



وزارة التعليم العالي والبحث العلمي
جهاز الإشراف والتقييم العلمي
دائرة ضمان الجودة والاعتماد الأكاديمي
قسم الاعتماد

دليل وصف البرنامج الأكاديمي والمقرر الدراسي مسار بولونيا

المقدمة:

يُعد البرنامج التعليمي بمثابة حزمة منسقة ومنظمة من المقررات الدراسية التي تشتمل على إجراءات وخبرات تنظم بشكل مفردات دراسية الغرض الأساس منها بناء وصقل مهارات الخريجين مما يجعلهم مؤهلين لتلبية متطلبات سوق العمل يتم مراجعته وتقييمه سنوياً عبر إجراءات وبرامج التدقيق الداخلي أو الخارجي مثل برنامج الممتحن الخارجي.

يقدم وصف البرنامج الأكاديمي ملخص موجز للسّمات الرئيسة للبرنامج ومقرراته مبيّناً المهارات التي يتم العمل على اكسابها للطلبة مبنية على وفق اهداف البرنامج الأكاديمي وتتجلى أهمية هذا الوصف لكونه يمثل الحجر الأساس في الحصول على الاعتماد البرامجي ويشترك في كتابته الملاكات التدريسية بإشراف اللجان العلمية في الأقسام العلمية.

ويتضمن هذا الدليل بنسخته الثانية وصفاً للبرنامج الأكاديمي بعد تحديث مفردات وفقرات الدليل السابق في ضوء مستجدات وتطورات النظام التعليمي في العراق والذي تضمن وصف البرنامج الأكاديمي بشكلها التقليدي نظام (سنوي، فصلي) فضلاً عن اعتماد وصف البرنامج الأكاديمي المعمم بموجب كتاب دائرة الدراسات م 2906/3 في 2023/5/3 فيما يخص البرامج التي تعتمد مسار بولونيا أساساً لعملها.

وفي هذا المجال لا يسعنا إلا أن نؤكد على أهمية كتابة وصف البرامج الأكاديمية والمقررات الدراسية لضمان حسن سير العملية التعليمية.

مفاهيم ومصطلحات:

وصف البرنامج الأكاديمي: يوفر وصف البرنامج الأكاديمي إيجازاً مقتضباً لرؤيته ورسالته وأهدافه متضمناً وصفاً دقيقاً لمخرجات التعلم المستهدفة على وفق استراتيجيات تعلم محددة.

وصف المقرر: يوفر إيجازاً مقتضباً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهنًا عما إذا كان قد حقق الاستفادة القصوى من فرص التعلم المتاحة. ويكون مشتق من وصف البرنامج.

رؤية البرنامج: صورة طموحة لمستقبل البرنامج الأكاديمي ليكون برنامجاً متطوراً وملهماً ومحفزاً وواقعياً وقابلاً للتطبيق.

رسالة البرنامج: توضح الأهداف والأنشطة اللازمة لتحقيقها بشكل موجز كما يحدد مسارات تطور البرنامج واتجاهاته.

أهداف البرنامج: هي عبارات تصف ما ينوي البرنامج الأكاديمي تحقيقه خلال فترة زمنية محددة وتكون قابلة للقياس والملاحظة.

هيكلية المنهج: كافة المقررات الدراسية / المواد الدراسية التي يتضمنها البرنامج الأكاديمي على وفق نظام التعلم المعتمد (فصلي، سنوي، مسار بولونيا) سواء كانت متطلب (وزارة، جامعة، كلية وقسم علمي) مع عدد الوحدات الدراسية.

مخرجات التعلم: مجموعة متوافقة من المعارف والمهارات والقيم التي اكتسبها الطالب بعد انتهاء البرنامج الأكاديمي بنجاح ويجب أن يُحدد مخرجات التعلم لكل مقرر بالشكل الذي يحقق أهداف البرنامج.

استراتيجيات التعليم والتعلم: بأنها الاستراتيجيات المستخدمة من قبل عضو هيئة التدريس لتطوير تعليم وتعلم الطالب وهي خطط يتم إتباعها للوصول إلى أهداف التعلم. أي تصف جميع الأنشطة الصفية واللاصفية لتحقيق نتائج التعلم للبرنامج.

