	2	10% (10)	5,10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2,12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	**1**	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	**2 hr**	10% (10)	7	LO # 1-7
	Final Exam	**2hr**	50% (50)	16	All
Total assessment			100% (100 Marks		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Introduction to computer**
Week 2	Computer programming language
Week 3	Flowcharts
Week 4	Algorithms
Week 5	Introduction to Microsoft word
Week 6	Word Tutorial
Week 7	Word Tutorial
Week 8	Introduction to Microsoft excel
Week 9	Find solutions for various mathematical operations
Week 10	How to insert different functions using Excel
Week 11	Draw charts using Excel
Week 12	Introduction to power point
Week 13	prepare a presentation using Power point
Week 14	Seminar

Week 15	Seminar
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Learning about computer parts and important tasks in Windows
Week 2	Learning the basics of the Word software by controlling the type, size and color of the font and other setting
Week 3	Learning how to insert an image, chart, text, etc
Week 4	Learning the basics of the Excel and how to find the solutions for different equations
Week 5	Learn drawing different charts
Week 6	Learning the basics for power point
Week 7	Learning how to prepare a presentation using Power point

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Microsoft Word 2016 Step by Step An introduction to EXCEL for civil Engineers Microsoft Power Point 2016 Step by Step	No
Recommended Texts		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(قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Module Information
معلومات المادة الدراسية

Module Title	**Human rights and democracy**	**Module Delivery**	
Module Type	**Supportive**	✔ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**E126**		
ECTS Credits	**4**		
SWL (hr/sem)	**60**		

Module Level	1	**Semester of Delivery**	1
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	1- Introducing students to the basic principles of human rights and clarifying those rights according to various sources. 2- Addressing the basic concepts of democracy and its historical development.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Educating the student on the principles and laws related to the subject of human rights. 2 -Teaching students the foundations upon which human rights and the democratic system are built. 3- Developing the necessary skills to deal with the democratic system. 4- The student acquainted with the constitutional rights in the Iraqi Law
Indicative Contents المحتويات الارشادية	Universal Declaration of Human Rights

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Teaching and learning strategies of Human rights and democracy of whole class, group of five students and individual activities and jobs to examine abilities, skills and learning. • Learn about most of the ideas and theories related to the systems of political governance and the way of looking at the issue of human rights and democratic behavior • How to preserve the right of opposition constitutionally. • Preserving the rights of minorities in society • Manage discussions on topics related to the curriculum • method of democratic dialogue Respect the different opinions on the chosen topics.

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	4,14	LO #1-3, 8-12
	Assignments	2	20% (20)	8,15	LO # 5-6, 13-14
	Report	1	10% (10)	12	LO # 1-8
Summative assessment	**Midterm Exam**	2 hr	10% (10)	10	LO # 1-8
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	The historical development of human rights throughout history
Week 2	Human rights in the Christian and Jewish religions
Week 3	Human rights in Islam
Week 4	Women's rights in ancient civilizations and Islam
Week 5	Universal Declaration of Human Rights
Week 6	National Human Rights Resources
Week 7	Human rights in the constitution of the Republic of Iraq for the year 2005
Week 8	Human rights and citizenship
Week 9	Definition of democracy - historical development - characteristics - types of authorities - Islam and Democracy
Week 10	Defining freedom linguistically and idiomatically - Sources of freedom - Freedom in the West - Individual and public freedom in Islam - Economic, labor and intellectual freedom
Week 11	Political and civil rights in the democratic system
Week 12	characteristics of the democratic system
Week 13	Democratic guarantees - types of guarantees - constitutional guarantees - judicial guarantees - political guarantees - combating organized corruption
Week 14	Elections systems
Week 15	Types of democratic systems
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Human rights, children and democracy for the Ministry of Education Human rights and children and democracy for the Ministry of Higher Education and Scientific Research - University of Tikrit	Yes
Recommended Texts	**Curriculum lectures**	No
Websites		

Module Information معلومات المادة الدراسية					
Module Title	**Engineering workshop**			**Module Delivery**	
Module Type	**Supported**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** √ **Practical** ☐ **Seminar**	
Module Code	**E116**				
ECTS Credits	**4**				
SWL (hr/sem)	**60**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/09/2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	• Educating and training students in workshops on practical activities related to the field application at the workplace.

	• Conveying the fundamental principles of using machinery and equipment in engineering workshops and teaching them to students.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Teaching students the fundamental principles of using machinery and equipment in engineering workshops and how to operate them safely. • Educating and training students on the practical aspects of various types of engineering workshops. • Developing the necessary skills to handle tools, instruments, and machinery in engineering workshops, along with preparing reports on the usage and benefits of this equipment.
Indicative Contents المحتويات الارشادية	
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
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)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	**2 hr**	10% (10)		
	Final Exam	**2hr**	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**ورشة النجارة**(Carpentry Workshop)
Week 2	**ورشة النجارة**(Carpentry Workshop)
Week 3	**ورشة النجارة**(Carpentry Workshop)
Week 4	**ورشة اللحام**(Welding Workshop)
Week 5	**ورشة اللحام**(Welding Workshop)
Week 6	**ورشة الخراطة**(Turning / Lathe Workshop)
Week 7	**ورشة الخراطة**(Turning / Lathe Workshop)
Week 8	**ورشة البرادة**(Filing / Benchwork Workshop)
Week 9	**ورشة البرادة**(Filing / Benchwork Workshop)
Week 10	**ورشة السباكة**(Foundry / Plumbing Workshop)
Week 11	**ورشة السباكة**(Foundry / Plumbing Workshop)
Week 12	**ورشة الفرينة / الفريزة**(Milling Workshop)
Week 13	**ورشة الفرينة / الفريزة**(Milling Workshop)
Week 14	ورشة اللحام (Welding Workshop)
Week 15	ورشة اللحام (Welding Workshop)
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Engineering Workshop	Yes
Recommended Texts		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)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.

Module Information
معلومات المادة الدراسية

Module Title	**Arabic**	**Module Delivery**	
Module Type	**Supported**	☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**216 AL**		
ECTS Credits	**2**		
SWL (hr/sem)	**30**		

Module Level	1	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Ali Saad	**e-mail**	
Module Leader's Acad. Title	Ass. Lecture	**Module Leader's Qualification**	MSc
Module Tutor		**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	1- Educating students about the nature of linguistics and assisting them in correct expression. 2- Regulating language styles and uncovering its secrets. 3- Equipping students with linguistic abilities that enable them to correct their

	speech while reading. 4- Developing students' linguistic, grammatical, and spelling skills. 5- Understanding sentence structures and their different styles. 6- Correcting mistakes arising from linguistic errors in pronunciation or writing. 7- Introducing punctuation marks and how to use them.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Establish a solid foundation in knowledge and linguistic thought for students in scientific disciplines, both human and scientific. 2- Maintain the integrity of the Arabic language. 3- Evaluate the language of researchers in preparing master's theses and doctoral dissertations, as well as the language of book authorship in accordance with the correct rules of the Arabic language.
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Conduct linguistic research that serves the language of the Holy Quran and legal arguments as a living means of expressing ideas. 2- Train the mind in scientific analysis, which is part of the levels of thinking. 3- Use multiple teaching methods to equip students with the ability to grasp the curriculum. 4- Develop the student's ability to choose topics that address contemporary intellectual problems.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
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**	2	10% (10)		
	Assignments	8	20% (20)		
	Seminar	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	The Arabic language and its position in global linguistics
Week 2	Speech and its components Categories of speech
Week 3	Noun - Signs of the noun
Week 4	Verb - Signs of the verb
Week 5	Part - Signs of the part
Week 6	Spelling and writing rules: Origins and development
Week 7	Spelling rules and written expression: Origin and development
Week 8	Rules for controlling the initial hamzah: 1- The hamzah of connection.
Week 9	2- Hamzat al-Qat' 3- Hamzat al-Estifham
Week 10	Rules for controlling the medial hamza
Week 11	Rules for controlling the extreme
Week 12	Rules for controlling the letter 'Alif'
Week 13	Punctuation Marks - History - Origin and Development
Week 14	Modern punctuation marks
Week 15	Review
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Lectures and handouts	No
Recommended Texts	Books on linguistics, grammar, and orthographic conventions	Yes
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)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.

Module Information
معلومات المادة الدراسية

Module Title	**Engineering Drawings**	**Module Delivery**	
Module Type	**Core**	**Theory** **Lecture** ☐ **Lab** ☐ **Tutorial** ✓ **Practical** ☐ **Seminar**	
Module Code	**E118**		
ECTS Credits	8		
SWL (hr/sem)	120		

Module Level	1	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	.
Module Tutor		**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	1. To enable the students to identify the tools/instrument needed. 2. To familiarize the student, with the proper techniques, manipulation, uses, and care of the drawing instruments. 3. To introduce the students to a specific language of engineers which is a graphical language. 4. To help and guide the students to learn how technical drawings can be drawn in different methods. 5. To acquire some different skills such as the ability to read and prepare engineering drawings, the ability to make free-hand sketching of objects, the power to imagine, analyze, and communicate, and the capacity to understand other subjects. 6. To acquire adequate skills in measuring/scaling dimension accurately, and the method of placing dimensions. 7. To acquire basic analysis skills in orthographic/section/isometric drawing 8. To know the proper drawing conventions/symbols to describe the engineering drawings.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Get information about the important tools for engineering drawing. This will give student basic knowledge of technical drawings professions and means of communications to others. 2. Knowing the types of lines and their applications in technical drawings. 3. Learning the steps to construct different geometric figures like lines, arcs, polygon, ellipse etc. which is essential for engineer. 4. Comprehend general projection theory, with emphasis on orthographic projection to represent three-dimensional objects in two-dimensional views. 5. Develop student's imagination and ability to represent the shape size and specifications of physical objects. 6. Learning how to draw sectional views. 7. Knowing how to place dimensions on engineering drawings. 8. Equipped with the skill that enables the students to convert orthographic projection into isometric projection.
Indicative Contents المحتويات الارشادية	Introduction to Engineering Drawing, Drawing Tools, Pencils, Drawing Sheets, Title Block of a Sheet, Types of Lines and their Uses. (10 hrs) Exercises in the Use of Instruments: Straight lines (Solid, Dashed and Center Lines), Circles and Tangents. (10 hrs) Graphic Geometry: Bisections, Parallels, Divisions, Angles, Geometric Shapes Tangents (Straight and Curved Lines), Ellipse. (30 hrs) Orthographic Projection: Theory, Orthographic Views, Representation of

	Lines, Hidden Features, Center Lines. Precedence of Lines, Exercises in Projection. (30 hrs) Sectional Views: Definition, Classification, Full and Half Sections, Exercises in Sectional Views. (20 hrs) Dimensioning Practices: Introduction, Terminology and Conventions, Exercises in Dimensioning. (10 hrs) Introduction to Types of Pictorial Drawing: Pictorial Methods Classified, Isometric. (10 hrs) Isometric Drawing: Perspective Drawing, Sketching, Layout of Circles, Exercises in Isometric Drawings. (30 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, lectures and by considering a variety of assignments that are interesting to the students.

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	7.7
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)	5,10	1,2,3,4,5,6
	Assignments	12	15% (15)	2,3,4,5,6,7, 9,10,11,12,13 ,14	1,2,3,4,5,6,7,8
	Projects / Lab.	15	15% (15)	1,2,3,4,5,6,7, 8,9,10,11,12, 13,14,15	1,2,3,4,5,6,7,8
	Report				
Summative assessment	Midterm Exam	2 hr	10% (10)	8	1,2,3,4,5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to engineering drawing and graphic instruments and their uses
Week 2	Exercises in the use of instruments
Week 3	Graphic geometry I
Week 4	Graphic geometry II
Week 5	Graphic geometry III
Week 6	Orthographic Projection I
Week 7	Orthographic Projection II
Week 8	Orthographic Projection III
Week 9	Sectional Views I
Week 10	Sectional Views II
Week 11	Dimensioning Practices (introduction, terminology and conventions)
Week 12	Introduction to types of Pictorial Drawing
Week 13	Isometric Drawing I
Week 14	Isometric Drawing II
Week 15	Isometric Drawing III
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	الرسم الهندس المؤلف: عبدالرسول الخفاف بغداد – 1990	Yes
Recommended Texts	The Fundamentals of Engineering Drawing & Graphic Technology, Fifth Edition Thomas E. French & Charles J. Vierck	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)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.

Module Information
معلومات المادة الدراسية

Module Title	**Engineering Mechanics 1**	**Module Delivery**	
Module Type	**Core**	✓**Theory** ✓**Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE113**		
ECTS Credits	**8**		
SWL (hr/sem)	**180**		

Module Level	1	**Semester of Delivery**	1,2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	The study of Engineering Mechanics aims to enable students to understand the basic principles of force analysis and equilibrium, and apply them in the analysis and design of bridges and buildings to ensure safety and sustainability. The course also teaches scientific engineering methods for dealing with friction, the centroid of stationary bodies, and determining their moment of inertia.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Apply knowledge of basic sciences, particularly mathematics and physics, to identify, formulate, and solve civil engineering problems, including understanding friction, methods of deriving motion, determining the centroid of regular and irregular shapes, and calculating the moment of inertia for regular and irregular shapes to assist in civil engineering analysis and design.
Indicative Contents المحتويات الارشادية	The objectives of CE113 (Engineering Mechanics) are to learn the fundamental principles of mechanics and develop problem-solving skills by applying these principles to basic engineering problems. Specific topics covered include: friction and its effects on bodies, determining the centroid for regular and irregular shapes, and calculating the moment of inertia for various shapes.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	This unit is taught using a strategy that encourages students to participate in discussions, solve exercises, and simultaneously refine and expand their critical thinking skills. This will be achieved through lectures, interactive lessons, and consideration of small projects involving activities of interest to students.

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)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction: Definitions, International System of Units, Newton's laws of motion and Force Systems
Week 2	Resultant Of Forces System: System of Forces, Composition and Resolution of Forces, Resolution and Composition of Two Concurrent, Coplanar forces, Resolution and Composition of three or more Concurrent, Coplanar forces, Equivalent couple, Force – couple system.
Week 3	Equilibrium: General, Free Body diagram (F.B.D), Modeling the Action of Forces in 2D Analysis, Two- and Three-Force Member, Equilibrium conditions
Week 4	Friction: Theory of Dry Friction, The static and kinetic friction forces, Coefficients of Friction, Angles of Friction, Problems Involving Dry Friction, Procedure for Analysis,
Week 5	Trusses; method of joint
Week 6	Method of section
Week 7	Center Of Gravity And Centroid
Week 8	Moments Of Inertia
Week 9	Dynamics: Introduction ,
Week 10	Dynamics: Introduction
Week 11	Rectilinear Kinematics
Week 12	Continuous Motion,
Week 13	Coplanar Curvilinear Motion of a Particle Using Rectangular Components
Week 14	Motion of Projectiles
Week 15	Motion of Projectiles
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**

Required Texts	• Vector Mechanics for Engineers, Ferdinand P. Beer Statics and Dynamics • Engineering Mechanics: by R. C. HIBBELER • Engineering Mechanics: Statics and Dynamics; by Archie Higdon and William B. Stiles. • Theory and Problems of Engineering Mechanics: Statics and Dynamics; by Mclean and Nelson. • Engineering Mechanics : Dynamics; 5th Edition by R. C. Hibbeler.	Yes
Recommended Texts		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 (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.

Module Information
معلومات المادة الدراسية

Module Title	**Engineering Mechanics 2**	**Module Delivery**	
Module Type	**Core**	✓**Theory** ✓**Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE113**		
ECTS Credits	**8**		
SWL (hr/sem)	**180**		

Module Level	1	**Semester of Delivery**	1,2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	The study of Engineering Mechanics aims to enable students to understand the basic principles of force analysis and equilibrium, and apply them in the analysis and design of bridges and buildings to ensure safety and sustainability. The course also teaches scientific engineering methods for dealing with friction, the centroid of stationary bodies, and determining their moment of inertia.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Apply knowledge of basic sciences, particularly mathematics and physics, to identify, formulate, and solve civil engineering problems, including understanding friction, methods of deriving motion, determining the centroid of regular and irregular shapes, and calculating the moment of inertia for regular and irregular shapes to assist in civil engineering analysis and design.
Indicative Contents المحتويات الارشادية	The objectives of CE113 (Engineering Mechanics) are to learn the fundamental principles of mechanics and develop problem-solving skills by applying these principles to basic engineering problems. Specific topics covered include: friction and its effects on bodies, determining the centroid for regular and irregular shapes, and calculating the moment of inertia for various shapes.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	This unit is taught using a strategy that encourages students to participate in discussions, solve exercises, and simultaneously refine and expand their critical thinking skills. This will be achieved through lectures, interactive lessons, and consideration of small projects involving activities of interest to students.

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)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Friction
Week 2	Friction
Week 3	Friction
Week 4	Friction
Week 5	Friction
Week 6	Friction
Week 7	Centroid
Week 8	Centroid
Week 9	Centroid
Week 10	Centroid
Week 11	Centroid
Week 12	Moment of Inertia
Week 13	Moment of Inertia
Week 14	Moment of Inertia
Week 15	Moment of Inertia
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Vector Mechanics for Engineers, Ferdinand P. Beer Statics and Dynamics • Engineering Mechanics: by R. C. HIBBELER • Engineering Mechanics: Statics and Dynamics; by Archie Higdon and William B. Stiles. • Theory and Problems of Engineering Mechanics: Statics and Dynamics; by Mclean and Nelson. • Engineering Mechanics : Dynamics; 5th Edition by R. C. Hibbeler.	Yes

Recommended Texts		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)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.

Module Information
معلومات المادة الدراسية

Module Title	**Mathematics 1**	**Module Delivery**	
Module Type	**Basic**	✓**Theory** ✓**Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**E112**		
ECTS Credits	8		
SWL (hr/sem)	120		

Module Level	1	**Semester of Delivery**	1,2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	• Good understanding of General Mathematics. • To give information about Integrations and derivations and how they are used in the physics field. • Helping students to connect mathematics with physics. • solving mathematical examples in their physics modules. • better understanding of integration and derivations and their importance of them in physics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After successful completion of the module, students should be able to: • Work with functions represented in various ways: graphical, numerical, analytical, or verbal. They should understand the connections among these representations. The functions include linear, polynomial, absolute value, rational, exponential, logarithmic, trigonometric, inverse trigonometric, hyperbolic, inverse hyperbolic, and piecewise defined functions. • Define and apply the concepts of limits and continuity to the mentioned functions and study them graphically and analytically. • Understand the meaning of the derivative in terms of a rate of change and local linear approximation, and should be able to use derivatives to solve a variety of problems. • Understand the meaning of the definite integral both as a limit of Riemann sums as the net accumulation of change and should be able to use integrals to solve a variety of problems. • Understand the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus. • Use various integration techniques to obtain anti-derivatives without an integral table or calculator.
Indicative Contents المحتويات الارشادية	
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Different forms of teaching will be used to come across with objectives of the course. PowerPoint presentations for the head titles, definitions, graphs, and many useful illustrations with a summary at the end of each chapter will be presented and discussed. • The PowerPoint contains information about new topics and unsolved examples, and then the whiteboard will be used to solve them and to let students to see the solutions.