نموذج وصف البرنامج الأكاديمي

اسم الجامعة: جامعة آشور

الكلية/ المعهد: كلية الهندسة

القسم العلمي: قسم الهندسة المدنية

اسم البرنامج الأكاديمي او المهني: الهندسة المدنية

اسم الشهادة النهائية بكالوريوس علوم في الهندسة المدنية

النظام الدراسي: مسار بولونيا

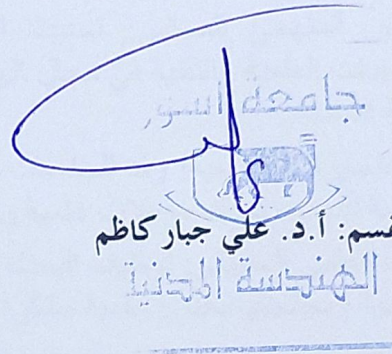
تاريخ اعداد الوصف: 2026/1/29

تاريخ ملء الملف: 2026/3/29

التوقيع

اسم المعاون العلمي: م.د. طريف شكري خالد

التاريخ ٢٠٢٦/٦/٢٩



التوقيع

اسم رئيس القسم: أ.د. علي جبار كاظم

التاريخ

دقق الملف من قبل

قسم ضمان الجودة والأداء الجامعي

اسم مدير قسم ضمان الجودة والأداء الجامعي: أ.د. سعد سامي ناجي

التاريخ

التوقيع



مصادقة السيد العميد

أ.د. علي حسين عتيوي

1. رؤية البرنامج
يتطلع قسم الهندسة المدنية إلى أن يكون نموذجًا أكاديميًا رائدًا، يُعدُّ مهندسين مدنيين ذوي كفاءات عالية وفق معايير دولية، لدعم التنمية المستدامة.

2. رسالة البرنامج
إعداد مهندسين مدنيين مؤهلين علميًا وعمليًا، للمساهمة الفاعلة في تنفيذ المشاريع الخدمية والعمرانية ودعم التنمية المستدامة.

3. أهداف البرنامج
1. إعداد الكوادر الهندسية المتخصصة: تخريج مهندسين مدنيين ذوي كفاءة علمية وعملية عالية قادرين على الانخراط الفاعل في سوق العمل والمساهمة في مشاريع البناء والتنمية وفق معايير الجودة الأكاديمية العالمية. 2. التطوير المنهجي المستمر: تحديث المناهج والخطط الدراسية بصورة دورية لمواكبة أحدث المستجدات العلمية والتقنية في مجال الهندسة المدنية، بما يضمن تخريج كوادر مؤهلة تلبيبةً لمتطلبات التنمية الشاملة.. 3. دعم المسيرة الأكاديمية: رفد الجامعات والمؤسسات التعليمية والتقنية بكوادر تدريسية متخصصة في الهندسة المدنية، تمتلك مؤهلات علمية ومهنية رفيعة تُسهم في الارتقاء بمستوى التعليم الهندسي 4. البحث العلمي التطبيقي: توظيف البحث العلمي كأداةً فاعلةً لخدمة المجتمع، من خلال دراسة التحديات الهندسية ومعالجتها بحلول علمية مبتكرة تُسهم في تحقيق التنمية المستدامة. 5. الشراكة والخدمات الاستشارية: بناء شراكات فاعلة مع مؤسسات الدولة والقطاع الخاص، لتقديم الاستشارات الفنية المتخصصة وتنظيم البرامج التدريبية الهادفة إلى تطوير الكفاءات الهندسية. 6. الاعتماد والجودة الشاملة: السعي المستمر نحو تحقيق معايير الجودة الشاملة والحصول على الاعتماد الأكاديمي والبرامجي الدولي، من خلال تطوير منظومة الأداء العلمي والمؤسسي بصورة متواصلة. 7. التعاون العلمي المشترك: تعزيز أطر التعاون وإقامة الشراكات العلمية مع الجامعات والمراكز البحثية المحلية والدولية، وتبادل الخبرات الأكاديمية والبحثية للارتقاء بمستوى التعليم الهندسي وخدمة المجتمع.

4. الاعتماد البرامجي
لا يوجد

5. المؤثرات الخارجية الأخرى
لا يوجد

6. هيكلية البرنامج				
هيكل البرنامج	عدد المقررات	وحدة دراسية	النسبة المئوية	ملاحظات *
متطلبات المؤسسة	8	18	8	
متطلبات الكلية	7	36	15	
متطلبات القسم	37	186	77	
التدريب الصيفي	نعم			
أخرى				

* ممكن ان تتضمن الملاحظات فيما إذا كان المقرر أساسي او اختياري.

7. وصف البرنامج					
المرحلة الأولى/ الفصل الاول					
رمز المقرر او المساق	اسم المقرر او المساق	الساعات المعتمدة			تطبيقي
		نظري	عملي	مختبر	
AU020201011	الرياضيات – I	5			1
AU020201012	الرسم الهندسي	2	3		
AU020201013	الميكانيك الهندسي – I	4			2
AU020201014	المواد الانشائية	4		2	
AU06	اللغة العربية	2			
AU04	الحاسوب	1		2	
المرحلة الأولى/ الفصل الثاني					
رمز المقرر او المساق	اسم المقرر او المساق	الساعات المعتمدة			تطبيقي
		نظري	عملي	مختبر	
AU020201021	الرياضيات – II	5		1	
AU020201022	الرسم بمساعدة الحاسوب	2	2		
AU020201023	الميكانيك الهندسي – II	4			2
AU020201024	الاحصاء الهندسي	4			
AU020201025	علم الارض	3			1
AU01	اللغة الانكليزية	2			
AU02	الديمقراطية وحقوق الانسان	2			

المرحلة الثانية/ الفصل الاول

الساعات المعتمدة				اسم المقرر او المساق	رمز المقرر او المساق
تطبيقي	مختبر	عملي	نظري		
1			5	الرياضيات – III	AU020202031
2			4	مقاومة المواد – I	AU020202032
		2	2	المساحة الهندسية – I	AU020202033
	2		2	تكنولوجيا الخرسانة – I	AU020202034
	2		2	ميكانيك الموائع – I	AU020202035
2			2	انشاء المباني	AU020202036

المرحلة الثانية/ الفصل الثاني

الساعات المعتمدة				اسم المقرر او المساق	رمز المقرر او المساق
تطبيقي	مختبر	عملي	نظري		
			4	تحليلات هندسية	AU020202041
2			2	مقاومة المواد – II	AU020202042
		2	2	المساحة الهندسية – II	AU020202043
	1		2	ميكانيك الموائع – II	AU020202044
	2		2	تكنولوجيا الخرسانة – II	AU020202045
			2	جرائم نظام البعث في العراق	AU03
			2	اللغة العربية- II	AU16
		2	1	الحاسوب- II	AU14
			2	اللغة الانكليزية - II	AU11

المرحلة الثالثة/ الفصل الأول

الساعات المعتمدة				اسم المقرر او المساق	رمز المقرر او المساق
تطبيقي	مختبر	عملي	نظري		
1			3	التحليل الانشائي - I	AU020203051
	2		2	ميكانيك التربة - I	AU020203052
1			3	تصاميم الخرسانة المسلحة - I	AU020203053
			4	الطرق العددية	AU020203054
		2	2	ادارة المشاريع الانشائية	AU020203055
			2	هندسة الري والبنزل	AU020203056

المرحلة الثالثة/ الفصل الثاني

رمز المقرر او المساق	اسم المقرر او المساق	الساعات المعتمدة		
		نظري	عملي	مختبر
AU020203061	التحليل الانشائي - II	3		1
AU020203062	ميكانيك التربة - II	2	2	2
AU020203063	تصاميم الخرسانة المسلحة - II	3		1
AU020203064	هندسة المواصلات I-	2	1	1
AU020203065	الهيدرولوجي	2		2
AU020203066	الاقتصاد الهندسي	2		2

8. مخرجات التعلم المتوقعة للبرنامج	
المعرفة	
مخرجات التعلم 1	1. القدرة على تحديد وصياغة وحل مشاكل الهندسة المدنية من خلال تطبيق مبادئ الهندسة والعلوم والرياضيات.
مخرجات التعلم 2	2. القدرة على تطبيق عملية التصميم الهندسي لإنتاج حلول تلبي الاحتياجات المحددة مع مراعاة متانة وقدرة تحمل المنشأ والبيئة والاقتصاد والعوامل الأخرى المناسبة للتخصص .
مخرجات التعلم 3	3. القدرة على تطوير وإجراء التجارب المناسبة، وتحليل البيانات وتفسيرها، واستخدام الحكم الهندسي لاستخلاص النتائج
مخرجات التعلم 4	4. القدرة على التواصل بفعالية مع مجموعة متنوعة من الجماهير .
المهارات	
مخرجات التعلم 5	5. القدرة على إدراك الحاجة المستمرة لاكتساب معارف جديدة، واختيار استراتيجيات التعلم المناسبة، وتطبيق هذه المعارف.
مخرجات التعلم 6	6. القدرة على تحديد الاسلوب المناسب ومقاربة المسائل الهندسية وتحديد الاسلوب المناسب لمعالجة المشاكل في مجالات الهندسة المدنية.
القيم	
مخرجات التعلم 7	1. القدرة على التعرف على المسؤوليات الأخلاقية والمهنية في المواقف الهندسية وإصدار أحكام رشيدة، والتي يجب أن تأخذ في الاعتبار تأثير الحلول الهندسية في السياقات العامة والاقتصادية والبيئية والمجتمعية. 2. القدرة على العمل بفعالية كعضو أو قائد لفريق يحدد الأهداف، ويخطط للمهام، ويفي بالمواعيد النهائية، ويخلق بيئة تعاونية وشاملة.