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)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Algebraic Preliminaries** Numbers, Sets, Inequalities & Absolute value.
Week 2	**Functions** Domain, Range, graphs, Symmetry, Asymptotes.
Week 3	**Limits** Definition of Limit, Theorems, Continuity, One-Sided Limits, Limits at Infinity, L Hopital's rule.
Week 4	**Derivatives** Definition, Power and Sum Rules, Product and Quotient Rules, Chain rule, High-Order derivatives, Implicit differentiation.
Week 5	**Applications of Derivative** Maximum and minimum, mean value theorem, Increasing and Decreasing Functions, Concavity and Points of inflection, Second Derivative Test.
Week 6	**Definite Integration** Definition, Integral Theorems, Length of a Curve, Areas, Volume of Solids, Surface Area, Indefinite Integrals.
Week 7	**Transcendental Functions** Trigonometric Functions, Graphs, Derivatives of trigonometric functions, Inverse trigonometric functions, Graphs, Derivatives of Inverse trigonometric functions, Natural Logarithm Functions, Exponential Functions, Functions a^u and $\log_a u$.

Week 8	**Complex Number** Invented number systems, The Argand diagram. Addition, Subtraction, product, Qutient, Power and Roots. Demoivers theorem.
Week 9	**Hyperbolic Functions** Definition, Derivatives, Integrals, Inverse Hyperbolic Functions.
Week 10	**Plane Analytic Geometry** Circle, Parabola, Ellipse, Hyperbola
Week 11	**Volume of Revolution** Disk Method & Washer Method
Week 12	**Volume of Revolution** Volumes by Cylindrical Shells & solid with known cross sections
Week 13	**Methods of Integrations** Integration by substitution, Trigonometric Integrals & Quadratic Functions
Week 14	**Methods of Integrations** Integration by Parts, Integration by partial fractions, Integration of Rational Functions, improper integrals.
Week 15	**Matrices and Determinates** Definition, Properties of Matrices, Operations on Matrices, Determinants, Matrix Inverse, Solution of Linear Simultaneous Equations (Gramer's Rule).
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1. Calculus with Analytical Geometry, Fourth Edition, By Robert Ellis and Denny Gulick, 1990. 2. Calculus, Fifth Edition, By Stanley I. Cross may1992. 3. Calculus, International Edition, By Thomas, 2005.	Yes
Recommended Texts	1. Calculus, 11th Edition, By Thomas, 2013. 2. Understanding Basic Calculus, by S.K. Chung, 2007	Yes
Websites		

Module Information
معلومات المادة الدراسية

Module Title	**Mathematics 2**	**Module Delivery**	
Module Type	**Basic**		✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**E112**		
ECTS Credits	8		
SWL (hr/sem)	120		

Module Level	1	**Semester of Delivery**	1,2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	• Good understanding of General Mathematics. • To give information about Integrations and derivations and how they are used in the physics field. • Helping students to connect mathematics with physics. • solving mathematical examples in their physics modules. • better understanding of integration and derivations and their importance of them in physics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After successful completion of the module, students should be able to: • Work with functions represented in various ways: graphical, numerical, analytical, or verbal. They should understand the connections among these representations. The functions include linear, polynomial, absolute value, rational, exponential, logarithmic, trigonometric, inverse trigonometric, hyperbolic, inverse hyperbolic, and piecewise defined functions. • Define and apply the concepts of limits and continuity to the mentioned functions and study them graphically and analytically. • Understand the meaning of the derivative in terms of a rate of change and local linear approximation, and should be able to use derivatives to solve a variety of problems. • Understand the meaning of the definite integral both as a limit of Riemann sums as the net accumulation of change and should be able to use integrals to solve a variety of problems. • Understand the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus. • Use various integration techniques to obtain anti-derivatives without an integral table or calculator.
Indicative Contents المحتويات الارشادية	
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• Different forms of teaching will be used to come across with objectives of the course. PowerPoint presentations for the head titles, definitions, graphs, and many useful illustrations with a summary at the end of each chapter will be presented and discussed. • The PowerPoint contains information about new topics and unsolved examples, and then the whiteboard will be used to solve them and to let students to see the solutions.

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)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Complex numbersComplex number systems, Argand diagram.
Week 2	Addition, subtraction, multiplication, division, powers, and roots, De Moivre's theorem
Week 3	Hyperbolic functions: definition, derivatives
Week 4	Hyperbolic functions: Integrals, inverse hyperbolic functions.
Week 5	Plane Analytical Geometry: Circle, Parabola
Week 6	Plane Analytical Geometry: Ellipse, Hyperbola
Week 7	Magnitude of the rotation result: Disc method

Week 8	Volume of the rotation: The method of cylindrical shells
Week 9	Surface area resulting from rotation: The method of cylindrical shells
Week 10	Methods of Integration: Integration by Substitution
Week 11	Methods of Integration: Trigonometric Integrals and Quadratic Functions
Week 12	Methods of integration: integration by parts, integration by partial fractions
Week 13	Integration methods: integration of rational functions, improper integrals
Week 14	Matrices and Determinants: Definition, Properties of Matrices, Operations on Matrices
Week 15	Matrices and determinants: determinants, the inverse of a matrix, solving simultaneous linear equations (Cramer's rule).
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	1. Calculus with Analytical Geometry, Fourth Edition, By Robert Ellis and Denny Gulick, 1990. 2. Calculus, Fifth Edition, By Stanley I. Cross may1992. 3. Calculus, International Edition, By Thomas, 2005.	Yes
Recommended Texts	1. Calculus, 11th Edition, By Thomas, 2013. 2. Understanding Basic Calculus, by S.K. Chung, 2007	Yes
Websites		

Module Information
معلومات المادة الدراسية

Module Title	**Building Material**	**Module Delivery**	
Module Type	**Core**	☑ **Theory** ☑ **Lecture** ☑ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE124**		
ECTS Credits	**6**		
SWL (hr/sem)	**90**		

Module Level	1	**Semester of Delivery**	1
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	1- Definition of building materials and the importance of studying them. 2- Studying models of building materials. 3- How to deal with building materials and benefit from them. 4- History of building materials and ways to develop them. 5- Studying all the properties related to building materials, including physical, chemical, mechanical, etc.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Knowing the building materials used previously and at the present time. 2- Methods of preparing old and modern building materials. 3- The different properties of building materials. 4- Laws and equations related to each material. 5- Knowing the factors affecting these materials as well as ways to develop them.
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The strategy used in this curriculum is to direct the student to study building materials and think about ways to develop them and understand their properties and everything related to them through studying them theoretically and conducting experiments for each material in the laboratory.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative	**Midterm Exam**	2 hr	10% (10)		

assessment	**Final Exam**	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to the science of building materials.
Week 2	General properties of building materials.
Week 3	General properties of building materials.
Week 4	Mechanical properties of engineering materials.
Week 5	Stress-strain curves for some materials.
Week 6	Modulus of elasticity for some engineering materials.
Week 7	Creeping and the factors affecting it and its curve.
Week 8	Fatigue and finding the limit of continuity.
Week 9	Bricks, their types, methods of classification and manufacture.
Week 10	Bricks, their types, methods of classification and manufacture.
Week 11	Wood, its composition and methods of preservation.
Week 12	Ferrous materials, their types, methods of preparation, and factors affecting them.
Week 13	Tiles, its types and specifications.
Week 14	Types of plaster and the most important gypsum products.
Week 15	Binding materials and their uses locally and their types.
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Building materials science,	Yes
Recommended Texts	Natural building materials technology, For the author, Dr. Ahmed Ibrahim Al-Attiyah.	No

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction
Week 2	Brick test
Week 3	Iron test.
Week 4	Tiles test.
Week 5	Plaster test.
Week 6	Wood test.
Week 7	Final Exam

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

Module Information
معلومات المادة الدراسية

Module Title	**Engineering Geology**	**Module Delivery**	
Module Type	**Basic**	☐ **Theory** ✔ **Lecture** ✔ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE114**		
ECTS Credits	6		
SWL (hr/sem)	75		

Module Level	1	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	1. To outline the contribution of engineering geology to the civil and mining works 2. To explain the classical approach to solve an engineering geological problem 3. The extensive uses of engineering geology maps 4. The role and effect of engineering geology in the improvement of earth materials
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The student will be trained to know the description of soil and rock masses for engineering purposes and is also expected to know the following: 1. Engineering geological maps and its applications. 2. Rock engineering properties and the geotechnical problems they cause. 3. The various techniques for soil and rock improvement.
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.26
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	7,12	5, 6, 10, and 11
	Assignments	2	10% (10)	4, 14	1, 2, 11, and 12
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	3, 4, and 11
Summative assessment	Midterm Exam	2 hr	10% (10)	8	1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	An introduction to engineering geology
Week 2	Minerals and rocks
Week 3	Physical and mechanical properties of rocks
Week 4	**Soil geology and properties**
Week 5	Groundwater (Part 1)
Week 6	Groundwater (Part 2)
Week 7	Geology maps
Week 8	Mid-term Exam
Week 9	Topography maps (Part 1)
Week 10	Topography maps (Part 2)
Week 11	Soil investigations (Part 1)
Week 12	Soil investigations (Part 2)
Week 13	Geological principles for the selection of foundations (problems of foundations)
Week 14	Geological investigation of building materials and road paving
Week 15	Preparatory Week
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction
Week 2	Discovery of metal
Week 3	Discovery of rocks
Week 4	Geology maps
Week 5	Topography maps
Week 6	Final Exam
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Engineering Geology by Dr. Majeed Al-Taa'e	Yes
Recommended Texts	ENGINEERING GEOLOGY by Sabinoy Gangopadhyay	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)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Module Information
معلومات المادة الدراسية

Module Title	**CHEMISTRY**	**Module Delivery**	
Module Type	**Core**	☑ **Theory** ☑ **Lecture** ☑ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE126**		
ECTS Credits	**3**		
SWL (hr/sem)	**45**		

Module Level	1	**Semester of Delivery**	1
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Mohammed Mustafa Mohammed Nooruldin Ars	**e-mail**	
Module Leader's Acad. Title	Ass. Lecturer	**Module Leader's Qualification**	M. Sc.
Module Tutor		**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	The course aims to present the basic methods for interpreting the behaviour of various types of materials in terms of their chemical compositions. Emphasis was placed on the application of chemical principles and their relationship to civil engineering.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Discuss how engineering involves chemistry 2. Summarize Chemistry applications in Building Materials (Examples) 3. Identify the structure of materials. The concept and structure of matter 4. Recognize Cement chemistry. its manufacture, reaction with water and setting to form a solid used in almost all structures. 5. Discuss how to produce cement limestone and clay and to react at high temperatures. The individual elements Ca, Si, O, Al, Fe rearrange themselves to form reactive cement. When mixed with water this cement will harden to become hydrated or hardened cement. 6. Identify the Chemical Composition of Cement 7. Identify burning process : chemical reactions in rotary Klin Zones 8. Discuss the sequence of changes during setting and hardening 9. Identify Setting and Hardening : Chemical Reactions 10. Discuss the Classification of Cements 11. Identify the Green cement and its different types. 12. Recognize Corrosion of Concrete Reinforcement – Causes & Remedies 13. Discuss the Factors Influencing Corrosion of Reinforcement 14. Discuss the Remedial Measures To Protect Reinforcement From Corrosion 15. Recognize water chemistry for better selection of suitable sources of water for human consumption and for livestock. 16. Discuss Water Quality Characteristics. 17. Identify Physical Characteristics of Water
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Indicative content includes the following. Chemistry importance fundamental, engineering involves chemistry in the following manners, chemistry applications in building materials (examples) the life cycles of all buildings are limited, chemical influences, the structure of materials. the concept and structure of matter[4 hrs] Cement chemistry, Portland cement chemical component, raw materials of portlandcementandit'suse,manufacturingcement,burningprocess: view of complete setup grinding and packaging, burning process : chemical reactions in rotary klin zones, [6 hrs]

	Properties of cement : setting and hardening, setting and hardening : chemical reactions, classification of cement based on chemical composition, portland cement types, special types of cement, green cement, some types of green cement [7 hrs] Corrosion chemistry, corrosion of concrete reinforcement – causes & remedies, factors influencing corrosion of reinforcement, remedial measures to protect reinforcement from corrosion . [4Hrs] Water chemistry. water quality characteristics, physical characteristics of water, chemical characteristics of water, inorganic minerals , major cations, major anions, carbonate equilibrium, ph and alkalinity, acidity, inorganic indicators of water quality, hardness, total dissolved solids, conductivity, sodium adsorption ratio, [6 hrs] Radionuclides, organic materials, natural organic matter, man-made organics, measurement of organics in water - organic carbon, organic indicators of water quality, biological oxygen demand, chemical oxygen demand, dissolved gases, solubility of gases, dissolved oxygen, microbiological characteristics, biological characteristics of water [6 hrs]

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	2hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - Chemistry importance for Engineering
Week 2	The structure of materials. the concept and structure of matter.

Week 3	Cement chemistry, burning process : chemical reactions in rotary klin zones.
Week 4	Setting and hardening : chemical reactions.
Week 5	Classification of cement based on chemical composition
Week 6	Green Cement
Week 7	Mid-term Exam
Week 8	Corrosion chemistry
Week 9	Remedial measures to protect reinforcement from corrosion
Week 10	Water chemistry
Week 11	Carbonate Equilibrium, pH and Alkalinity, Acidity,.
Week 12	Inorganic indicators of water quality, hardness, total dissolved solids, conductivity, sodium adsorption ratio,
Week 13	Radionuclides, organic materials, natural organic matter, man-made organics, measurement of organics in water - organic carbon.
Week 14	Organic indicators of water quality, biological oxygen demand, chemical oxygen demand, dissolved gases, solubility of gases, dissolved oxygen, microbiological characteristics, biological characteristics of water
Week 15	Preparatory Week
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	• Laboratory Safety Rules and Equipment Familiarization
Week 2	• Measurement of Mass, Volume, and Density
Week 3	• Separation of Mixtures (Filtration, Evaporation, and Chromatography)
Week 4	• Determination of Melting and Boiling Points
Week 5	• Observation of Chemical and Physical Changes
Week 6	• Preparation and Standardization of Solutions
Week 7	• Acid-Base Titration and pH Measurement

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Cement and Concrete Chemistry, Wieslaw Kurdowski, Springer Water Chemistry Green Science and Technology of Nature's Most Renewable Resource , S. E. Manahan, CRC press	Yes
Recommended Texts	Chemistry of Water, Rao, Rao Alla Appa, New Age International (P) Limited	No
Websites	https://chem.libretexts.org	

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

Module Information
معلومات المادة الدراسية

Module Title	**English**	**Module Delivery**	
Module Type	**Supported**	✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**U111**		
ECTS Credits	**2**		
SWL (hr/sem)	**30**		

Module Level	1	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	Improve the students' skills of reading, speaking, and writing. Enrich the vocabulary of the student with new words related to Civil Engineering.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Clarify the basic concepts of the English language by defining the tools for grammar, formulating sentences, texts, and pronunciation. • Acquisition of skills in speaking and writing research and reports. • The ability to read, write and to gain experience in dealing with foreign companies.
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Teaching and learning strategies of English include a range of whole class, group of two or three students and individual activities to examine the different abilities, skills and learning rates of each student and allow every student to participate and to achieve some degree of success. Some of these strategies are: • Readings with a focus on improving the spelling of some complex words. • Exercises and activities during the lecture. • Homework assignments. • Directing students to some websites for learning and practicing. • Conducting seminars to explain and analyze a specific issue and find solutions to

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
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**	2	10% (10)		
	Assignments	8	20% (20)		
	Seminar	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Present tense
Week 2	Past tense
Week 3	Future tense
Week 4	Punctuation
Week 5	Capitalization
Week 6	Simple sentences
Week 7	Compound sentences
Week 8	Prewriting techniques
Week 9	Midterm exam
Week 10	Connecting ideas
Week 11	Comparison
Week 12	Nouns
Week 13	Pronouns
Week 14	The passive.
Week 15	How to write an academic report
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Lectures and handouts	No
Recommended Texts		No
Websites	https://www.english-grammar.at	

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

Module Information
معلومات المادة الدراسية

Module Title	**Physics**	**Module Delivery**	
Module Type	**Core**		☑ **Theory** ☑ **Lecture** ☑ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**E119**		
ECTS Credits	**3**		
SWL (hr/sem)	**45**		

Module Level	1	**Semester of Delivery**	1
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	The course provides general information about physics and its branches, with a focus on the branches that are relevant to the study of civil engineering, such as classical mechanics and the laws and equations of motion. All phenomena in the natural world are measured in terms of a few fundamental relationships between measurable properties of matter and energy. These relationships are called the laws of physics, and they are formulas characterized by a high degree of generality,

	derived from a vast number of phenomena. The goal of physics can be summarized as expressing these fundamental relationships (these laws) in a mathematical form, enabling the student to use the logical rules of mathematics to apply the laws to specific cases and thus obtain quantitative results. Most physical laws are important in the field of civil engineering, which requires engineers to understand these laws to reflect them in the engineering reality related to mathematics, engineering foundations, fluid motion, hydraulic structures, and others.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Clarifying the basic concepts of physics. 2- Acquiring skills in handling and understanding the laws of physics in a simplified manner. 3- Acquiring the essential skills as an introduction to the physical properties necessary to describe all physical measurements, called dimensions, which are length, mass, time, temperature, electric current, number of particles, and luminous intensity. And deriving other physical quantities such as force, energy, and momentum from these seven basic dimensions. 4- The ability to know and understand the science of physics. 5- The ability to think about solving any problem. 6- Writing scientific reports. 7- The ability to gain experience in dealing with physical quantities.
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The course aims to provide basic information about general physics that civil engineering students need in the subjects of static and dynamic mechanics, materials resistance, and fluid mechanics.

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to physics
Week 2	units and dimensions
Week 3	vectors
Week 4	Statics
Week 5	Kinematics
Week 6	Body dynamics
Week 7	Newton's laws of motion
Week 8	Work, energy and power
Week 9	Momentum
Week 10	Rotational motion
Week 11	Harmonic motion
Week 12	Flexibility
Week 13	Fluids
Week 14	The heat
Week 15	The sound
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	University Physics Volume 1 by Samuel J. Ling	Yes
Recommended Texts		No
Websites	https://www.coursera.org/search?query=physics	

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

نماذج وصف المواد الدراسية-المرحلة الثانية-قسم الهندسة المدنية

Module Information معلومات المادة الدراسية					
Module Title	**Building construction method and drawings**			**Module Delivery**	
Module Type	**Core**			✓**Theory** □ **Lecture** ✓**Lab** □ **Tutorial** □ **Practical** □ **Seminar**	
Module Code	**CE228**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/09/2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**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	1. Understanding the types of construction systems. 2. The steps of starting and completing construction projects. 3. Specifications and use of various construction equipment. 4. The requirements and methods of implementation of projects. 5. The general requirements and specifications of various construction works.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The ability to distinguish the type of construction system. 2. Select the appropriate procedure to perform certain construction work. 3. Select the most suitable equipment. 4. Select the type of foundation. 5. The knowledge required to distinguish the works that met the specifications.
Indicative Contents المحتوياتالإرشادية	1. Types and development of buildings. 2. Earthworks types and methods of implementation. 3. Dewatering methods. 4. Types and properties of foundations. 5. Construction of walls 6. Finishing 7. Concrete works 8. Joints types and methods of installation.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Encouraging students to participate in presenting opinions and ideas relating construction. 2. Letting the students to select the right choice to perform certain construction work. 3. Testing students' understanding by inviting them to participate by discovering the errors, mistakes, and disadvantages of the method of implementing a certain step within a construction project and suggesting the appropriate method.

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	114	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.73
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction on building and construction projects
Week 2	Earthworks and excavation using hand tools and the methods of supporting them.
Week 3	Excavation with mechanical equipment, dewatering, earth filling, and compaction.
Week 4	Shallow footings types and requirements.
Week 5	Raft, buoyancy, and pier foundations and the settlement and vibration of foundations.
Week 6	Pile foundations types and methods of installation.
Week 7	Concrete works details requirements and equipment.
Week 8	Masonry works units' types and requirements.
Week 9	Requirements and design of brick walls.
Week 10	Frameworks and scaffolding
Week 11	Water and dump proofing
Week 12	Joints in buildings
Week 13	Means of transition between levels.
Week 14	Beams, columns, and floor systems.
Week 15	Finishing works.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Site Inspection and Soil Sampling
Week 2	Setting Out and Layout of Buildings
Week 3	Excavation Works and Shoring Systems
Week 4	Concrete Mix Design, Slump Test, and Casting
Week 5	Reinforcement Bars (Rebar) Cutting, Bending, and Fixing
Week 6	Formwork Assembly and Shuttering
Week 7	Brickwork and Blockwork Masonry Bonds

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Zuheir Sako and Artin Levon “Building construction (in Arabic)”	Yes
Recommended Texts	1. Edward Allen and Joseph Iano “Fundamentals of Building Construction M a t e r i a l s a n d M e t h o d s” 2. T.D. Ahuja and G.S. Birdi “CIVIL ENGINEERING building construction” 2.PURUSHOTHAMA RA J “Building Construction Materials and Techniques”	No
Websites		

Module Information
معلومات المادة الدراسية

Module Title	**Engineering Survey 1**	**Module Delivery**	
Module Type	**Core**		✓**Theory** ☐ **Lecture** ✓**Lab** ☐ **Tutorial** ☐ **Practical**
Module Code	**CE215**		
ECTS Credits	**4**		
SWL (hr/sem)	**75**		

Module Level	2	**Semester of Delivery**	1,2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	ENGINEERING DRAWING	**Semester**	1-1

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The aim of this Module is to provide the student with a deep understanding of surveying and construction activities; practical application of topographic surveying skills, an awareness of the preliminary considerations involved in construction developments and a knowledge of the materials and procedures employed in construction of small commercial/industrial building works.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Apply the basic surveying concepts, principles, and theories on distance and angular measurements as well as area computation. 2. Solve distances, elevations, and areas from a provided set of survey data. 3. Apply the basic surveying concepts, principles, and theories on determining horizontal and vertical distances using stadia. 4. Compute the missing data from incomplete traverse data. 5. Acquire a working knowledge of the design and layout of horizontal or vertical curves in highways or railways. 6. Determine and use the appropriate methodology in calculating earthworks in various civil engineering constructions.
Indicative Contents	LESSON 1: Introduction to Surveying a. Surveying Concepts b. Types of Surveys c. Importance of Surveying d. Surveying Equipment and Accessories e. Measurement f. Sources of Errors g. Errors and Mistakes h. Accuracy and Precision Distance Measurement a. Measurement of Horizontal Distance - Pacing - Taping - Tachymetry - Graphical & Mathematical Method - Mechanical Devices - Photogrammetry b. Taping Over Level Ground Taping Along Sloping Ground LESSON 3: Distance Corrections a. Types of Correction b. Incorrect Tape Length c. Temperature Variations d. Slope Corrections e. Sag and Tension Corrections f. Combined Taping Corrections g. Errors in Taping h. Taping Precision LESSON 4: Leveling Methods a. Importance of Leveling b. Reference Elevations or Datums c. Types of Level d. Methods of Leveling e. Differential Leveling f. Leveling Errors g. Profile Leveling h. Profiles and Cross Sections LESSON 5: Angles and Directions Measurements a. Meridians b. Azimuth c. Bearings d. The Compass e. Local Attraction f. Traverse Angle Definitions g. Traverse Computations h. Transits and Theodolites i. Introduction to Total Stations j. Advantages and Disadvantages of Total Stations k. Surveying with Total Stations l. Measuring Horizontal Angles m. Closing the Horizon n. Measuring Zenith Angles CLO 1, 2, & 3 Synchronous • Lesson 5: Angles and Direction Measurement Sample Problems • Discussion of QUIZ # 1 • Asynchronous • Lesson 5: Angles and Direction Measurement Asynchronous Seatwork # 4 Assignment # 4 5th

	Traverse Adjustment and Area Computation a. Methods of Calculating Areas b. Balancing Angles c. Latitudes and Departures d. Error of Closure e. Balancing Latitudes and Departures f. Double Meridian Distances g. Double Parallel Distances h. Rectangular Coordinates i. Areas Computed by Coordinates j. Areas Within Irregular Boundaries LESSON 8: Topographic Survey a. Introduction to Topographic Survey b. Contours c. Plotting of Contour Characteristics d. Map Symbols e. Transit-Stadia Method of Mapping f. Plane Table Surveys g. Profiles from Contour Maps h. The Stadia Theory a. Measurement by Stadia for Horizontal distances b. Measurement by Stadia for inclined Distance c. Sources of Error in stadia work. LESSON 9: Horizontal curves a. Simple Curve b. Compound Curve c. Reverse Curve Spiral Curve Lesson 10: Vertical Curves a. Symmetrical Parabolic Curve b. Unsymmetrical Parabolic Curve

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	Problem set assignments are due at the beginning of class. Homework can be turned in early if a student expects to be absent. • Guidelines for homework: a. All solutions will be submitted on 8 ½" x 11" paper. b. Solutions will be presented on one side of each sheet only. c. The first page will contain the following in the upper left margin: - Student's name - Student number - Course code and Course Title - Indicate the Problem set d. The final answer must be boxed together with the correct units. e. Clarity and neatness are vital. Points may be taken off for sloppiness.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	128	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	9
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3&9	LO 1&2&3
	Assignments	2	10% (10)	5&13	LO 2&5
	Projects / Lab.	1	10% (10)	12	LO 6
	Report	1	10% (10)	10	LO 5 & 4
Summative assessment	Midterm Exam	2 hr	10% (10)	15	All
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Surveying Distance Measurement
Week 2	Distance Corrections
Week 3	Leveling Methods
Week 4	Angles and Directions Measurements
Week 5	Traverse Adjustment and Area Computation
Week 6	Topographic Survey
Week 7	Topographic Survey
Week 8	Horizontal curves
Week 9	Vertical Curves
Week 10	Earthwork Operations & Mass Diagram
Week 11	Earthwork Operations & Mass Diagram
Week 12	Global Positioning System
Week 13	Satellite survey
Week 14	GIS
Week 15	GIS
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Tape measurement
Week 2	Tape measurement
Week 3	Tape measurement
Week 4	Leveling
Week 5	Leveling
Week 6	Leveling
Week 7	Theodolite
Week 8	Theodolite
Week 9	Total Station
Week 10	Total Station
Week 11	Total Station
Week 12	Total Station
Week 13	Total Station
Week 14	Total Station
Week 15	Total Station

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		no

Recommended Texts	1. Surveying: Theory and Practice by James M. Anderson and Edward M. Mikhail, (7th Edition), 2002 2. Kavanagh, Barry F., Surveying: Principles and Applications (9th Edition), 2014 3. Kavanagh, Barry F., Surveying with Construction Applications (8th Edition), 2015 4. Ghilani, C.D., and Wolf, P.R., Elementary Surveying: An Introduction to Geomatics (13th Edition), 2011 5. Schofield W. and M. Breach, Engineering Surveying, (6th Edition), 2007 6. La Putt, J.P., Elementary Surveying (3rd Edition) 2013 Reprint 7. La Putt, J.P., Higher Surveying (2nd Edition) 2013 Reprint	No
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتاز	90 - 100	Outstanding Performance
	B - Very Good	جـ د جدا	80 - 89	Above average with some errors
	C - Good	جـ د	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 (قـد 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.

Module Information
معلومات المادة الدراسية

Module Title	**Engineering Survey II**	**Module Delivery**	
Module Type	**Core**		✓**Theory** ☐ **Lecture** ✓**Lab** ☐ **Tutorial** ☐ **Practical**
Module Code	**CE215**		
ECTS Credits	**4**		
SWL (hr/sem)	**75**		

Module Level	2	**Semester of Delivery**	1,2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	ENGINEERING DRAWING	**Semester**	1-1

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The aim of this Module is to provide the student with a deep understanding of surveying and construction activities; practical application of topographic surveying skills, an awareness of the preliminary considerations involved in construction developments and a knowledge of the materials and procedures employed in construction of small commercial/industrial building works.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	7. Apply the basic surveying concepts, principles, and theories on distance and angular measurements as well as area computation. 8. Solve distances, elevations, and areas from a provided set of survey data. 9. Apply the basic surveying concepts, principles, and theories on determining horizontal and vertical distances using stadia. 10. Compute the missing data from incomplete traverse data. 11. Acquire a working knowledge of the design and layout of horizontal or vertical curves in highways or railways. 12. Determine and use the appropriate methodology in calculating earthworks in various civil engineering constructions.
Indicative Contents المحتويات الإرشادية	LESSON 1: Introduction to Surveying a. Surveying Concepts b. Types of Surveys c. Importance of Surveying d. Surveying Equipment and Accessories e. Measurement f. Sources of Errors g. Errors and Mistakes h. Accuracy and Precision Distance Measurement a. Measurement of Horizontal Distance - Pacing - Taping - Tachymetry - Graphical & Mathematical Method - Mechanical Devices - Photogrammetry b. Taping Over Level Ground Taping Along Sloping Ground LESSON 3: Distance Corrections a. Types of Correction b. Incorrect Tape Length c. Temperature Variations d. Slope Corrections e. Sag and Tension Corrections f. Combined Taping Corrections g. Errors in Taping h. Taping Precision LESSON 4: Leveling Methods a. Importance of Leveling b. Reference Elevations or Datums c. Types of Level d. Methods of Leveling e. Differential Leveling f. Leveling Errors g. Profile Leveling h. Profiles and Cross Sections LESSON 5: Angles and Directions Measurements a. Meridians b. Azimuth c. Bearings d. The Compass e. Local Attraction f. Traverse Angle Definitions g. Traverse Computations h. Transits and Theodolites i. Introduction to Total Stations j. Advantages and Disadvantages of Total Stations k. Surveying with Total Stations l. Measuring Horizontal Angles m. Closing the Horizon n. Measuring Zenith Angles CLO 1, 2, & 3 Synchronous • Lesson 5: Angles and Direction Measurement Sample Problems • Discussion of QUIZ # 1 • Asynchronous • Lesson 5: Angles and Direction Measurement Asynchronous Seatwork # 4 Assignment # 4 5th

	Traverse Adjustment and Area Computation a. Methods of Calculating Areas b. Balancing Angles c. Latitudes and Departures d. Error of Closure e. Balancing Latitudes and Departures f. Double Meridian Distances g. Double Parallel Distances h. Rectangular Coordinates i. Areas Computed by Coordinates j. Areas Within Irregular Boundaries LESSON 8: Topographic Survey a. Introduction to Topographic Survey b. Contours c. Plotting of Contour Characteristics d. Map Symbols e. Transit-Stadia Method of Mapping f. Plane Table Surveys g. Profiles from Contour Maps h. The Stadia Theory a. Measurement by Stadia for Horizontal distances b. Measurement by Stadia for inclined Distance c. Sources of Error in stadia work. LESSON 9: Horizontal curves a. Simple Curve b. Compound Curve c. Reverse Curve Spiral Curve Lesson 10: Vertical Curves a. Symmetrical Parabolic Curve b. Unsymmetrical Parabolic Curve

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Problem set assignments are due at the beginning of class. Homework can be turned in early if a student expects to be absent. • Guidelines for homework: a. All solutions will be submitted on 8 ½" x 11" paper. b. Solutions will be presented on one side of each sheet only. c. The first page will contain the following in the upper left margin: - Student's name - Student number - Course code and Course Title - Indicate the Problem set d. The final answer must be boxed together with the correct units. e. Clarity and neatness are vital. Points may be taken off for sloppiness.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	128	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	9
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3&9	LO 1&2&3
	Assignments	2	10% (10)	5&13	LO 2&5
	Projects / Lab.	1	10% (10)	12	LO 6
	Report	1	10% (10)	10	LO 5 & 4
Summative assessment	Midterm Exam	2 hr	10% (10)	15	All
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Sections
Week 2	Longitudinal section adjustment
Week 3	Longitudinal section adjustment
Week 4	Longitudinal section adjustment
Week 5	Types of cross-sections
Week 6	Cross section adjustment
Week 7	Cross sectional calculations
Week 8	The theodolite
Week 9	The leveling and horizontal adjustment of the device
Week 10	Inspecting and adjusting the theodolite device
Week 11	The applications of the theodolite device
Week 12	The applications of the theodolite device
Week 13	The directions
Week 14	Direction systems
Week 15	Direction applications
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Tape measurement
Week 2	Tape measurement
Week 3	Tape measurement
Week 4	Leveling
Week 5	Leveling
Week 6	Leveling
Week 7	Theodolite
Week 8	Theodolite
Week 9	Total Station
Week 10	Total Station
Week 11	Total Station
Week 12	Total Station
Week 13	Total Station
Week 14	Total Station
Week 15	Total Station

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		no

Recommended Texts	8. Surveying: Theory and Practice by James M. Anderson and Edward M. Mikhail, (7th Edition), 2002 9. Kavanagh, Barry F., Surveying: Principles and Applications (9th Edition), 2014 10. Kavanagh, Barry F., Surveying with Construction Applications (8th Edition), 2015 11. Ghilani, C.D., and Wolf, P.R., Elementary Surveying: An Introduction to Geomatics (13th Edition), 2011 12. Schofield W. and M. Breach, Engineering Surveying, (6th Edition), 2007 13. La Putt, J.P., Elementary Surveying (3rd Edition) 2013 Reprint 14. La Putt, J.P., Higher Surveying (2nd Edition) 2013 Reprint	No
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتاز	90 - 100	Outstanding Performance
	B - Very Good	جـ د جدا	80 - 89	Above average with some errors
	C - Good	جـ د	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 (قد 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.

Module Information
معلومات المادة الدراسية

Module Title	**Fluid Mechanics I**	**Module Delivery**	
Module Type	**Core**		✓**Theory** ☐ **Lecture** ✓**Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**CE214**		
ECTS Credits	**5**		
SWL (hr/sem)	**75**		

Module Level	2	**Semester of Delivery**	1,2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	E-mail
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**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	1- To develop problem solving skills and understanding of Fluid Mechanics in civil engineering. 2- This course deals with the basic concepts of Fluid Mechanics. 3- This is the basic subject for all electrical and electronic circuits. 4- 4- To understand viscous fluid flow problems.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- To understand general principles of fluid mechanics 2- To understand incompressible and compressible flow 3- To understand flow through pipes and open channel
Indicative Contents المحتوياتالإرشادية	This module covers a wide range of topics of fluid mechanics in order to offer basic knowledge and foundations applicable to various civil engineering problems. This module introduces fundamental of conservation (mass, momentum and energy) laws of fluid flow, potential (ideal) flow, inviscid compressible flow and viscous flow. This module is also complemented by lab classes and tutorials

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, and interactive tutorials.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	128	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	9
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	6.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Fluid Properties and Units and Dimensions
Week 2	Fluid pressure and its measurements
Week 3	Hydrostatic forces on surfaces: plane Surfaces
Week 4	Hydrostatic forces on surfaces: Non plane Surfaces
Week 5	Buoyancy and floatation
Week 6	Kinematics and dynamics of fluid flow, Bernoulli's equation
Week 7	Fluids Subjected to constant acceleration
Week 8	Applications of Bernoulli's equation
Week 9	Discharge measurements
Week 10	Momentum equation
Week 11	Laminar and turbulent flow
Week 12	Flow through pipes, Major and minor head losses
Week 13	Flow through pipes, Major and minor head losses
Week 14	Open channel flow
Week 15	Open channel flow
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Some Physical Properties of Fluids
Week 2	Fluid Pressure at a Point
Week 3	Simple Manometers, Differential Manometers
Week 4	Hydrostatic Forces on Submerged Surfaces
Week 5	Impulse Momentum Equation
Week 6	Types of Resistances and Losses of Energy in Pipes
Week 7	Flow Measuring Devices

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Fluid Mechanics, Streeter	Yes
Recommended Texts	Fluid Mechanics, White, F.M., 2016	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتاز	90 - 100	Outstanding Performance
	B - Very Good	جـ د جدا	80 - 89	Above average with some errors
	C - Good	جـ د	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 (قد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Module Information
معلومات المادة الدراسية

Module Title	**Fluid Mechanics II**	**Module Delivery**	
Module Type	**Core**		✓**Theory** □ **Lecture** ✓**Lab** □ **Tutorial** □ **Practical** □ **Seminar**
Module Code	**CE214**		
ECTS Credits	**5**		
SWL (hr/sem)	**75**		

Module Level	2	**Semester of Delivery**	1,2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	E-mail
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشاد ة

Module Aims أهداف المادة الدراسية	5- To develop problem solving skills and understanding of Fluid Mechanics in civil engineering. 6- This course deals with the basic concepts of Fluid Mechanics. 7- This is the basic subject for all electrical and electronic circuits. 8- 4- To understand viscous fluid flow problems.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	4- To understand general principles of fluid mechanics 5- To understand incompressible and compressible flow 6- To understand flow through pipes and open channel
Indicative Contents المحتوياتالإرشادية	This module covers a wide range of topics of fluid mechanics in order to offer basic knowledge and foundations applicable to various civil engineering problems. This module introduces fundamental of conservation (mass, momentum and energy) laws of fluid flow, potential (ideal) flow, inviscid compressible flow and viscous flow. This module is also complemented by lab classes and tutorials

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, and interactive tutorials.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	128	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	9
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	6.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Applications of Bernoulli's Equation
Week 2	Applications of Bernoulli's Equation
Week 3	Applications of Bernoulli's Equation
Week 4	Measurement of Flow
Week 5	Measurement of Flow
Week 6	Momentum equation
Week 7	Laminar and turbulent flow
Week 8	Laminar and turbulent flow
Week 9	Flow through the pipes and the primary and secondary losses in energy
Week 10	Flow through the pipes and the primary and secondary losses in energy
Week 11	Flow through the pipes and the primary and secondary losses in energy
Week 12	Flow through the pipes and the primary and secondary losses in energy
Week 13	Flow in open channels
Week 14	Flow in open channels
Week 15	Flow in open channels
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Some Physical Properties of Fluids
Week 2	Fluid Pressure at a Point
Week 3	Simple Manometers, Differential Manometers
Week 4	Hydrostatic Forces on Submerged Surfaces
Week 5	Impulse Momentum Equation
Week 6	Types of Resistances and Losses of Energy in Pipes
Week 7	Flow Measuring Devices

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fluid Mechanics, Streeter	Yes
Recommended Texts	Fluid Mechanics, White, F.M., 2016	No
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتاز	90 - 100	Outstanding Performance
	B - Very Good	جـد جدا	80 - 89	Above average with some errors
	C - Good	جـد	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 (قـد 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.