• استراتيجيات التعليم والتعلم

يتم اعتماد استراتيجيات متعددة للتعليم والتعلم حسب طبيعة المقررات الدراسية والمخرجات المتوخاة لكل منها، حيث يتم عرض المشاكل الهندسية ضمن المنهاج المقرر وتكليف الطلبة بواجبات بيتية لإيجاد الحلول المناسبة (المخرج 1) وتحفيزهم لتطبيق المعرفة المكتسبة لإنتاج تصاميم هندسية تلبي الاحتياجات المطلوبة (المخرج 2).

يتم أيضا توزيع الطلبة الى مجموعات لإجراء التجارب والقياسات في المقررات ذات الطابع العملي والتطبيقي وتحليل النتائج ومناقشتها (المخرج 3) وكتابة التقارير وعرضها بشكل جماعي (المخرجين 4 و7).

كما يتم تدريب الطلبة على استخدام أدوات التعلم الحديثة كالبرمجيات الهندسية بما يعزز قابليتهم على اكتساب المعرفة والتعلم المستمر مع مراعاة المسؤولية الأخلاقية المهنية (المخرجين 5 و6).

• طرائق التقييم

يتم اعتماد الامتحانات اليومية والأسبوعية (10%) ونصف الفصل (10%) والامتحان النهائي (50%) لتقييم الطلبة ومدى تحقق جميع مخرجات التعلم المطلوبة (المخرجات من 1 الى 7)، بالإضافة الى الطرائق التالية:

- 1- الواجبات البيتية 10% (المخرجات 1 و2 و6)
- 2- تطبيق التجارب المختبرية والقياسات الحقلية 10% (المخرجين 3 و5)
- انجاز التقارير والمشاريع ومناقشتها بشكل جماعي 10% (المخرجين 4 و7).

• الهيئة التدريسية

أعضاء هيئة التدريس

الرتبة العلمية		التخصص		المتطلبات/المهارات الخاصة (ان وجدت)		اعداد الهيئة التدريسية	
						ملاك	محاضر
أستاذ	هندسة مدنية	عام	خاص			1	
أستاذ مساعد	هندسة مدنية		ادارة مشاريع			1	
أستاذ مساعد	هندسة مدنية		هندسة نقل			1	1
أستاذ مساعد	هندسة مدنية		جيوتكنيك				1
أستاذ مساعد	هندسة مدنية		انشاءات				1
مدرس	هندسة مدنية		تخطيط حضري			1	
مدرس	هندسة مدنية		هندسة نقل			1	
مدرس مساعد	علوم التحسس النائي		جيولوجي نفط			1	
مدرس مساعد	هندسة مدنية		انشاءات			1	
مدرس مساعد	هندسة مدنية		ادارة مشاريع			1	
مدرس مساعد	هندسة مدنية		مواد بناء			1	
مدرس مساعد	هندسة مدنية		هندسة نقل			1	
مدرس مساعد	هندسة موارد مائية		موارد مائية			1	
مدرس مساعد	هندسة انشاءات		ادارة مشاريع			1	
مدرس مساعد	هندسة مواد		مواد عام			3	1
مدرس مساعد	هندسة معماري		تخطيط حضري				1