Module Information
معلومات المادة الدراسية

Module Title	**Arabic**	**Module Delivery**	
Module Type	**Supported**	✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**216 AL**		
ECTS Credits	**2**		
SWL (hr/sem)	**30**		

Module Level	2	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor		**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	8- Educating students about the nature of linguistics and assisting them in correct expression. 9- Regulating language styles and uncovering its secrets. 10- Equipping students with linguistic abilities that enable them to correct their

	speech while reading. 11- Developing students' linguistic, grammatical, and spelling skills. 12- Understanding sentence structures and their different styles. 13- Correcting mistakes arising from linguistic errors in pronunciation or writing. 14- Introducing punctuation marks and how to use them.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	4- Establish a solid foundation in knowledge and linguistic thought for students in scientific disciplines, both human and scientific. 5- Maintain the integrity of the Arabic language. 6- Evaluate the language of researchers in preparing master's theses and doctoral dissertations, as well as the language of book authorship in accordance with the correct rules of the Arabic language.
Indicative Contents المحتويات الارشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	5- Conduct linguistic research that serves the language of the Holy Quran and legal arguments as a living means of expressing ideas. 6- Train the mind in scientific analysis, which is part of the levels of thinking. 7- Use multiple teaching methods to equip students with the ability to grasp the curriculum. 8- Develop the student's ability to choose topics that address contemporary intellectual problems.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
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**	2	10% (10)		
	Assignments	8	20% (20)		
	Seminar	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	The Arabic language and its position in global linguistics
Week 2	Speech and its components Categories of speech
Week 3	Noun - Signs of the noun
Week 4	Verb - Signs of the verb
Week 5	Part - Signs of the part
Week 6	Spelling and writing rules: Origins and development
Week 7	Spelling rules and written expression: Origin and development
Week 8	Rules for controlling the initial hamzah: 1- The hamzah of connection.
Week 9	2- Hamzat al-Qat' 3- Hamzat al-Estifham
Week 10	Rules for controlling the medial hamza
Week 11	Rules for controlling the extreme
Week 12	Rules for controlling the letter 'Alif'
Week 13	Punctuation Marks - History - Origin and Development
Week 14	Modern punctuation marks
Week 15	Review
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Lectures and handouts	No
Recommended Texts	Books on linguistics, grammar, and orthographic conventions	Yes
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)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.

Module Information
معلومات المادة الدراسية

Module Title	**Computer programming**	**Module Delivery**	
Module Type	**Supportive**	☐ **Theory** ✓ **Lecture** ✓ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE217**		
ECTS Credits	**2**		
SWL (hr/sem)	**30**		

Module Level	3	**Semester of Delivery**	1,2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**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	Fortran is a general-purpose programming language mainly used by the scientific community. It is fast, and portable and it has seamless handling of arrays and parallelism. It is one of the earliest high level programming languages, and many recognize the original versions which used punched cards to encode the programs. Its name is a contraction of FORmula TRANslation (old versions of the language are typically stylized as FORTRAN) and its creation marked the representation of mathematical expressions with more ease than lower-level assembly language. It is still widely used today in numerical weather prediction, physical and chemical modelling, applied mathematics, and other high- performance computing purposes. Fortran has a rich array of mathematical libraries and scientific codebases available. The newer standards continuously add modern functionality and are fully backward compatible.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge and Understanding 1- Familiarity with the programming language FORTRAN. 2- Learn how to write the program in the FORTRAN language. 3- Applying several engineering programs using the FORTRAN programming language. 4- Use physical problem using FORTRAN 5- Identify the variables and constants in the programming language. 6- Identify loops, arrays, and subprograms. B. Subject-specific skills 1- Writing an engineering program in Fortran. 2- Convert any problem to a program written in Fortran. 3- Reserving locations for engineering data in the program's memory and using them. 4- Linking information to engineering reality.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Weekly homework and sudden daily and weekly tests. Giving homework and activities in the classroom. As well as guiding students to important scientific sources and taking some exercises to train on them. The practical side also contributes to applied knowledge.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
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**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to the Fortran language Program(initialization section, program structure)
Week 2	Variables and constants (how to write variables and constants)
Week 3	Inputs and outputs (how to start writing inputs and outputs)
Week 4	GOTO and FORMAT (statement and its types)
Week 5	Control statement (recognize control statement)
Week 6	DO loop statements (use Loop rules)
Week 7	IF statements and their types (Arithmetic and Boolean IF statements)
Week 8	Relationship rules and examples (some relationships between DO and IF)
Week 9	Multiple selected examples (A collection of examples)
Week 10	A collection of notes, general summaries of the previous chapters
Week 11	Introduction and properties of ARRAYs
Week 12	DIMENSION statement rules
Week 13	Using more than one method for reading and printing Reading and printing Arrays
Week 14	Where statement selects the domain of the matrix
Week 15	External and internal functions Sub Routines
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Learn how to operate a computer with FORTRAN software
Week 2	Application on Variables and constants in FORTRAN language

Week 3	Start writing inputs and outputs in FORTRAN language with application
Week 4	Use GOTO and FORMAT statements with examples in Lab.
Week 5	Application of Control statements
Week 6	Learn to use DO loop statements and its rules in computer
Week 7	Apply IF statements and their types in PC.
Week 8	Use some relationships between DO and IF statements in the Lab.
Week 9	A collection of examples for civil engineering application part1
Week 10	A collection of examples for civil engineering application part2
Week 11	Use ARRAYs in the Lab. For Fortran language
Week 12	Apply DIMENSION statement rules
Week 13	Applications for students
Week 14	Use Where statement and apply it
Week 15	Learn how to use External and internal functions Sub Routines and application

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	FORTRAN FOR SCIENTISTS & ENGINEERS 4th Edition, by Stephen Chapman	--
Recommended Texts	Computing for Scientists: Principles of Programming with Fortran 90 and C++ R. J. Barlow, A. R. Barnett	--
Websites	https://fortran-lang.org/en/learn/	

Module Information
معلومات المادة الدراسية

Module Title	**Applied mathematics**	**Module Delivery**	
Module Type	**Basic**	x **Theory** x **Lecture**	
Module Code	**E212**	□ **Lab** x **Tutorial**	
ECTS Credits	**8**	□ **Practical** x **Seminar**	
SWL (hr/sem)	**120**		

Module Level	2	**Semester of Delivery**	1
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Nabil Najm	**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	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**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	The course aims to; 1- Presenting polar coordinates and their applications in engineering 2- Presenting vectors and their applications in engineering 3- Presenting series and their applications in engineering 4- Presenting partial derivatives and their applications in engineering 5- Presenting multiple integral and their applications in engineering 6- Presenting complex numbers and their applications in engineering
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Knowledge and Understanding 1- Understanding polar coordinates and their relation to Cartesian coordinates and their applications. 2- Studying vectors and use them to study the analytic geometry of space with their important applications in engineering. 3- Studying different types of series and their applications in solving different engineering and mathematical problems 4- Using partial differentiation in deriving different surface equations, rate of change, optimization problem and estimation of change. 5- Studying and using multiple integral and their applications in civil engineering such as determining areas, volumes, center of masses and moments of inertia. 6- Studying complex numbers and their relations in solving different mathematical problems.
Indicative Contents المحتويات الإرشادية	– Graphing in Polar coordinates, calculating areas and lengths of curves using polar coordinates. - Study the analytic geometry of space using vectors. Vectors provide simple ways to define equations for lines, planes, curves, and surfaces in space with their many important applications in science, engineering. - study partial derivatives for the functions of two or multiple variables, chain rules, directional derivatives and critical points. - Study the multiple integrals in Cartesian and polar coordinates and area, volume, centroid and moment of inertia calculations using multiple integrals.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	102	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	98	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO # 1, 2, 4, 5
	Assignments	2	10% (10)	4, 9	LO # 1, 2, 4, 5
	Report	1	10% (10)	13	LO # 3, 6
Summative assessment	**Midterm Exam**	2 hr	20% (20)	7	LO # 1,2,3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Definition of Polar Coordinates, Polar Equations and Graphs, Relating Polar and Cartesian Coordinates, Graphing Polar Coordinate Equations
Week 2	Areas and Lengths in Polar Coordinates
Week 3	Vectors and the Geometry of Space, Component Form and Vector Algebra Operations
Week 4	Unit Vectors, Midpoint of a Line Segment, Navigation, forces action on a single object
Week 5	The Dot Product, Angle Between Vectors, orthogonal Vectors, work and Vector Projections
Week 6	The Cross Product, Calculating the Cross Product as a determinant, Area of a Parallelogram and Torque, Lines and Planes in Space
Week 7	Infinite Sequences and Series, Infinite Series, Taylor and Maclaurin Series,
Week 8	Power Series, The Binomial Series and Applications of Taylor Series

Week 9	Partial Derivatives, Limits and Continuity in Higher Dimensions, Partial Derivatives of a Function of Two and Three Variables Second-Order and higher Partial Derivatives.
Week 10	The Chain Rule, Directional Derivatives and Gradient Vectors, Tangent Planes and Differentials, Estimating Change in a Specific Direction
Week 11	Extreme Values and Saddle Points, optimization
Week 12	Double Integrals in Cartesian and Polar Form, Area by Double Integration
Week 13	Triple Integrals, Area, volume, centroid and moment of inertia
Week 14	Triple Integrals in Cylindrical and Spherical Coordinates
Week 15	Complex Numbers, Argand Diagrams, Euler's Formula, Operations on complex number
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Thomas' Calculus, George B. Thomas	Yes
Recommended Texts	Calculus , STANLEY I. CROSSMAN	No
Websites		

Module Information
معلومات المادة الدراسية

Module Title	**Baath Party Crime**	**Module Delivery**	
Module Type		✓**Theory** □ **Lecture** □ **Lab** □ **Tutorial** □ **Practical** □ **Seminar**	
Module Code	**CE219**		
ECTS Credits	**4**		
SWL (hr/sem)	**45**		

Module Level	2	**Semester of Delivery**	1,2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Baath Party Crime	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	The basic objective is to introduce the student to The course aims to introduce the student to the crimes committed by the former regime during its era, which extended for thirty-five years, especially the crimes committed against members of the Shiite sect.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Apply the knowledge of fundamental sciences mainly mathematics and physics to identify, formulate and solve civil engineering problems including stress, strain and deflection calculations as well as calculating axial force, shear and bending moment diagrams used in civil engineering analysis and design
Indicative Contents المحتويات الإرشادية	The objectives of CE213, Strength of Materials, are to learn the principles of mechanics applied to different materials [III] and to develop problem solving skills through application of these principles to basic engineering problems. Specific topics covered in this class include: behavior of axially loaded members; torsion of circular shafts; stresses and deflections in beams; connectors in built-up beams; stress transformation under rotation of axes; principal stresses; triaxial stress and maximum shear stress; pressure vessels; and buckling behavior of columns. The course will rely on students' prerequisite knowledge of mathematics and basic science [II] in developing principles and analytical techniques of mechanics of materials.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Interactive daily lectures Daily oral exams Weekly written exams

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	128	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	9

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	6.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2,12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Grammar of the Baath regime throughout the history of government
Week 2	The position of the Supreme Criminal Court on Baathist violations
Week 3	The concept of crimes and their types
Week 4	Crime departments
Week 5	The concept of crimes and their types
Week 6	Psychological crimes and their effects
Week 7	Social crimes
Week 8	Violations of Iraqi laws

Week 9	Pictures of human rights violations
Week 10	Creating genocide graves for the Baath regime in Iraq
Week 11	Chronological classification of genocide graves in Iraq
Week 12	Graves of the victims of the Anfal massacre for the period 1987-1988
Week 13	Graves of the victims of the Anfal massacre for the period 1987-1988
Week 14	Graves of victims of the 1991 Shaabani uprising
Week 15	Graves of victims of the 1991 Shaabani uprising
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Mechanics of Materials-Andrew Pytel	No
Recommended Texts	Strength of Materials-Ferdinand L.Singer	No
Websites	https://www.coursera.org/courses?query=mechanics%20of%20materials	

Grading Scheme
مخطط الدرجات

Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتاز	90 - 100	Outstanding Performance
	B - Very Good	جـد جدا	80 - 89	Above average with some errors
	C - Good	جـد	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 (قـد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Module Information
معلومات المادة الدراسية

Module Title	**Concrete technology**	**Module Delivery**	
Module Type	**Core**		**Theory**
Module Code	**CE216**		**✓Lecture**
ECTS Credits	**8**		**✓Lab**
SWL (hr/sem)	**120**		**Tutorial**
			Practical
			Seminar

Module Level	2	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتوياتالإرشادية	
Module Aims أهداف المادة الدراسية	This Module aims at helping students: 1. To develop an understanding about the fundamentals of concrete technology. 2. To be aware of concrete historical development, general characteristics, types, and factors influencing Concrete properties. 3. To discuss and understand the materials involved in making Concrete. 4. Studying the concrete at its Fresh Stage including its design, estimation of material proportions as well as manufacturing, delivery, placing and curing. 5. Study the concrete at it Hardened stage including understanding concepts such as Shrinkage and Creep as well as Durability of concrete. 6. To understand the various laboratory tests required to be done for the concrete at various stages of its development.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students should be able to exhibit the following key learning outcomes of this module: 1. Recall key historical stages of concrete development over the centuries. Discuss and list concrete types, characteristics and factors influencing its properties. 2. Define and list the various types of cementitious binders. Explain the process of manufacturing Portland cement and its chemical composition. 3. Explain the hydration process of Portland cement and define Portland cement types. 4. Explain the effect of aggregate on concrete and classify the various types of aggregates. Discuss and explain the properties of aggregates. 5. Calculate the various moisture conditions of aggregate moisture content, fineness modules and Bulk specific gravity. Discuss the characteristics of water used in concrete. 6. Define the workability of fresh concrete and explain its method of measurement, segregation, bleeding and list the factors affecting workability of concrete. 7. Explain and carry out the relevant calculations for concrete mix design using both the American and British methods. 8. Discuss the manufacturing process of concrete and explain the key factors to be considered during the delivery and placing of concrete. 9. Discuss the Hardened stage of Concrete including explaining key topics such as strengths of Hardened Concrete, Dimensional Stability—Shrinkage and Creep, Durability as well as non-destructive tests.
Indicative Contents المحتوياتالإرشادية	Indicative content includes the following: 1. Introduction to Concrete Concrete Definition and Historical Development, Concrete as a Structural Material, Characteristics of Concrete, Types of Concrete, Factors Influencing Concrete Properties. 2. Materials for Making Concrete Cementitious Binders, Aggregates, Admixtures and Water 3. Fresh Concrete

	Workability of Fresh Concrete, Mix Design, Procedures for Concrete Mix Design, Manufacture of Concrete, Delivery of Concrete, Concrete Placing, Early-Age Properties of Concrete. 4. Hardened Concrete Strengths of Hardened Concrete, Dimensional Stability—Shrinkage and Creep, Durability, Nondestructive tests

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	100	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	75	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	15% (15)	4, 13	LO # 2, 3, 4, 5 and 7
	Assignments	2	8% (8)	3, 9	LO # 1 and 6
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	7% (7)	14	LO # 7, 8 and 9
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1 to 5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Concrete Definition and Historical Development, Concrete as a Structural Material, Characteristics of Concrete, Types of Concrete and Factors Influencing Concrete Properties.
Week 2	Cementitious Binders: Classification of binders, Portland cement, Manufacture of Portland cement, Chemical composition, Hydration of Portland cement
Week 3	Cementitious Binders: Types of Portland cement, The role of water, Basic tests of Portland cement, Geopolymers
Week 4	Aggregates: Effects of aggregates, Classification of aggregates, Properties of aggregates, Moisture conditions, Moisture content (MC) calculations, Density and specific gravity, Unit weight,
Week 5	Measurement of moisture content, Grading aggregates, Shape and texture of aggregates. Solved examples for Moisture content (MC) calculations.
Week 6	Admixtures: Definition and classifications, Chemical admixtures, Air-entraining admixtures, Mineral admixtures. Water: Mixing water, Impurities in water, Water for curing and washing.
Week 7	Midterm Exam Workability of fresh concrete, Segregation and bleeding, slump loss.