التطوير المهني
توجيه أعضاء هيئة التدريس الجدد
تتمثل العملية المستخدمة لتوجيه أعضاء هيئة التدريس الجدد والزائرين والدوام الكامل والجزئي على مستوى المؤسسة والقسم، في تسجيلهم مع كبار الأساتذة وعقد اجتماعات لتطوير خبراتهم.
التطوير المهني لأعضاء هيئة التدريس
تتضمن خطة التطوير الأكاديمي والمهني لأعضاء هيئة التدريس استراتيجيات التدريس والتعلم، وتقييم نتائج التعلم، والتطوير المهني، من خلال الدورات التدريبية وورش العمل.
• معيار القبول
يتم التسجيل في القسم عن طريق القبول المركزي من وزارة التعليم العالي والبحث العلمي.
• أهم مصادر المعلومات عن البرنامج
الموقع الإلكتروني لجامعة اشور – قسم الهندسة المدنية https://www.au.edu.iq/dept.php?id=5
• خطة تطوير البرنامج
مواكبة التطورات في مجال الهندسة المدنية واعتماد أحدث المصادر والمراجع والأساليب العلمية والمتمثلة بـ ▪ الكتب المنهجية ▪ المصادر الخارجية المساعدة ▪ المصادر العلمية في المواقع الإلكترونية الرصينة (الشبكة الدولية للمعلومات) ▪ المحاضرات الورقية والإلكترونية لأستاذ المادة ▪ الأفلام الفيديوية ذات العلاقة المقدمة من قبل التدريسي.

مخطط مهارات البرنامج

مخرجات التعلم المطلوبة من البرنامج															
القيم				المهارات				المعرفة				اساسي أم اختياري	اسم المقرر	رمز المقرر	السنة / المستوى
ج4	ج3	ج2	ج1	ب4	ب3	ب2	ب1	أ4	أ3	أ2	أ1				
	*	*	*		*	*	*	*	*	*	*	اساسي	الرياضيات Iـ	AU020201011	المرحلة الأولى/ الفصل الاول
	*	*	*		*	*	*	*	*	*	*	اساسي	الرسم الهندسي	AU020201012	
		*			*	*		*	*		*	اساسي	الميكانيك الهندسي Iـ	AU020201013	
	*	*	*		*	*	*	*	*	*	*	اساسي	المواد الانشائية	AU020201014	
	*	*	*		*	*	*	*	*	*	*		اللغة العربية	AU06	
					*					*	*		الحاسوب	AU04	
	*	*	*		*	*	*	*	*	*	*	اساسي	الرياضيات IIـ	AU020201021	المرحلة الأولى/ الفصل الثاني
	*	*	*		*	*	*	*	*	*	*	اساسي	الرسم بمساعدة الحاسوب	AU020201022	
		*			*	*		*	*		*	اساسي	الميكانيك الهندسي IIـ	AU020201023	
		*			*	*		*	*		*	اساسي	الاحصاء الهندسي	AU020201024	
	*	*	*		*	*	*	*	*	*	*	اساسي	علم الارض	AU020201025	
	*	*	*		*	*	*	*	*	*	*		اللغة الانكليزية	AU01	
													الديمقراطية وحقوق الانسان	AU02	
	*	*	*		*	*	*	*	*	*	*	اساسي	الرياضيات IIIـ	AU020202031	المرحلة الثانية/ الفصل الاول
	*	*	*		*	*	*	*	*	*	*	اساسي	مقاومة المواد Iـ	AU020202032	
		*			*	*		*	*		*	اساسي	المساحة الهندسية Iـ	AU020202033	
	*	*	*		*	*	*	*	*	*	*	اساسي	تكنولوجيا الخرسانة Iـ	AU020202034	
	*	*	*		*	*	*	*	*	*	*	اساسي	ميكانيك الموائع Iـ	AU020202035	
					*					*	*	اساسي	انشاء المباني	AU020202036	
						*	*				*	اساسي	تحليلات هندسية	AU020202041	
	*	*	*		*	*	*	*	*	*	*	اساسي	مقاومة المواد IIـ	AU020202042	

	*	*	*		*	*	*	*	*	*	*	اساسي	المساحة الهندسية - II	AU020202043	المرحلة الثانية/ الفصل الثاني
	*	*	*		*	*	*	*	*	*	*	اساسي	ميكانيك الموائع - II	AU020202044	
	*	*	*		*	*	*	*	*	*	*	اساسي	تكنولوجيا الخرسانة - II	AU020202045	
													جرائم نظام البعث في العراق	AU03	
		*	*		*	*	*	*	*	*	*		اللغة العربية - II	AU16	
					*					*	*		الحاسوب - II	AU14	
		*	*		*	*	*	*	*	*	*		اللغة الانكليزية - II	AU11	
		*	*		*	*	*	*	*	*	*	اساسي	التحليل الانشائي - I	AU020203051	المرحلة الثالثة/ الفصل الاول
		*	*		*	*	*	*	*	*	*	اساسي	ميكانيك التربة - I	AU020203052	
		*	*		*	*	*	*	*	*	*	اساسي	تصاميم الخرسانة المسلحة - I	AU020203053	
		*	*		*	*	*	*	*	*	*	اساسي	الطرق العددية	AU020203054	
		*	*		*	*	*	*	*	*	*	اساسي	ادارة المشاريع الانشائية	AU020203055	
		*	*		*	*	*	*	*	*	*	اساسي	هندسة الري واليزل	AU020203056	
		*	*		*	*	*	*	*	*	*	اساسي	التحليل الانشائي - II	AU020203061	المرحلة الثالثة/ الفصل الثاني
		*	*		*	*	*	*	*	*	*	اساسي	ميكانيك التربة - II	AU020203062	
		*	*		*	*	*	*	*	*	*	اساسي	تصاميم الخرسانة المسلحة - II	AU020203063	
		*	*		*	*	*	*	*	*	*	اساسي	هندسة المواصلات - I	AU020203064	
		*	*		*	*	*	*	*	*	*	اساسي	الهيدرولوجي	AU020203065	
		*	*		*	*	*	*	*	*	*	اساسي	الاقتصاد الهندسي	AU020203066	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Mathematics-I		Module Delivery	
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020201011			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	1	Semester of Delivery		1
Administering Department	02	College	02	
Module Leader	Dr. Ammar Ahmed Saeed		e-mail	ammar.ahmed.saeed@au.edu.iq
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	Ph. D.
Module Tutor	Name (if available)		e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	01/06/2023	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. Having an awareness of the basic concepts of calculus theories (limits, derivatives, and integrations). 2. Learning the calculus tools necessary for dealing with the engineering problems (calculations of areas, volumes, and length of plane curves). 3. Understanding the behavior and drawing of different types of transcendental functions and their potential employments in engineering applications. 4. Learning different advanced techniques for integration methods.

	5. Developing the knowledge, skills and attitudes necessary to pursue further studies in mathematics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The calculation of limits of function values, finite limits, limits of infinity of rational functions. 2. Learning how to calculate the derivatives of various functions. The calculation of derivatives of different algebraic functions. 3. The drawing of different types of linear, circular, rational, and trigonometric functions. 4. Recognizing and implement appropriate techniques to integrate trigonometric inverse trigonometric functions, and different functions. 5. Quantification of the areas between two or more functions 6. Quantification of length of plane lines. 7. Quantification of volumes of rotation of various functions around lines using disk method. 8. Learning the Inverse of trigonometric functions, their derivatives, and their integrations. 9. Understanding the Natural logarithm functions, Exponential and General Exponential functions. 10. Learning the Inverse of trigonometric functions, their derivatives, and their integrations. 11. Definition of the Hyperbolic functions, their derivatives, their integrations, and their drawings. 12. Learning and practicing the technique of integration by parts. 13. Learning and practicing the integration of partial fractions.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <u>The Limits and Limit Laws</u> Definition of the concept of the limits and how it helps in derivatives of various functions. Calculating the limits of different functions. Finite Limits, Limits of Infinity. Limits of Rational Functions [6 hrs] <u>Differentiation</u> Learning the tangents and derivative at a point, differentiation rules, derivative of trigonometric functions. The chain rule, implicit differentiation, L'Hôpital's rule. [6 hrs] <u>Plotting of functions</u> – Graphs of functions, extreme values of functions, drawing different types of linear, circular, rational, and trigonometric functions [6 hrs].