Week 8	Introduction to Mix Design. Procedures For Concrete Mix Design using the American Institute of Concrete method
Week 9	Solved Examples for American method for concrete Mix design.
Week 10	Procedures For Concrete Mix Design using the British Standards Institute.
Week 11	Solved Examples for British method for concrete Mix design.
Week 12	Manufacture of Concrete. Delivery of Concrete. Concrete Placing: Site preparation, conveying concrete, Depositing concrete in forms, Compacting and finishing, Curing. Early-Age Properties of Concrete
Week 13	Strengths of Hardened Concrete: Definitions, Compressive strength, and corresponding tests.
Week 14	Uniaxial tensile strength and corresponding tests, Flexural strength and corresponding tests, Bond strength.
Week 15	Shrinkage and Creep, Durability. Non-destructive tests
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Fineness of Cement measurement: Method 1 & 2: Blaine Air Permeability & Sieve Analysis.
Week 2	Lab 2: Determination of Standard Consistency of Cement.
Week 3	Lab 3: Initial and Final Setting Time of Cement.
Week 4	Lab 4: Portland Cement Compressive and Tensile Strength: Casting stage.
Week 5	Lab 5: Portland Cement Compressive and Tensile Strength: Testing Stage.
Week 6	Lab 6: Standard Test Method for Relative Density (Specific Gravity) and Absorption of Fine Aggregate.
Week 7	Lab 7: Standard Test Method for Relative Density (Specific Gravity) and Absorption of Coarse Aggregate.
Week 8	Lab 8: Sieve Analysis of Fine and Coarse Aggregate Test.
Week 9	Lab 9: Slump Test for Concrete.

Week 10	Lab 10: Compaction Factor Test for Concrete
Week 11	Lab 11: Compressive and Tensile Strength Test for Concrete
Week 12-14	For Students to Carry out the relevant tests to complete their Module report.
Week 15	Practical Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Zongjin Li. Advanced Concrete Technology. Advanced Concrete Technology, Published by John Wiley & Sons, Inc.	No
Recommended Texts		No
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتاز	90 - 100	Outstanding Performance
	B - Very Good	جـ د جدا	80 - 89	Above average with some errors
	C - Good	جـ د	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 (قد 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.

Module Information
معلومات المادة الدراسية

Module Title	**Strength of Material I**			**Module Delivery**	
Module Type	**Core**			✓**Theory** □ **Lecture** □ **Lab** □ **Tutorial** □ **Practical** □ **Seminar**	
Module Code	**CE213**				
ECTS Credits	**5**				
SWL (hr/sem)	**75**				
Module Level	2		**Semester of Delivery**	1,2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/09/2025		**Version Number**	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Engineering Mechanics (Static)	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	The objective of this course is elaborate on the knowledge of engineering mechanics (statics) and to teach the students the purpose of studying strength of materials with respect to civil engineering design and analysis. The course introduces the students to the concepts of engineering mechanics of materials and the behavior of the materials and structures under applied loads
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Apply the knowledge of fundamental sciences mainly mathematics and physics to identify, formulate and solve civil engineering problems including stress, strain and deflection calculations as well as calculating axial force, shear and bending moment diagrams used in civil engineering analysis and design

Indicative Contents المحتويات الإرشادية	The objectives of CE213, Strength of Materials, are to learn the principles of mechanics applied to different materials [III] and to develop problem solving skills through application of these principles to basic engineering problems. Specific topics covered in this class include: behavior of axially loaded members; torsion of circular shafts; stresses and deflections in beams; connectors in built-up beams; stress transformation under rotation of axes; principal stresses; triaxial stress and maximum shear stress; pressure vessels; and buckling behavior of columns. The course will rely on students' prerequisite knowledge of mathematics and basic science [II] in developing principles and analytical techniques of mechanics of materials.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	This module will be delivered with a strategy that encourage students' to participate in the discussion, exercises solving, and at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple projects involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	128	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	9
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	6.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2,12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10

Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction and review of statics – equilibrium.
Week 2	Simple stresses and strains
Week 3	Mechanical properties of materials
Week 4	Axial load and deformation on axial load
Week 5	Thermal stresses and strains
Week 6	Thin walled cylinder
Week 7	Torsion-calculation of simple torsion for circular shafts.
Week 8	Plan Stress Analysis (Two Dimensional Stress Analysis)
Week 9	Shearing Forces and Bending Moments in Beams
Week 10	Shear force and bending moment diagrams.
Week 11	Bending stress in Beams
Week 12	Shearing stress in beams
Week 13	Deflection of Beams-Integration Method
Week 14	Deflection of Beams-Singularity Method
Week 15	Buckling of Columns.
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Mechanics of Materials-Andrew Pytel	No
Recommended Texts	Strength of Materials-Ferdinand L.Singer	No
Websites	https://www.coursera.org/courses?query=mechanics%20of%20materials	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتاز	90 - 100	Outstanding Performance
	B - Very Good	جـ د جدا	80 - 89	Above average with some errors
	C - Good	جـ د	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 (قد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Module Information
معلومات المادة الدراسية

Module Title	**Strength of Material II**	**Module Delivery**	
Module Type	**Core**		√**Theory**
Module Code	**CE213**		□ **Lecture**
ECTS Credits	**5**		□ **Lab**
SWL (hr/sem)	**75**		□ **Tutorial**
			□ **Practical**
			√**Seminar**

Module Level	2	**Semester of Delivery**	1,2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Jasim Mohsin	**e-mail**	
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	PH.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Engineering Mechanics	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	The objective of this course is elaborate on the knowledge of engineering mechanics (statics) and to teach the students the purpose of studying strength of materials with respect to civil engineering design and analysis. The course introduces the students to the concepts of engineering mechanics of materials and the behavior of the materials and structures under applied loads

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Apply the knowledge of fundamental sciences mainly mathematics and physics to identify, formulate and solve civil engineering problems including stress, strain and deflection calculations as well as calculating axial force, shear and bending moment diagrams used in civil engineering analysis and design
Indicative Contents المحتويات الإرشادية	The objectives of CE213, Strength of Materials, are to learn the principles of mechanics applied to different materials [III] and to develop problem solving skills through application of these principles to basic engineering problems. Specific topics covered in this class include: behavior of axially loaded members; torsion of circular shafts; stresses and deflections in beams; connectors in built-up beams; stress transformation under rotation of axes; principal stresses; triaxial stress and maximum shear stress; pressure vessels; and buckling behavior of columns. The course will rely on students' prerequisite knowledge of mathematics and basic science [II] in developing principles and analytical techniques of mechanics of materials.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	This module will be delivered with a strategy that encourage students' to participate in the discussion, exercises solving, and at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple projects involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	128	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	9

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	6.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2,12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Shear forces and bending moments in the beams
Week 2	Shear forces and bending moments in the beam
Week 3	Shear forces and bending moments in the beam
Week 4	Graphs of shear forces and bending moments.
Week 5	Graphs of shear forces and bending moments.
Week 6	Graphs of shear forces and bending moments.
Week 7	Bending stress in beams
Week 8	Bending stress in beams
Week 9	Bending stress in beams
Week 10	Bending stress in beams
Week 11	The deviation of bundles - Integration method
Week 12	The deviation of bundles - Integration method
Week 13	Beam deviation - The uniqueness method
Week 14	Buckling of Columns.
Week 15	Buckling of Columns.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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	Mechanics of Materials-Andrew Pytel	No
Recommended Texts	Strength of Materials-Ferdinand L.Singer	No
Websites	https://www.coursera.org/courses?query=mechanics%20of%20materials	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتاز	90 - 100	Outstanding Performance
	B - Very Good	جـ د جدا	80 - 89	Above average with some errors
	C - Good	جـ د	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 (قد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Module Information
معلومات المادة الدراسية

Module Title	**Engineering Statistics**	**Module Delivery**	
Module Type	**Supportive**	✓**Theory** ✓ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE227**		
ECTS Credits	**4**		
SWL (hr/sem)	**45**		

Module Level	2	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**e-mail**	
Module Leader's Acad. Title		**Module Leader's Qualification**	
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	01/09/2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**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	The module aims to present the basic of engineering statistics by analyzing, organizing and describing data in tables and drawings, knowing the measures of dispersion and central tendency, in addition to knowing the theory of probability and inference from the data to make decisions and linking them to engineering reality.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge and Understanding 1- Understand the importance of statistics and its divisions. 2- Learn how to show and represent statistical data with tables or graphics. 3- Identify the most important measures of central tendency and dispersion of data. 4- Learn about probability theory and its different distributions. 5- Identifying the design of samples, their estimation, and knowledge of their properties. B. Subject-specific skills 1- Analyze, organize, and describe data in tables and/or curves. 2- Describe the averages of the data and methods of measuring their dispersion. 3- Engineering inference from the statistical data to take the appropriate decision. 4- Linking information to engineering reality.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Weekly homework and daily and weekly quizzes. Giving assignments and activities in the classroom. As well as guiding students to the important scientific sources and taking some exercises to practice on them.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	58	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
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**	2	10% (10)		
	Assignments	2	10% (10)		
	Projects / Lab.	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)		
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	INTRODUCTION TO ENGINEERING STATISTICS (Brief definition in statistics)
Week 2	PRESENTATION OF STATISTICS DATA cont. (Frequency distributions, Frequency distributions table)
Week 3	PRESENTATION OF STATISTICS DATA (Cumulative frequency distribution, Graphical representation of data)

Week 4	Graphical representation of data (Cumulative frequency curves, Histogram, Frequency polygon)
Week 5	MEASURES OF CENTRAL LOCATION (Measures of center, four types)
Week 6	MEASURES OF DISPERSION, THE PROBABILITY (Measures of dispersion, four types, Probability theory)
Week 7	THE PROBABILITY cont. (Combinations of Three or More Events)
Week 8	THE PROBABILITY cont. (Probability theory rules, Conditional Probability, Bayes' theorems)
Week 9	Geometric Probability (Geometric Probability examples)
Week 10	PROBABILITY DISTRIBUTION (Discrete probability distribution, Discrete Uniform Distribution)
Week 11	PROBABILITY DISTRIBUTION, cont. (Geometric Distribution, Negative binomial Distribution, Binomial Distribution)
Week 12	Continuous Probability Distributions, Continuous Uniform Distributions, Normal Distributions, Exponential Distribution)
Week 13	SAMPLING DISTRIBUTION (Sampling Distribution of the Sample Mean, Central Limit Theorem, applications)
Week 14	THE EXPECTATION (Expectation properties and Moments)
Week 15	THE ESTIMATION (point estimator, interval estimator)
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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	Statistics with engineering applications Entry to statistics	--
Recommended Texts	Fundamentals of Behavioral Statistics ,1988	--
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 (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.

نماذج وصف المواد الدراسية-المرحلة الثالثة-قسم الهندسة المدنية

Module Information معلومات المادة الدراسية					
Module Title	**Irrigation Engineering**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE315**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**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 الاخرى			
Prerequisite module	Irrigation Engineering	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. This course covers the basic concepts of irrigation engineering and explains the different irrigation methods. 2. Demonstrate the relationship between irrigation engineering (within agricultural engineering) and civil engineering. 3. Develop skills in understanding and solving problems within the field of agricultural engineering, such as water waste problems. 4. Present the principles and laws taken in other related courses and demonstrate their importance and how to apply and employ them in irrigation

	engineering to solve potential engineering problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Clarifying the basic concepts of irrigation engineering systems and their applications in agricultural fields 2. Acquiring basic skills in managing irrigation systems optimally. 3. Gaining the appropriate experience in designing irrigation systems in different ways and their suitability to different surrounding conditions and knowing the difference between the old and modern irrigation systems. 4. Developing the ability to solve water waste problems and finding the best ways to reduce them. 5. Developing the ability to write scientific reports and reading charts with tables. This course covers a wide range of different irrigation methods, their optimal conditions and design methods with the aim of enriching the knowledge base of the civil engineer in the field of agricultural engineering in a way that enables him to solve potential engineering problems in this field effectively.
Indicative Contents المحتويات الارشادية	• The main strategy for delivering this module is to encourage student's participation in the exercises while refining and expanding their critical thinking skills. This will be achieved through theoretical lectures, small discussion groups, presentation of scientific films, writing reports, and using the scientific web sites.

	• Direct questions in a manner (how and why) for the subject during the lecture. • short exams during the theoretical lecture. • Midterm exam.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

	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.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	140	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

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	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	**Midterm Exam**	1 hr	10% (10)	10	1-5
	Final Exam	2hr	50% (50)	16	All

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to the Irrigation Engineering
Week 2	Introduction to the Irrigation Engineering
Week 3	Introduction to the Irrigation Engineering
Week 4	Introduction to the Irrigation Engineering
Week 5	Land gradation design
Week 6	Surface irrigation
Week 7	Strip irrigation
Week 8	Furrow irrigation
Week 9	design of beam-columns in braced frames
Week 10	Sprinkler irrigation
Week 11	Sprinkler irrigation
Week 12	Sprinkler irrigation
Week 13	Sprinkler irrigation
Week 14	Trickle irrigation
Week 15	Trickle irrigation
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1. اساسيات الري تأليف جورج هارغريفز وغاري ميركلي 2. مقدمة في نظم الري للدكتور سمير محمد إسماعيل 3. Irrigation and Drainage Engineering by Peter Waller and Muluneh Yitayew 4. Irrigation and water resources engineering by G.L. Asawa	Yes

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.

Module Information
معلومات المادة الدراسية

Module Title	**Soil Mechanics 1**	**Module Delivery**	
Module Type	**Core**	☐ **Theory** ✓**Lecture** ✓**Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE313**		
ECTS Credits	**8**		
SWL (hr/sem)	**200**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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 الاخرى

Prerequisite module	Soil Mechanics 1	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	Theoretical lectures, practical lectures, small discussion groups, presentation of scientific films, and writing reports.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Indicative Contents المحتويات الارشادية	• The main strategy for delivering this module is to encourage student's participation in the exercises while refining and expanding their critical thinking skills. This will be achieved through theoretical lectures, small discussion groups, presentation of scientific films, writing reports, and using the scientific web sites.

	• Direct questions in a manner (how and why) for the subject during the lecture. • short exams during the theoretical lecture. • Midterm exam.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

	• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side. D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	140	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

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	1	10% (10)		
	Report	1	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	Basic Characteristics of Soils

Week 2	Weight-Volume Relationships
Week 3	Weight-Volume Relationships
Week 4	Plasticity and Structure of Soil
Week 5	Plasticity and Structure of Soil
Week 6	Classification of Soil
Week 7	Classification of Soil
Week 8	Soil Compaction
Week 9	Soil Compaction
Week 10	Permeability
Week 11	Permeability
Week 12	Seepage
Week 13	Seepage
Week 14	Seepage
Week 15	Permeability
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	• Determination of Natural Moisture Content
Week 2	• Specific Gravity of Soil Solids
Week 3	• Sieve Analysis (Grain Size Distribution)
Week 4	• Hydrometer Analysis
Week 5	• Liquid Limit Determination (Casagrande and Cone Penetrometer Methods)
Week 6	• Plastic Limit and Plasticity Index Determination
Week 7	• Shrinkage Limit Test

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	- Principles of Geotechnical Engineering (By: Braja M. Das, 7th Ed.)	Yes
Recommended Texts	- Principles of Geotechnical Engineering (By: Braja M. Das, 7th Ed.)	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)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.

Module Information
معلومات المادة الدراسية

Module Title	**Soil Mechanics 2**	**Module Delivery**	
Module Type	**Core**	☐ **Theory** ✓**Lecture** ✓**Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE313**		
ECTS Credits	**8**		
SWL (hr/sem)	**200**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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 الاخرى

Prerequisite module	Soil Mechanics 2	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	Theoretical lectures, practical lectures, small discussion groups, presentation of scientific films, and writing reports.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Indicative Contents المحتويات الارشادية	• The main strategy for delivering this module is to encourage student's participation in the exercises while refining and expanding their critical thinking skills. This will be achieved through theoretical lectures, small discussion groups, presentation of scientific films, writing reports, and using the scientific web sites.

	• Direct questions in a manner (how and why) for the subject during the lecture. • short exams during the theoretical lecture. • Midterm exam.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

	• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side. D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	140	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

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	1	10% (10)		
	Report	1	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	**In Situ Stresses**
Week 2	**Compressibility of Soil-Consolidation Settlement**
Week 3	**Soil-Consolidation Settlement**
Week 4	**Soil-Consolidation Settlement**
Week 5	**Soil-Consolidation Settlement**
Week 6	**Soil-Consolidation Settlement**
Week 7	**Soil-Consolidation Settlement**
Week 8	**Shear Strength of Soil**
Week 9	**Shear Strength of Soil**
Week 10	**Shear Strength of Soil**
Week 11	**Shear Strength of Soil**
Week 12	**Shear Strength of Soil**
Week 13	**Lateral Earth Pressure**
Week 14	**Lateral Earth Pressure**
Week 15	**Lateral Earth Pressure**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	• Consolidation Test (Odometer Test)
Week 2	• Direct Shear Test on Cohesionless Soils
Week 3	• Unconfined Compression Test (UCC) on Cohesive Soils
Week 4	• Unconsolidated-Undrained (UU) Triaxial Compression Test
Week 5	• Consolidated-Undrained (CU) Triaxial Compression Test with Pore Water Pressure Measurement
Week 6	• Consolidated-Drained (CD) Triaxial Compression Test
Week 7	• Vane Shear Test (Laboratory and Field Simulation)

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	- Principles of Geotechnical Engineering (By: Braja M. Das, 7th Ed.)	Yes
Recommended Texts	- Principles of Geotechnical Engineering (By: Braja M. Das, 7th Ed.)	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)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.

Module Information معلومات المادة الدراسية					
Module Title	**Traffic and Transportation Engineering**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ✓**Lecture** ✓**Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE317**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**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 الاخرى			
Prerequisite module	Traffic and Transportation Engineering	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	The course aims to study the means and establish systems that achieve organization, safety and efficiency and determine them during human or goods transportation operations in all means of transportation by road, rail, air and sea navigation, by using various engineering techniques with the latest means of communication and technology, including traffic signs, traffic signals, traffic symbols and signs, all with the aim of organizing and facilitating traffic, and preserving lives, time and money.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A. Cognitive and educational objectives 1. Methods of calculating traffic volumes. 2. Methods of calculating vehicle speed. 3. Design of road elements. 4. Analysis of traffic accidents B. Course specific skill objectives 1. Apply quantitative and numerical methods for the purpose of solving engineering problems. 2. Use basic knowledge to research new technologies. 3. Derive and evaluate information necessary to apply engineering analysis methods to unfamiliar problems.
Indicative Contents المحتويات الارشادية	Scientific and research skills are developed through teaching and learning activities. Analytical and problem-solving skills are further developed through a set of problems prepared by the lecturers in small study groups and all work submitted is assessed and responded to.

	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	140	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
	Quizzes	2	10% (10)	3 , 7	All

Formative assessment	**Assignments**	2	10% (10)	2,4,6,8,10,12	All
	Class activity	1	10% (10)		
	Report	1	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	Introduction
Week 2	Volume subdues
Week 3	Speed studies
Week 4	Relationship among speed, volume and density
Week 5	intersections
Week 6	Traffic control methods
Week 7	Sign and marking
Week 8	traffic signalized analysis
Week 9	traffic signalized design - Webster method
Week 10	Stopping Sight distance
Week 11	Passing Sight distance
Week 12	Horizontal curve design
Week 13	Vertical curve design
Week 14	Parking study
Week 15	Accident study
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	• Spot Speed Study Using Radar / Stopwatch
Week 2	• Traffic Volume Count and Composition Study
Week 3	• Intersection Delay and Queue Length Analysis
Week 4	• Travel Time and Delay Study (Floating Car Method)
Week 5	• Pedestrian Volume and Walking Speed Study
Week 6	• Parking Space Inventory and Duration Study
Week 7	• Traffic Signal Timing and Coordination Design

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1. مبادئ هندسة المرور، د. لمياء عبدالجليل. Traffic Engineering Third Edition by Roger P. Roess, Elena S. Prassas and William R. McShane.	Yes
Recommended Texts	1. Highway and Traffic Engineering in Developing Countries by Bent Thagesen. 2. Traffic and Highway Engineering by Nicholas J. Garber and Lester A. Hoel.	No

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

Module Information
معلومات المادة الدراسية

Module Title	**Drainage Engineering**	**Module Delivery**	
Module Type	**Core**	✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE315**		
ECTS Credits	**8**		
SWL (hr/sem)	**200**		
Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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 الاخرى

Prerequisite module	Drainage Engineering	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	1. Clarify the basic concepts of drainage engineering systems and their applications in agricultural fields. 2. Gain the ability to address the problems of high groundwater levels. 3. Gain basic skills in managing drainage systems and gain experience in designing these systems under different surrounding conditions. 4. Gain experience in the difference between the old and modern drainage system and managing the drainage system optimally.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Ability to design drainage systems in different ways. 2. Ability to think about problems of rising groundwater levels. 3. Writing scientific reports and reading charts and tables. This course covers a wide range of different drainage methods, their optimal conditions and design methods with the aim of enriching the knowledge base of the civil engineer in the field of agricultural engineering in a way that enables him to solve potential engineering problems in this field effectively.
Indicative Contents المحتويات الارشادية	The main strategy for delivering this module is to encourage student's participation in the exercises while refining and expanding their critical thinking skills. This will be achieved through theoretical lectures, small discussion groups, presentation of scientific films, writing reports, and using the scientific web sites.

	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	140	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
	Quizzes	2	10% (10)	3 , 7	All
	Assignments	2	10% (10)	2,4,6,8,10,12	All

Formative assessment	**Class activity**	1	10% (10)		
	Report	1	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	Introduction to the Drainage Engineering
Week 2	Introduction to the Drainage Engineering
Week 3	Introduction to the Drainage Engineering
Week 4	Drainage systems
Week 5	Drainage systems
Week 6	Drainage systems
Week 7	Design of drain cross sections
Week 8	Design of drain cross sections
Week 9	Design of drain cross sections
Week 10	Distance between the drains
Week 11	Distance between the drains
Week 12	Distance between the drains
Week 13	Vertical drainage
Week 14	Vertical drainage
Week 15	Vertical drainage
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	كتاب هندسة البزل تأليف الدكتور عبد الستار يونس الدباغ	Yes
Recommended Texts	Irrigation and Drainage Engineering by Peter Waller and Muluneh Yitayew	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)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.

Module Information
معلومات المادة الدراسية

Module Title	**Numerical Analysis**	**Module Delivery**	
Module Type	**Core**	✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE311**		
ECTS Credits	**8**		
SWL (hr/sem)	**200**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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 الاخرى

Prerequisite module	Numerical Analysis	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	The course aims to identify the following: 1- Numerical solution of algebraic equations. 2- Taylor series 3- Differentiation and integration by numerical methods 4- Numerical solution of differential equations 5- Finding the mathematical model for a set of points, interpolation and induction

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge and Understanding A1-Preparing applied engineers in the field of civil engineering who are distinguished by a high level of knowledge and analytical creativity in line with the solid standards adopted globally in ensuring quality and academic accreditation of corresponding engineering programs while adhering to the ethics of the engineering profession. A2- Enabling knowledge and understanding of practical applications according to the course objectives. A3- The ability to build a mathematical model to represent various engineering processes.A3- B. Subject-specific skills B1 - The ability to know and understand the mathematical model of the problem through the differential equation and its solution B2 - The ability to think about solving any problem. B3 - The ability to solve problems using analytical methods for differential equations. B4 - The ability to gain experience in dealing with initial problems and boundary conditions.
Indicative Contents المحتويات الارشادية	• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it

	• Direct questions in a manner (how and why) for the subject during the lecture. • short exams during the theoretical lecture. • Midterm exam.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

	• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	140	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

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	1	10% (10)		
	Report	1	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	Numerical solution of algebraic equations
Week 2	Numerical solution of algebraic equations
Week 3	Numerical solution of algebraic equations
Week 4	Numerical solution of algebraic equations
Week 5	Numerical solution of algebraic equations
Week 6	Numerical solution of algebraic equations
Week 7	Taylor Series

Week 8	Numerical Derivation and Integration
Week 9	Numerical Derivation and Integration
Week 10	Numerical Derivation and Integration
Week 11	Numerical Solution of Differential Equations
Week 12	Numerical Solution of Differential Equations
Week 13	Numerical Solution of Differential Equations
Week 14	Finding the Mathematical Model for a Set of Points, Interpolation and Induction
Week 15	Finding the Mathematical Model for a Set of Points, Interpolation and Induction
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي 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	MATHEMATICS, NINTH EDITION, JOHN WILEY & SONS, INC., 2006	Yes
Recommended Texts	Reputable websites.	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)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.

Module Information
معلومات المادة الدراسية

Module Title	**Engineering Analysis**	**Module Delivery**	
Module Type	**Core**	✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE311**		
ECTS Credits	**8**		
SWL (hr/sem)	**200**		
Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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 الاخرى

Prerequisite module	Engineering Analysis	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	The course aims to identify the following: 1- First order ordinary differential equations. 2- Engineering applications of first order differential equations 3- Second and higher order ordinary differential equations with fixed and variable coefficients 4- Engineering applications of second order differential equations 5- Fourier series 6- Partial differential equations

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge and Understanding A1-Preparing applied engineers in the field of civil engineering who are distinguished by a high level of knowledge and analytical creativity in line with the solid standards adopted globally in ensuring quality and academic accreditation of corresponding engineering programs while adhering to the ethics of the engineering profession. A2- Enabling knowledge and understanding of practical applications according to the course objectives. A3- The ability to build a mathematical model to represent various engineering processes.A3- B. Subject-specific skills B1 - The ability to know and understand the mathematical model of the problem through the differential equation and its solution B2 - The ability to think about solving any problem. B3 - The ability to solve problems using analytical methods for differential equations. B4 - The ability to gain experience in dealing with initial problems and boundary conditions.
Indicative Contents المحتويات الارشادية	• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it

	• Direct questions in a manner (how and why) for the subject during the lecture. • short exams during the theoretical lecture. • Midterm exam.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	140	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

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	1	10% (10)		
	Report	1	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	Introduction to Differential Equations
Week 2	First order ordinary differential equations
Week 3	First order ordinary differential equations
Week 4	First order ordinary differential equations
Week 5	Applications of DEs
Week 6	Applications of differential equations
Week 7	Higher order ordinary differential equations
Week 8	Higher order ordinary differential equations

Week 9	Higher order ordinary differential equations
Week 10	Applications of higher order ordinary differential equations
Week 11	Applications of higher order ordinary differential equations
Week 12	Applications of higher order ordinary differential equations
Week 13	Fourier Series
Week 14	Partial Differential Equations
Week 15	Partial Differential Equations
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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	MATHEMATICS, NINTH EDITION, JOHN WILEY & SONS, INC., 2006	Yes
Recommended Texts	Reputable websites.	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)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.

Module Information
معلومات المادة الدراسية

Module Title	**Reinforced concrete designs-1**	**Module Delivery**	
Module Type	**Core**		✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**CE314**		
ECTS Credits	**10**		
SWL (hr/sem)	**250**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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 الاخرى

Prerequisite module	Reinforced concrete designs-1	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	A- Cognitive objectives A1- Apply basic knowledge in understanding the analysis and design of two-way reinforced concrete slabs. A2- Analyze and design different reinforced concrete columns with central and eccentric loading. A3- Apply methods for calculating the overlap distances of reinforcing steel and the span distance inside concrete beams when cutting a number of reinforcing bars. B- Course specific skill objectives.

	B1- Apply mathematical methods approved in international codes for analysis and design purposes. B2- Use basic knowledge to research new technologies. B3- Use simplified methods by relying on diagrams and tables to design columns subjected to central and eccentric loads.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it
Indicative Contents المحتويات الارشادية	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.

	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

	• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side. D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	160	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	90	**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	1	10% (10)		
	Report	1	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	Introduction
Week 2	Introduction
Week 3	Introduction
Week 4	Introduction
Week 5	Working Stress Method
Week 6	Working Stress Method
Week 7	Flexural Beam Analysis And Design
Week 8	Flexural Beam Analysis And Design
Week 9	Application Examples
Week 10	Flexural Beam Analysis And Design
Week 11	Flexural Beam Analysis And Design
Week 12	Flexural Analysis And Design of T-Beams.
Week 13	Shear and Diagonal Tension in Beams.
Week 14	Shear and Diagonal Tension in Beams.
Week 15	Design and Analysis of slabs.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي 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	1-Structural Concrete Theory and Design, By Nadim Hasson ,Akthem Aktham Al manseer,6th Edition 2015	Yes
Recommended Texts	2- Reinforced concrete Design ,7th Edition 2007 By Chu K ai Wang	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)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.

Module Information
معلومات المادة الدراسية

Module Title	**Reinforced concrete designs-2**	**Module Delivery**	
Module Type	**Core**	✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE314**		
ECTS Credits	**10**		
SWL (hr/sem)	**250**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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 الاخرى

Prerequisite module	Reinforced concrete designs-2	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	A- Cognitive objectives A1- Apply basic knowledge in understanding the analysis and design of two-way reinforced concrete slabs. A2- Analyze and design different reinforced concrete columns with central and eccentric loading. A3- Apply methods for calculating the overlap distances of reinforcing steel and the span distance inside concrete beams when cutting a number of reinforcing bars. B- Course specific skill objectives. B1- Apply mathematical methods approved in international codes for analysis and

	design purposes. B2- Use basic knowledge to research new technologies. B3- Use simplified methods by relying on diagrams and tables to design columns subjected to central and eccentric loads.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it
Indicative Contents المحتويات الارشادية	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.

	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

	• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side. D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	160	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	90	**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	1	10% (10)		
	Report	1	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	Intiontrodion

Week 2	Two way slabs
Week 3	Two way slabs
Week 4	Two way slabs Analysis
Week 5	Two way slabs Design
Week 6	Practical Examples
Week 7	Flexural Beam Analysis And Design
Week 8	Introduction Columns
Week 9	Application Examples
Week 10	Analysis and Design of Column
Week 11	Application Examples
Week 12	Analysis and Design of Column
Week 13	Application Examples
Week 14	Development length
Week 15	Development length
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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	1-Structural Concrete Theory and Design, By Nadim Hasson ,Akthem Aktham Al manseer,6th Edition 2015	Yes
Recommended Texts	2- Reinforced concrete Design ,7th Edition 2007 By Chu K ai Wang	No
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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	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.

Module Information
معلومات المادة الدراسية

Module Title	**Theory of Structure 1**	**Module Delivery**	
Module Type	**Core**	✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE312**		
ECTS Credits	**8**		
SWL (hr/sem)	**200**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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 الاخرى

Prerequisite module	Theory of Structure 1	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	The course aims to expand on the concepts identified in Structural Theory-1, where the analysis of statically indeterminate structures is reviewed by imposing the conditions of the deformation form on the equilibrium of the structure. The methods used include the two basic approaches in analysis methods: the group of force methods (such as the method of compatible deformations) and the group of displacement methods (such as the slope-slump method and the method of moment distribution).

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Cognitive objectives A-1 Knowing the concept of a group of force methods in the analysis of statically indeterminate structures, as well as knowing the method of compatible deformations and applying it to statically indeterminate thresholds. A-2 Knowing the concept of a group of displacement methods in the analysis of statically indeterminate structures, and knowing the slope-slump method and applying it to indeterminate thresholds and structures. A-3 Knowing the method of moment distribution and applying it to indeterminate thresholds and structures. A-4 Knowing the concept of strain energy and knowing Castellino's theories and applying them to the analysis of indeterminate thresholds and structures. B- Course specific skill objectives. B-1 The ability to analyze statically indeterminate structures and evaluate reaction components. B-2 The ability to draw shear force and bending moment diagrams for statically indeterminate structures.
Indicative Contents المحتويات الارشادية	The main strategy for delivering this module is to encourage student's participation in the exercises while refining and expanding their critical thinking skills. This will be achieved through theoretical lectures, small discussion groups, presentation of scientific films, writing reports, and using the scientific web sites.

	• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

	• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side. D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	140	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

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	1	10% (10)		
	Report	1	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	Force Methods

Week 2	Method of Consistent Deformations
Week 3	Method of Consistent Deformations
Week 4	Method of Consistent Deformations
Week 5	Introduction to displacement methods and derivation of slope-deflection method
Week 6	Application of slope-deflection method to beams and non-sway frames
Week 7	Displacement Methods: Moment Distribution
Week 8	Displacement Methods: Moment Distribution
Week 9	Displacement Methods: Moment Distribution
Week 10	Displacement Methods: Moment Distribution
Week 11	Displacement Methods: Moment Distribution
Week 12	Energy Methods
Week 13	Energy Methods
Week 14	Energy Methods
Week 15	Energy Methods
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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	Elementary Theory of Structures, Yan-Yu Hseih, Prentice Hall Structural Analysis, R.C. Hibbeler, Prentice Hall	Yes
Recommended Texts		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 (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.

Module Information
معلومات المادة الدراسية

Module Title	**Theory of Structure 2**	**Module Delivery**	
Module Type	**Core**		✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**CE312**		
ECTS Credits	**8**		
SWL (hr/sem)	**200**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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 الاخرى

Prerequisite module	Theory of Structure 2	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	The course aims to expand on the concepts identified in Structural Theory-1, where the analysis of statically indeterminate structures is reviewed by imposing the conditions of the deformation form on the equilibrium of the structure. The methods used include the two basic approaches in analysis methods: the group of force methods (such as the method of compatible deformations) and the group of displacement methods (such as the slope-slump method and the method of moment distribution).

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Cognitive objectives A-1 Knowing the concept of a group of force methods in the analysis of statically indeterminate structures, as well as knowing the method of compatible deformations and applying it to statically indeterminate thresholds. A-2 Knowing the concept of a group of displacement methods in the analysis of statically indeterminate structures, and knowing the slope-slump method and applying it to indeterminate thresholds and structures. A-3 Knowing the method of moment distribution and applying it to indeterminate thresholds and structures. A-4 Knowing the concept of strain energy and knowing Castellino's theories and applying them to the analysis of indeterminate thresholds and structures. B- Course specific skill objectives. B-1 The ability to analyze statically indeterminate structures and evaluate reaction components. B-2 The ability to draw shear force and bending moment diagrams for statically indeterminate structures.
Indicative Contents المحتويات الارشادية	The main strategy for delivering this module is to encourage student's participation in the exercises while refining and expanding their critical thinking skills. This will be achieved through theoretical lectures, small discussion groups, presentation of scientific films, writing reports, and using the scientific web sites.

	• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

	• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side. D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	140	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

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	1	10% (10)		
	Report	1	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	Introduction to force methods Force Methods

Week 2	Method of Consistent Deformations
Week 3	Method of Consistent Deformations
Week 4	Method of Consistent Deformations
Week 5	Displacement Methods: Slope-Deflection
Week 6	Displacement Methods: Slope-Deflection
Week 7	Displacement Methods: Moment Distribution
Week 8	Displacement Methods: Moment Distribution
Week 9	Displacement Methods: Moment Distribution
Week 10	Displacement Methods: Moment Distribution
Week 11	Displacement Methods: Moment Distribution
Week 12	Energy Methods
Week 13	Energy Methods
Week 14	Energy Methods
Week 15	Energy Methods
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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	Elementary Theory of Structures, Yan-Yu Hseih, Prentice Hall Structural Analysis, R.C. Hibbeler, Prentice Hall	Yes
Recommended Texts		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 (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.

Module Information
معلومات المادة الدراسية

Module Title	**Engineering Management**	**Module Delivery**	
Module Type	**Core**	✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE316**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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 الاخرى

Prerequisite module	Engineering Management	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	Teaching undergraduate students how to deal with applied engineering programs such as the EPANET program used to analyze and For water network design, as well as the Microsoft Project program used in planning construction projects, estimating costs and project completion time, and controlling projects

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Learning outcome 1- Teaching students how to deal with construction programs in an integrated manner and comparing with the theoretical study to design and analyze For water network design. 2- Teaching students how to create quantity schedules for construction projects by controlling the workflow
Indicative Contents المحتويات الارشادية	Scientific and research skills are developed through teaching and learning activities. Analytical and problem-solving skills are further developed through a set of problems prepared by the lecturers in small study groups and all work submitted is assessed and responded to.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	40	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
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**	2	10% (10)	3 , 7	All
	Assignments	2	10% (10)	2,4,6,8,10,12	All
	Class activity	1	10% (10)		
	Report	1	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	Introduction to project management
Week 2	Introduction to project management
Week 3	Project planning
Week 4	Project planning
Week 5	Project planning
Week 6	Project planning
Week 7	Bar chart
Week 8	Bar chart
Week 9	(Gantt chart)
Week 10	How to manage project resources in a (Scheduling)
Week 11	How to solve the diagram in a way (PERT)
Week 12	How to solve the diagram in a way (PERT)
Week 13	How to draw recurring charts LOB method
Week 14	How to draw recurring charts LOB method
Week 15	How to draw recurring charts LOB method
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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	A Guide to the project management body of knowledge - PMI	Yes
Recommended Texts	1. Project Management, A Systems Approach to Planning, Scheduling, and Controlling, 10th edition, KERZNER 2. Principles of Construction management By: Roy Pitcher 3. Construction Planning, Programming and Control by Brian Cooke 4. Operations Management Creating Value Along the Supply Chain Russell - Chapter 9: Project management	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)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

نماذج وصف المواد الدراسية-المرحلة الرابعة-قسم الهندسة المدنية

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			**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 الاخرى			
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 الارشادية	
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 الارشادية	• 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

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.