	<u>Indefinite and definite integration, integrals involving trigonometric functions</u> –Understanding the rules of integrating trigonometric functions. Learning how to deal with some basic engineering problems having integrals [6 hrs] <u>Area between curves</u> –Applications for finding areas between curves [6 hrs] <u>Lengths of plane curves</u>- Obtaining the length of in-plane curves. [6 hrs] <u>Volumes, solids of revolution</u>- Finding the volumes of revolution of different functions about lines using the disk method [6 hrs] <u>Mid-term examination</u> [2 hrs] <u>Inverse functions and Natural Logarithm functions</u>- Definition of one-to-one function. definition of the inverse of the functions, how to establish an inverse for a function, their derivatives. [6 hrs] <u>Exponential functions and General Exponential functions</u>- Definition of the Exponential functions and General Exponential functions, their derivatives, their integrations. Drawing of various exponential functions. Solution and Analysis of equations involving exponential functions. [6 hrs] <u>Inverse of trigonometric functions</u>- Learning the Inverse of trigonometric functions, their derivatives, and their integrations [6 hrs] <u>Hyperbolic functions</u>– Definition of the Hyperbolic functions, their derivatives, their integrations, and their drawings [6 hrs]. <u>Integration by parts</u>–Understanding the technique of integration by parts, using integration by parts as tabular integration, and substituting methods rules of integrating trigonometric functions. [6 hrs] <u>Integration of inverse of functions, integration of partial fractions</u>- Learning how work out integrals of inverse of functions, integration of rational functions by partial fractions, general description of the method, the Heaviside ‘Cover-up’ method for linear factor. [6 hrs] <u>Final examination</u> [4 hrs]
--	--

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to develop students’ knowledge and understanding of linear algebra and calculus and broaden their ideas about what it means to learn and use these mathematical tools. This will be achieved through interactive class lectures, tutorial problems and assignments which offer the students opportunities to develop their logical reasoning skills.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	30 min. /2	10% (10)	4,10	LO #1-3 and 9-11
	Assignments	10 min. /6	10% (10)	2,3,5,7,9,11	LO # 1-8
	Classwork	30 min. /2	10% (10)	6,12	LO #3 and 7
	Report	2	10% (10)	8, 14	LO # 4 and 15
	Midterm Exam	1 hr	10% (10)	9	LO # 1-8
Summative assessment	Final Exam	3hr	50% (50)	16	All
			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المناهج الأسبوعي النظري

	Material Covered
Week 1	The Limits and Limit Laws, Finite Limits, Limits of Infinity. Limits of Rational Functions
Week 2	Differentiation, the tangents and derivative at a point, derivative of trigonometric functions, the chain rule, implicit differentiation, L'Hôpital's rule
Week 3	Plotting of functions – extreme values of functions, graphs of functions. drawing different types of linear, circular, rational, and trigonometric functions
Week 4	Integrals involving trigonometric functions
Week 5	Applications of integration: Area under the curve, area between curves, Engineering applications involving integrals
Week 6	Applications of integration: Lengths of plane curves- obtaining the length of in-plane curves
Week 7	Applications of integration: Volumes, solids of revolution using disk method

Week 8	Inverse functions and Natural Logarithm functions
Week 9	Exponential functions and General Exponential functions
Week 10	Inverse of trigonometric functions, their derivatives, and their integration
Week 11	Hyperbolic functions, their derivatives, and their integration
Week 12	Integration by parts, tabular integration, substituting methods
Week 13	Integration of partial fractions, special forms
Week 14	Review
Week 15	Revisions: Preparatory week before the final exam
Week 16	Revisions: Preparatory week before the final exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	George B. Thomas, Maurice D. Weir, Joel R. Hass and Frank R. Giordano, “ Thomas' Calculus ” 14 th Edition, Publisher: Addison-Wesley Longman publishing Co. (2018)	No
Recommended Texts	Howard Anton, Irl C. Bivens and Stephen Davis “ Calculus with Analytic Geometry ” 10 th Edition, Publisher: John Wiley & Sons; 10 th Edition (2012)	No
	A. Howard, C.B. Iri, D. Stephen “ Calculus: Late Transcendental ”, 9 th edition, 2010	
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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Engineering Drawing		Module Delivery	
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	AU020201012			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	1	Semester of Delivery		1
Administering Department	02	College	02	
Module Leader	Ass.Lect. Ali Malik Jasim		e-mail	alimalik917366@gmail.com
Module Leader's Acad. Title	Lecturer.	Module Leader's Qualification	Master's	
Module Tutor	Name (if available)		e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	01
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 purposes of the course are: 1- To introduce the students to use drawing instruments, use of different types of pencils in an Engineering Drawing and to draw lines, circles, polygon and Curves. 2. To know how to represent letters & numbers in drawing sheet. 3. To introduce the students to use scales and orthographic projections, projections

	of points & straight lines and solids etc. 4. To make the students draw the projections of the various types of solids in different positions. 5. To represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view and vice versa. 6. To teach the students different Engineering Sections and Basics of dimensioning
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of course, the student will be able to: LO#1. Get information about the important tools for engineering drawing and Familiarize with different drawing equipment, technical standards and procedures. LO#2- Learning how to draw the shapes, angles and lines and others which is essential for engineer and Develop student's imagination and ability to represent the shape size and specifications of physical objects. LO#3. For construction of geometric figures. This will give students ability to draw three-dimension objects on the paper and to draw the pictorial drawings. LO#4- Explain the principle of projection and understand the main idea of using dimension for engineering drawing LO#5- Explain the principle of sectioning and understand the intersection LO#6- Learning the main idea from assembly and detail drawing
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Introduction / drawing instruments, Lettering / title block, Type of lines, Geometric Constructions, Geometric Shapes Orthographic projection on three perpendicular planes, isometric projection, sectional view, Dimensioning