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

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**

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)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Module Information
معلومات المادة الدراسية

Module Title	**Foundation engineering II**	**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**	2
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 الاخرى

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 الارشادية	
Module Aims أهداف المادة الدراسية	This course is intended to; • Determine the allowable axial load capacity of single piles and pile groups. • Determine the settlement of single pile and pile groups. • Understand and determine lateral earth pressure. • Understand the forces that lead to instability of earth retaining structures. • Determine the stability of eath retaining structures (retaining walls, sheet pile walls, braced excavation).
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	When the student complete studying this course, he should be able to: • Determine the allowable axial load capacity of single pile and pile group. • Estimation of pile load in a pile group. • Determine the stability of earth structures.
Indicative Contents المحتويات الارشادية	• Chapter 1; Pile Foundations: Single Pile Analysis; Introduction, Classification of Piles, Static Pile Capacity, Point Bearing Capacity, Point Bearing from Field Tests, SPT, CPT, Skin Friction Capacity, Pile Loading Test-Axial Compression (ASTM-D1143), Pile Capacity – Dynamic Analysis

	• Chapter 2; Pile Foundations: Groups; Introduction, The Carrying Capacity of Pile Groups, Efficiency of Pile Groups, Settlement of Pile Groups, Pile Caps, Negative Skin Friction • Chapter 3; Lateral Earth Pressure; Introduction, Coulomb Earth Pressure Theory, Rankine Earth Pressures • Chapter 4; Retaining Walls; Introduction, Stability of Retaining Walls, Base Key. • Chapter 5; Sheet Pile Walls; Introduction, Types of sheetpiling, Safety Factor, Cantilever Sheetpiling, Anchored Sheetpiling: Free-Earth Support, Capacity of Deadman, Location of Deadman.

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.

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	1	10% (10)		
	Report	1	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; Pile Foundations: Single Pile Analysis; Introduction, Classification of Piles, Static Pile Capacity, Point Bearing Capacity, Point Bearing from Field Tests, SPT, CPT,
Week 2	Pile Foundations: Single Pile Analysis; Introduction, Classification of Piles, Static Pile Capacity, Point Bearing Capacity, Point Bearing from Field Tests, SPT, CPT,
Week 3	Pile Foundations: Single Pile Analysis; Introduction, Classification of Piles, Static Pile Capacity, Point Bearing Capacity, Point Bearing from Field Tests, SPT, CPT,
Week 4	Skin Friction Capacity, Pile Loading Test-Axial Compression (ASTM-D1143), Pile Capacity – Dynamic Analysis
Week 5	Skin Friction Capacity, Pile Loading Test-Axial Compression (ASTM-D1143), Pile Capacity – Dynamic Analysis
Week 6	Pile Foundations: Groups; Introduction, The Carrying Capacity of Pile Groups, Efficiency of Pile Groups, Settlement of Pile Groups, Pile Caps, Negative Skin Friction
Week 7	Pile Foundations: Groups; Introduction, The Carrying Capacity of Pile Groups, Efficiency of Pile Groups, Settlement of Pile Groups, Pile Caps, Negative Skin Friction
Week 8	Pile Foundations: Groups; Introduction, The Carrying Capacity of Pile Groups, Efficiency of Pile Groups, Settlement of Pile Groups, Pile Caps, Negative Skin Friction
Week 9	Lateral Earth Pressure; Introduction, Coulomb Earth Pressure Theory, Rankine Earth Pressures
Week 10	Lateral Earth Pressure; Introduction, Coulomb Earth Pressure Theory, Rankine Earth Pressures
Week 11	Retaining Walls; Introduction, Stability of Retaining Walls, Base Key.

Week 12	Sheet Pile Walls; Introduction, Types of sheetpiling, Safety Factor, Cantilever Sheetpiling,
Week 13	Sheet Pile Walls; Introduction, Types of sheetpiling, Safety Factor, Cantilever Sheetpiling,
Week 14	Anchored Sheetpiling: Free-Earth Support, Capacity of Deadman, Location of Deadman.
Week 15	Anchored Sheetpiling: Free-Earth Support, Capacity of Deadman, Location of Deadman.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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)قيد المعالجة(	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Module Information
معلومات المادة الدراسية

Module Title	**Prestress Concrete**	**Module Delivery**	
Module Type	**Core**	✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE411**		
ECTS Credits	**8**		
SWL (hr/sem)	**200**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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\9\2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	1. To develop an understanding of the basic principles of structural analysis and be able to explain them. 2. To determine and analyze models of applied loads on structures. 3. To develop and utilize influence lines of structures. 4. To utilize various methods of analysis of beams, trusses, and frames to determine the response of both determinate and indeterminate structures.

	5. To understand the role of structural analysis within the context of engineering design and decision making.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Ability to apply knowledge of basic mathematics through differential equations, science, and engineering to solving engineering problems. 2. Ability to formulate and solve civil engineering problems. 3. Understanding of professional and ethical responsibility. 4. Recognition of the need for, and an ability to engage in, life-long learning. 5. Ability to use modern tools, techniques, and computation methods necessary for civil engineering practice.
Indicative Contents المحتويات الارشادية	Part I: Statically Determinate Structures Types of structural elements, Types of structures, Types of loads, Types of supports, Equations of equilibrium, Equations of condition, Determinancy and stability. Internal loadings developed in structural members, sign convention, Shear force and bending moment diagrams for a beam, Relationships between load, shear force and bending moment, Moment diagrams by method of superposition, Shear and moment diagrams for a frame. Determinancy and stability of trusses, The method of joints, The method of sections. Influence lines for statically determinate structures, Influence lines for beams, Relationships of influence lines and structural loading, Influence lines for trusses, Moving loads on beams, Absolute maximum moment in a beam. Approximate analysis of statically indeterminate structures, Indeterminate trusses, Vertical loads on building frames, Lateral loads on building frames: portal method. Deflection of a beam, Significance of beam deflections, Double integration method, Singularity function method, Moment-area method. Part II: Statically Indeterminate Structures 3 Force methods, Method of consistent deformations, Basic procedure, Primary structure, Redundant reaction components. Displacement methods, The slope-deflection method, Derivation of the slope- deflection equations, Application of the slope-deflection method to the analysis of statically indeterminate beams, Analysis of rigid frames without joint translation. The moment distribution method, General description of the moment distribution method, Distribution factor, Procedure, Modified stiffness factor for hinged far end, Support settlement, Application of moment distribution to frames without sidesway. Energy methods, Strain energy in an elastic system: axial loading, flexural loading, Castigliano's theorem method, Joint displacement in trusses, Application of Castigliano's theorem to statically indeterminate structures: beams, frames.

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	1	10% (10)		
	Report	1	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	Introduction
Week 2	Yield line analysis for slabs
Week 3	One-Way Joist Slab (Ribbed Slab)
Week 4	Flat slab
Week 5	Waffle slab
Week 6	Precast slab
Week 7	Slabs on grade
Week 8	Composite slab
Week 9	Prestress concrete
Week 10	Analysis of flexural member of prestress concrete beams
Week 11	Analysis of flexural member of prestress concrete beams
Week 12	Design of flexural member of prestress concrete beams
Week 13	Design of flexural member of prestress concrete beams
Week 14	development length and anchorage zone design
Week 15	Deflection and crack control for flextural member of prestress concrete beams
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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	"Elementary Theory of Structures", Yan-yu Hsieh, Prentice-Hall, 1982.	Yes
Recommended Texts	"Structural Analysis", Russel C. Hibbeler, 9th ed., Pearson Education, 2014.	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)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.

Module Information
معلومات المادة الدراسية

Module Title	**Steel 1**	**Module Delivery**	
Module Type	**Core**		✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**CE413**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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 الاخرى

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 الارشادية	
Module Aims أهداف المادة الدراسية	1- Understanding steel as a structural material, and get knowledge of its mechanical properties. 2- Knowledge of design codes and standards. 3- Learning to identify and evaluate the various loads. 4-Understanding the analysis and design of tension members in steel structures. 5- Studying the analysis and design of compression members.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Cognitive objectives A1- Understanding steel as a structural material, and get knowledge of its mechanical properties. A2- - Knowledge of design codes and standards A3- Understanding the analysis and design of tension and compression members in steel structures. B- Skill objectives specific to the course. B1- provision of necessary skills to deal with steel structures. B2-Abbility to analyze tension and compression members. B3- Knowledge of the procedures involved in designing tension and compression members. C. Thinking Skills C1- Analytical thinking: analyze steel structural members under different loading conditions. C2- Design thinking: develop efficient and economical steel structural designs that satisfy strength, and serviceability requirements. C3- Decision-making skills: choose of suitable steel grade and sections based on engineering judgment and standards.
Indicative Contents المحتويات الارشادية	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum.

	• Direct questions in a manner (how and why) for the subject during the lecture. • short exams during the theoretical lecture. • Midterm exam.

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.

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
	Quizzes	2	10% (10)	3 , 7	All

Formative assessment	**Assignments**	2	10% (10)	2,4,6,8,10,12	All
	Class activity	1	10% (10)		
	Report	1	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	Introduction
Week 2	Advantages and disadvantages of steel as a structural material,
Week 3	cold-formed steel shapes, steel grades, stress-strain relationships for structural steel,
Week 4	Specifications, loads, design methods (load and resistance factor design, LRFD, and the allowable strength design, ASD),
Week 5	nominal strength, load combinations for LRFD and ASD methods, description of the AISC manual
Week 6	Tension members: Introduction, tensile strength of tension members, net area
Week 7	effective area, connecting elements for tension members.
Week 8	block shear
Week 9	AISC requirements, maximum slenderness ratio, design tables.
Week 10	design of tension members, selection of sections, design to LRFD,
Week 11	design to ASD, design tables, built- up tension members.
Week 12	**Analysis of axially loaded compression members:** Modes of failure, sections used for columns, the Euler formula, effective lengths of columns
Week 13	stiffened and unstiffened elements, long, short and intermediate columns
Week 14	columns with different unsupported lengths, built-up columns, design of built-up columns with lacing, columns within rigid frames and the alignment charts.
Week 15	columns with different unsupported lengths, built-up columns, design of built-up columns with lacing, columns within rigid frames and the alignment charts.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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	1- AISC Steel Construction Manual, Fifteenth edition-2017. 2- Structural Steel Design.by McCormac and Csernak, 6th edition, 2018.	Yes
Recommended Texts		No
Websits		

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

Module Information
معلومات المادة الدراسية

Module Title	**Steel 2**	**Module Delivery**	
Module Type	**Core**		✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**CE413**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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 الاخرى

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 الارشادية	
Module Aims أهداف المادة الدراسية	1- Understanding the behaviour of beams in steel structures. 2- Learning the analysis and design of beams. 3- Studying the analysis and design of beam-column members. 4- Investigating the behaviour and design of bolted connection under the effect of concentric and eccentric loading. 5- Understanding the behaviour and design of welded connection.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Cognitive objectives A1- Understanding steel as a structural material, and get knowledge of its mechanical properties. A2- - Knowledge of design codes and standards A3- Understanding the analysis and design of tension and compression members in steel structures. B- Skill objectives specific to the course. B1- provision of necessary skills to deal with steel structures. B2-Abbility to analyze tension and compression members. B3- Knowledge of the procedures involved in designing tension and compression members. C. Thinking Skills C1- Analytical thinking: analyze steel structural members under different loading conditions. C2- Design thinking: develop efficient and economical steel structural designs that satisfy strength, and serviceability requirements. C3- Decision-making skills: choose of suitable steel grade and sections based on engineering judgment and standards.
Indicative Contents المحتويات الارشادية	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum.
	• Direct questions in a manner (how and why) for the subject during the lecture. • short exams during the theoretical lecture. • Midterm exam.

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.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	90	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
	Quizzes	2	10% (10)	3 , 7	All

Formative assessment	**Assignments**	2	10% (10)	2,4,6,8,10,12	All
	Class activity	1	10% (10)		
	Report	1	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	Design of Beams for Moments and shear: Introduction, Plastic behavior (zone1).
Week 2	Plastic behavior (zone1). design of beams - zone1 (full plastic moment), lateral supports of beams,
Week 3	inelastic buckling (zone 2), bending coefficients, moment capacities (zone 2), design of beams – zone 3,
Week 4	elastic buckling,(zone 3), AISC beam design charts, noncompact sections
Week 5	Design for shear, unsymmetrical bending, and design of purlins.
Week 6	Bending and Axial Compression (Beam-Columns): Bending and axial compression, Beam – Columns, first order and second order moments, analysis
Week 7	effective length, approximate second order analysis method.
Week 8	magnification factors, moment modification factors.
Week 9	design of beam-columns in braced frames
Week 10	Bolted Connections: Types of bolts, high - strength bolts, snug - tight joints, pretension joints, slip - critical joints, fully pretensioning methods, sizes of bolt holes, load transfer, lap joint, butt joint, failure of bolted joints,
Week 11	bearing type connections. shear strength and bearing strength for bearing type connections (load pass through center of gravity of connection).
Week 12	Eccentrically Loaded Bolted Connections: Bolts subjected to eccentric shear, Elastic analysis method, reduced eccentricity method, instantaneous center of rotation method.
Week 13	AISC - Part7 Tables, bearing - type connections subjected to shear and tension.
Week 14	Welded Connections: Welding advantages, types of welding, classification of welds, type of weld, type of joints, fillet welds, plug and slot welds, welding symbols, strength of welds

Week 15	Bolted Connections: Types of bolts, high - strength bolts, snug - tight joints, pretension joints, slip - critical joints, fully pretensioning methods, sizes of bolt holes, load transfer, lap joint, butt joint, failure of bolted joints,
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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	1- AISC Steel Construction Manual, Fifteenth edition-2017. 2- Structural Steel Design.by McCormac and Csernak, 6th edition, 2018.	Yes
Recommended Texts		No
Websites		

Module Information
معلومات المادة الدراسية

Module Title	**Construction Method**	**Module Delivery**	
Module Type	**Core**	✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE417**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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\9\2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	Concrete design, Mathematics, Survey	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	Introduction to the various construction techniques, practices, and equipment needed for different types of construction activities. It also leads the student through the steps of creating a detailed building estimate utilizing construction documents. Direct costs are generated by performing quantity take-offs and pricing with historical data, labor, and productivity rates. Students analyze subcontractor bids, generate indirect costs, and apply project margins to complete a building estimate.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	When the student complete studying this course, he should be able to: 7. Determine the allowable axial load capacity of single pile and pile group. 8. Estimation of pile load in a pile group. 9. Determine the stability of earth structures.
Indicative Contents المحتويات الارشادية	Understanding of general concepts of methods of construction and/ oproject management, • Ability in: 1. Planning and scheduling of construction projects, 2. Estimating construction projects. 3. Participating in taking-over, final measurement, and acceptance of construction. 4. projects, selection of construction equipment properly. 5. Measuring of construction equipment and planning,

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Different forms of teaching will be used to reach the objectives of the course. Notes are to be written on the whiteboard, especially design equations, head titles, definitions and summary of conclusions, classification of materials, and any other illustration, there will be classroom discussions and the lecture will give enough background to solve examples. Power points presentations will be used when required, besides worksheets will be designed to let the chance for practicing. Students should read the lecture notes regularly and participate the classroom discussions.

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	1	10% (10)		
	Report	1	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	Construction equipment and engineering fundamentals.
Week 2	Soil stabilization and compaction, Tractors
Week 3	Bulldozers, scrapers.
Week 4	Excavating equipment
Week 5	Trucks
Week 6	The form works for concrete structures
Week 7	Estimation fundamentals
Week 8	Buildings estimation material
Week 9	Buildings estimation material

Week 10	Buildings estimation material
Week 11	Earthwork estimation
Week 12	Earthwork estimation
Week 13	Cost estimation
Week 14	Contracts and technical specifications
Week 15	Contracts and technical specifications
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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	1. Fundamentals of Behavioral Statistics,1988Peurifoy Robert L, and Ledbetter, William B. “Construction Planning, Equipment & Methods” 4th Edition, McGraw-Hill, 1985. 2. Nunnally, S. W. “Construction Methods and Management”, 7th Edition, Upper Saddle River, New Jersey: Prentice Hall, 2007.	Yes

	3. Dutta, B. N. " Estimating and Costing in Civil Engineering-Theory and Practice", 24th Edition, USB Publishers' Distributors Ltd., New Delhi, 1999.	
Recommended Texts		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 (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.

Module Information
معلومات المادة الدراسية

Module Title	**Sanitary engineering**	**Module Delivery**	
Module Type	**Core**	☐ **Theory** ✓**Lecture** ✓**Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE416**		
ECTS Credits	**8**		
SWL (hr/sem)	**200**		
Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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\9\2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	Concrete design, Mathematics, Survey	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	The aim of this module is to learn the students how to; 1. compute the quantity of potable water, 2. recognize the materials used in piping works, 3. design water pumping stations, 4. design water treatment systems, 5. assess the environmental impact of untreated sewage discharge, 6. compute the quantity of sanitary sewage, 7. compute the quantity of storm water, 8. design sewer systems, 9. design sewage treatment systems, and 10. design sludge treatment systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On successful completion of this module, students will be able to; 1. compute the quantity of potable water for a specific city, 2. select the appropriate piping material, 3. analyze and design water networks, 4. design water pumping stations, 5. design water treatment systems. 6. compute the quantity of sanitary sewage for a specific city, 7. compute the quantity of storm water, 8. design sanitary sewer system, 9. design storm sewer system, 10. design sewage treatment systems. 11. design sludge treatment systems
Indicative Contents المحتويات الارشادية	Water use, variations of water consumption rates, design period, population estimate, fire demand, ductile iron pipes, PVC pipes, steel pipes, concrete pipes, HDPE pipes, GRP pipes, flow in water pipelines, analysis of water networks using Hardy-Cross method, design of water networks, types of water pumping stations, types of pumps, power of pumping, system head curve, pump characteristics curves, pumps connection, pumps selection, water treatment, rapid mix unit, coagulation process, flocculation unit, sedimentation unit, filtration unit, disinfection unit **(56 hours).**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	This module will be adopted through different strategies like; in-class lectures and interactive tutorials, field data collection for nearby water and sewage projects, in- lab experiments, and photo and video presentations for existing water and sewage treatment equipment and systems.

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	1	10% (10)		
	Report	1	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	Quantity of water: Water use; variations in rates of water consumption; design period; population estimate; fire demand.
Week 2	Piping materials: Ductile iron piping works; PVC piping works; steel piping works; concrete piping works; HDPE piping works; GRP piping works; valves.
Week 3	Water distribution systems: Description of water distribution systems; analysis and design of water distribution systems.
Week 4	Water pumping stations: Types of pumping stations; types of pumps; pumps power; system head curve; pump characteristics curves; pumps connection; pumps selection.
Week 5	Water treatment: Aim of water treatment; description and design of Intake structure; description and design of rapid mix unit; coagulation process
Week 6	Water treatment: description and design of flocculation unit; sedimentation process; description and design of sedimentation unit

Week 7	Water treatment: description and design of filtration systems; description and design of disinfection systems.
Week 8	Mid-term Exam; Quantity of sanitary sewage and storm water
Week 9	Flow in sewers; Design of sewer systems
Week 10	Treatment of sanitary sewage: General introduction, flowsheet of a conventional sanitary sewage plant, description and design of screening unit
Week 11	Treatment of sanitary sewage: description and design of grit removal unit
Week 12	Treatment of sanitary sewage: description and design of primary sedimentation unit
Week 13	Treatment of sanitary sewage: description and design of biological treatment systems; description and design of secondary sedimentation unit
Week 14	Sludge treatment: Design and description of gravity thickening unit; design and description of anaerobic digestion unit; design and description of dewatering unit.
Week 15	A preparatory week before the final exam
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	• **تحديد درجة الحرارة**(Temperature)
Week 2	• **قياس العكورة**(Turbidity)
Week 3	• **قياس اللون**(Color)
Week 4	• **قياس المواد الصلبة الكلية**(Total Solids - TS)
Week 5	• **قياس المواد الصلبة العالقة**(Total Suspended Solids - TSS)
Week 6	• **قياس المواد الصلبة الذائبة**(Total Dissolved Solids - TDS)
Week 7	• **تحديد درجة الحرارة**(Temperature)

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	McGhee, T.J., "Water Supply and Sewage", 6th Ed., McGraw Hill, Tokyo, 1991.	Yes
Recommended Texts	Viessman, W., Hammer, M.J., Perez, E,M,, Chdik, P.A., Water supply and pollution control, 6th Ed., Pearson Education Limited 2014.	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 (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.

Module Information
معلومات المادة الدراسية

Module Title	**Engineering Hydrology**	**Module Delivery**	
Module Type	**Core**	✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE418**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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\9\2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. Preparing and qualifying specialized engineers to meet the requirements of the labor market in the private and public sectors in civil engineering through diversification of methods of learning and education and training students to apply the acquired knowledge and skills to solve real problems. 2. Providing distinguished academic programs in the field of civil engineering, both theoretical and practical, that comply with international standards of academic quality and meet the needs of the labor market.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Outline the physical processes in the context of hydrology, including the hydrological cycle in general. 2- Define and understand key concepts related to hydrology, such as relative and cumulative frequency, the use of statistical data distributions, time of concentration, runoff and rainfall hydrographs, catchment storage, flood routing. 3- Apply a range of common techniques, such as flood frequency analysis, probabilistic rational, to estimate design peak flows. 4- Apply runoff-routing methods, rainfall hyetograph estimation to estimate flood hydrographs. 5- Compare and evaluate a number of methods for determining peak flows and flood hydrographs for urban and rural areas, including flood frequency analysis, the rational methods, the regional method and runoff routing methods. 6- Apply and evaluate stochastic modelling techniques and water storage behavior analysis to estimate the yield of a small rural water supply system. 7- Define and describe processes groundwater systems. Application the Darcy's law to determine groundwater.
Indicative Contents المحتويات الارشادية	This course serves as an introduction to the field of engineering hydrology. It covers fundamentals such as the hydrological cycle, catchment, hyetographs, losses, and hydrographs. Design topics covered will be selected from: flood frequency analysis, determination of design rainfall intensity and hyetographs, peak flow estimation, design hydrograph estimation, and groundwater process.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, and interactive tutorials.

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	1	10% (10)		
	Report	1	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	Introduction and Hydrologic Cycle
Week 2	Precipitations: Forms of Precipitations, Rainfall intensity, Measurement of Precipitation
Week 3	Precipitations: Mean Areal Depth of Precipitation, Frequency of Point Rainfall
Week 4	Losses: Evaporation
Week 5	Losses: Infiltration:
Week 6	Runoff: Methods of estimation of runoff
Week 7	Flow Measurement: Water Stage Measurement, Measurements of Discharge

Week 8	Flow Measurement: Stage-Discharge rating curve, Reservoir mass curve and storage
Week 9	Hydrographs: components of a hydrograph, factors affecting hydrograph, hydrograph separation
Week 10	Hydrographs: unit hydrograph, the average unit-hydrograph, the unit-hydrograph from multi- period storms
Week 11	Hydrographs: The Conversion of U-H Duration, Synthetic UH
Week 12	Flood Routing: Hydrologic Storage Routing
Week 13	Flood Routing: Hydrologic Channel Routing
Week 14	An introduction to Groundwater Hydrology
Week 15	An introduction to Groundwater Hydrology
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي 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	Engineering hydrology / E. M. Wilson	Yes

Recommended Texts	Engineering hydrology/ Subramanya	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)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.

Module Information
معلومات المادة الدراسية

Module Title	**Highway Pavement**	**Module Delivery**	
Module Type	**Core**	☐ **Theory** ✓ **Lecture** ✓ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE415**		
ECTS Credits	**8**		
SWL (hr/sem)	**200**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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\9\2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1- The course aims to present the basic elements of geometric design for highways and deals with the dimensions and layout of visible features of the highway. The features normally considered are the cross-section elements, sight distance consideration, horizontal curvature, gradients, and intersection. 2- The course aims to present the basic element for designing the pavement (flexible & Rigid) also analyze all stresses and applied loads on the pavement and take into consideration choosing the materials used in the pavement construction.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Gives us an idea about the roads of ancient times. 2- The emphasis of the geometric design is to address the requirement of the driver and the vehicle such as safety, comfort, efficiency, etc. 3- The characteristics of cross-sectional elements are important in highway geometric design because they influence safety and comfort. 4- Horizontal alignment is one of the most important features influencing the efficiency and safety of a highway. 5- Knowledge and Understanding of highway design features. 6- Bituminous materials, Natural Asphalt, constituents of asphalt cement, and test of asphalt. 7- The emphasis of the different aggregate characteristics with size and gradation, and methods of blending for dry mix design. 8- Bituminous mix design, with the objective of mix design. 9- Study of stress distribution through the pavement with the calculation of flexible pavement stresses and deflections. 10- Knowledge and Understanding of pavement design and analysis.
Indicative Contents المحتويات الارشادية	Indicative content includes the following: Part A – Highway Engineering - Proper design of a horizontal curve, including elements within a single curve and consistency of curvature along a highway. 3 Module Evaluation - Design speed is the single most important factor that affects the geometric design. - Derive and evaluate the information needed to apply engineering analysis methods to unfamiliar problems. - Soil stabilization methods and classification. - Highway Drainage and Design Equation Part B – Pavement Design and Analysis - Study of stress distribution through the pavement with the calculation of flexible pavement stresses and deflections. - Flexible pavement design methods (CBR method and AASHTO Design method). - Rigid pavement types and types of joints in the rigid pavement, and temperature stresses.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	Scientific and research skills are developed through teaching and learning activities. Analysis and design-solving skills are further developed by employing a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.

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	1	10% (10)		
	Report	1	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	Introduction
Week 2	Bituminous Materials, Test for Asphalt
Week 3	Bituminous Materials, Test for Asphalt
Week 4	Aggregate, Physical Properties of Aggregate, Methods of Blending

Week 5	Aggregate, Physical Properties of Aggregate, Methods of Blending
Week 6	Bituminous Mix Design, Marshal Mix Design
Week 7	Bituminous Mix Design, Marshal Mix Design
Week 8	Stress distribution through the pavement, Calculation of stresses and deflections
Week 9	Stress distribution through the pavement, Calculation of stresses and deflections
Week 10	Design Introduction to Pavement, Types of Pavements, CBR Design Method
Week 11	Design Introduction to Pavement, Types of Pavements, CBR Design Method
Week 12	Stabilized Bases & Subases, Earthworks & Subgrades, Control of Embankment Construction
Week 13	Flexible pavement design methods, AASHTO Design Methods
Week 14	Rigid Pavement, Rigid Pavement Types, Types of Joints in Rigid Pavement
Week 15	Rigid Pavement, Critical load position, Temperature Stresses
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	California Bearing Ratio CBR Test
Week 2	Bitumen Penetration Test
Week 3	Bitumen Ductility Tests
Week 4	Specific Gravity Test of Bitumen
Week 5	Bitumen Softening Test
Week 6	Viscosity Test of Bitumen, Flash Point Tests of Bitumen
Week 7	Marshall Tests

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Handbook of Transportation Engineering. By Myer Kutz.2004.	Yes
Recommended Texts		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)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.

Module Information معلومات المادة الدراسية					
Module Title	**Water Supply**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ✓ **Lecture** ✓ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE417**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**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\9\2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Water supply and treatment	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	This module introduces the fundamental principles and engineering practices of water supply systems. It provides students with the knowledge required to estimate water demand, identify water sources, assess water quality, and design the main components of water supply systems, including intake structures, transmission pipelines, pumping stations, storage reservoirs, and water distribution networks. The course also covers conventional water treatment processes and relevant design standards to ensure the delivery of safe and reliable drinking water.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon successful completion of this module, students will be able to: 10. Explain the principles and components of water supply engineering systems. 11. Estimate present and future water demand for communities. 12. Evaluate different water sources and assess their suitability for potable water supply. 13. Analyze water quality parameters and select appropriate treatment processes. 14. Design intake structures, transmission mains, pumping stations, storage reservoirs, and water distribution networks. 15. Apply hydraulic principles in the analysis and design of water supply systems. 16. Use engineering standards and design codes in planning and designing water supply projects.
Indicative Contents المحتويات الارشادية	• Introduction to water supply engineering and public health considerations. • Water demand estimation and population forecasting. • Sources of water supply (surface water and groundwater). • Water quality standards and water quality analysis. • Water treatment processes: screening, aeration, coagulation, flocculation, sedimentation, filtration, and disinfection. • Design of intake structures and transmission pipelines. • Pumping stations and selection of pumps. • Service reservoirs and storage facilities. • Water distribution systems and network analysis. • Pipe materials, valves, fittings, and appurtenances. • Operation, maintenance, and management of water supply systems. • Design examples based on engineering standards and practical applications.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Different teaching methods will be employed to achieve the course objectives, including lectures, classroom discussions, worked design examples, and problem-solving sessions. PowerPoint presentations and engineering design standards will be used to explain theoretical concepts and practical applications. Students will complete assignments and design exercises to strengthen analytical and engineering design skills. Regular participation in classroom activities and independent study of lecture notes are expected to enhance learning outcomes.

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	1	10% (10)		
	Report	1	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	Introduction to Water Supply Engineering, objectives, components of water supply systems, and public health aspects.
Week 2	Water demand estimation, per capita consumption, demand variations, and population forecasting methods.
Week 3	Sources of water supply: Surface water, groundwater, springs, and selection criteria.
Week 4	Water quality characteristics, physical, chemical, and biological parameters, and drinking water standards.
Week 5	.

Week 6	Water intake structures and transmission systems.
Week 7	Water treatment processes: Screening, aeration, coagulation, and flocculation.
Week 8	Sedimentation and filtration processes in water treatment plants.
Week 9	Disinfection methods, chlorination, and water treatment plant layout.
Week 10	Pumping stations, pump selection, and hydraulic considerations.
Week 11	Water storage reservoirs, balancing storage, and elevated tanks.
Week 12	Water distribution systems, network layouts, and pipe materials.
Week 13	Hydraulic analysis of water distribution networks and pressure management.
Week 14	Design of water supply systems using engineering standards and design examples.
Week 15	Operation, maintenance, and management of water supply systems, including leakage control and water losses.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	• **قياس العكورة**(Turbidity)
Week 2	• **قياس الرقم الهيدروجيني**(pH Value)
Week 3	• **تعيين العسر الكلي والجزئي**(Total and Partial Hardness)
Week 4	• **تعيين القلوية والحموضة**(Alkalinity and Acidity)
Week 5	• **قياس الأملاح الذائبة الكلية**(Total Dissolved Solids - TDS)
Week 6	• **قياس التوصيلية الكهربائية**(Electrical Conductivity - EC)
Week 7	• **قياس الكلور المتبقي**(Residual Chlorine)

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1. Fundamentals of Behavioral Statistics,1988Peurifoy Robert L, and Ledbetter, William B. “Construction Planning, Equipment & Methods” 4th Edition, McGraw-Hill, 1985. 2. Nunnally, S. W. “Construction Methods and Management”, 7th Edition, Upper Saddle River, New Jersey: Prentice Hall, 2007. 3. Dutta, B. N. “ Estimating and Costing in Civil Engineering-Theory and Practice”, 24th Edition, USB Publishers’ Distributors Ltd., New Delhi, 1999.	Yes

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

Module Information
معلومات المادة الدراسية

Module Title	**Ethics engineering**	**Module Delivery**	
Module Type	**Core**		✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**
Module Code	**CE416**		
ECTS Credits	**8**		
SWL (hr/sem)	**200**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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\9\2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	Concrete design, Mathematics, Survey	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	This module introduces students to the fundamental principles of professional ethics and ethical responsibility in engineering practice. It aims to develop students' understanding of ethical values, professional conduct, legal responsibilities, sustainability, and social accountability. The course emphasizes ethical decision-making, integrity, teamwork, leadership, and compliance with professional codes of ethics in civil engineering and related professions.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon successful completion of this module, students will be able to: 1. Understand the principles and importance of professional ethics in engineering practice. 2. Apply ethical reasoning to solve professional and engineering-related dilemmas. 3. Recognize the legal, social, and environmental responsibilities of engineers. 4. Demonstrate honesty, integrity, and accountability in professional activities. 5. Work effectively within multidisciplinary teams while respecting professional values. 6. Identify and apply national and international engineering codes of ethics. 7. Appreciate the importance of lifelong learning and continuous professional development.
Indicative Contents المحتويات الارشادية	• Introduction to professional ethics and ethical theories. • Professional responsibility and accountability. • Engineering codes of ethics and professional standards. • Integrity, honesty, and conflict of interest. • Ethical decision-making in engineering practice. • Occupational health and safety responsibilities. • Environmental ethics and sustainable development. • Social responsibility and public welfare. • Teamwork, leadership, and professional communication. • Intellectual property rights and confidentiality. • Legal aspects of engineering practice. • Case studies on ethical issues in civil engineering.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The course will be delivered through lectures, classroom discussions, case studies, and interactive learning activities. Students will analyze real engineering ethical dilemmas, participate in group discussions and presentations, and complete assignments that enhance ethical reasoning and professional judgment. PowerPoint presentations, videos, and professional engineering codes will be used to support learning. Students are encouraged to actively participate in discussions and independently review relevant ethical standards and professional guidelines.

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	1	10% (10)		
	Report	1	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	Introduction to professional ethics and engineering ethics.
Week 2	Ethical theories and moral principles.
Week 3	Professional responsibility and accountability.
Week 4	Engineering codes of ethics and professional conduct.
Week 5	Integrity, honesty, and conflict of interest.
Week 6	Ethical decision-making and problem-solving methods.
Week 7	Occupational health, safety, and ethical responsibilities.
Week 8	Midterm Examination.
Week 9	Environmental ethics and sustainable development.

Week 10	Social responsibility and public welfare.
Week 11	Teamwork, leadership, and professional communication.
Week 12	Intellectual property rights and confidentiality.
Week 13	Legal responsibilities of engineers and engineering practice.
Week 14	Case studies in engineering ethics.
Week 15	Contemporary ethical issues in engineering and professional development.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي 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	McGhee, T.J., "Water Supply and Sewage", 6th Ed., McGraw Hill, Tokyo, 1991.	Yes
Recommended Texts	Viessman, W., Hammer, M.J., Perez, E,M,, Chdik, P.A., Water supply and pollution control, 6th Ed., Pearson Education Limited 2014.	No

Module Information
معلومات المادة الدراسية

Module Title	**Hydraulic Structures**	**Module Delivery**	
Module Type	**Core**	✓**Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE414**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		

Module Level	4	**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader		**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\9\2025	**Version Number**	1.0

Relation with other Modules
العلاقة مع المواد الدراسية الاخرى

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	1- To study and design the different types of hydraulic structures. 2- Understand the causes of failure of the hydraulic structures and its solutions. 3-To choose a suitable hydraulic structures in the project.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Discuss the types of hydraulic structures according to its purposes. 2- Discuss the causes of failure of hydraulic structures. 3- Explain the different methods of floor design of the hydraulic structures. 4- Define and explain of the energy dissipation structures. 5- Define and design of stilling basins. 6- Explain and design of different types of culvert. 7- Discuss and design of pipe aqueduct and flume. 8- Define and design of siphon. 9- Study and design a steel vertical gates.
Indicative Contents المحتويات الارشادية	Indicative content includes the following: 1- Types the hydraulic structures , causes of failure and design of floor . (16 hrs) 2- Design of regulator and stilling basin with hydraulic jump . (12 hrs) 3- Design of crossing hydraulic structures .(16 hrs) 4- Study the sliding gates and its design. (6 hrs) 5- Revision problem classes. (6hrs)

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The students participation in the exercises and solved a problem in the class to expand the thinking skills .

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	1	10% (10)		
	Report	1	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	Introduction, types of hydraulic structures.
Week 2	Steps for design of hydraulic structures, site conditions.
Week 3	Causes of failure of hydraulic structures, Bligh's creep theory.
Week 4	Lane's weighted creep theory.
Week 5	Khosla 's theory.
Week 6	Solved problems of pervious methods.
Week 7	Hydraulic design of regulators.
Week 8	Solved problems about design of the regulators.
Week 9	Hydraulic jump and solved problems.
Week 10	Design of vertical drop.
Week 11	Design of stilling basins.
Week 12	Design of pipes and box culverts.
Week 13	Design of pipe aqueduct and flume.
Week 14	Design of siphon .
Week 15	Design of sliding steel gates .
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Irrigation, water power and water resources engineering. By Arora (2007) 2- Hydrulic structures by (Novak) (2007)	Yes
Recommended Texts	Theory and design of Irrigation structures. By (Gupta).	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 (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.