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The student work will be assessed according to the module tasks. The exercises in the drawing hall will be marked weekly. And the homework will be assessed next lecture. During both assessments the student will give the oral and written feedback in order to improve their skills. An exam will be conducted at each end of a topic and the final exam will be done at the end of the semester
--------------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	20min./3	10% (10)	2,4, and 10	LO #2, #4, and #6
	Assignments	240 min./24	10% (10)	2 -16	LO# #3, #4, #5 and #6
	Classwork	30 min. /2	10% (10)	6,12	LO #1 and 5
	Report	None	None	None	-
	Midterm Exam	1.5hr	20% (20)	8	LO #1- #4
Summative assessment	Final Exam	3hr	50% (50)	16	All
	100% (100 Marks)				

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	How to use engineering tools and paper layout with an explanation of the types of engineering lines.
Week 2	Handwriting exercises
Week 3	Engineering Processes
Week 4	Engineering Processes
Week 5	Engineering Processes
Week 6	Projection
Week 7	Projection
Week 8	Mid-term Exam
Week 9	Projection
Week 10	dimensions
Week 11	Isometric projection
Week 12	Isometric projection
Week 13	Isometric projection
Week 14	Sectional view
Week 15	Sectional view
Week 16	Preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	الرسم الهندسي / عبد الرسول عبد الحسين الخفاف	Yes
Recommended Texts		
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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Description

وصف المادة الدراسية

The program provides students with a concise overview of its key features and learning outcomes, enabling them to demonstrate whether they have made the most of the available opportunities. This is accompanied by a description of the program's content.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Engineering Mechanics -I		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020201013			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	1	Semester of Delivery		1
Administering Department	02	College	02	
Module Leader	Asst. Lect. Ali Mahmood		e-mail	ali.mahmood.hamed@au.edu.iq
Module Leader's Acad. Title	Asst. Lect.	Module Leader's Qualification	M.Sc	
Module Tutor	Name (if available)		e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	01/06/2023	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. A study of mechanics gives students the basic tools to understand how the applied forces work on a structures and bodies. 2. Knowledge of mechanics is a fundamental tool for a civil engineer. Our purpose is to understand what has become known as classical mechanics.

	3. The concepts of classical mechanics will deal with include a study of forces, motion, energy, work, momentum and heat, how these are connected, and how these ideas can be applied to engineering problems. 4. provide the students with an elementary understanding of the basic principles of mechanics acquired from introductory physics together with their application to problem solving. 5. This class emphasis on the basic concepts on engineering mechanics required to be use for real structural engineering problem solving.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand what "building materials" are as well as the other properties. 2. Describe the types and use of brick and blockwork material available locally. 3. Show fundamental plastering methods 4. Determine the benefits of insulating and Finishing materials 5. Describe the various admixtures used in building and their uses. 6. Determine the benefits of sanitary work
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Statics: Forces, moments and equilibrium, Load analysis of plane, pinned frames (trusses), Geometrical properties (Area, centroid). Simple tensile, compressive and linear-elastic material behavior.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	20min./2	10% (10)	5 and 10	LO #2, and #3
	Assignments	30min./2	10% (10)	2 and 12	LO #4
	Projects / Lab.	3	10% (10)	Continuous	-
	Report	1	10% (10)	13	-
Summative assessment	Midterm Exam	1.5hr	10% (20)	7	LO #1- #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري

	Material Covered
Week 1	Introduction- Basic Concepts
Week 2	Composition and Resolution of Forces
Week 3	Principle of Moments and Couples
Week 4	Resultants of Force Systems
Week 5	Resultants of Force Systems
Week 6	Equilibrium and Free-Body Diagram
Week 7	Equilibrium and Free-Body Diagram
Week 8	Mid-term Exam
Week 9	Frames in the Plane
Week 10	Frames in the Plane
Week 11	Frames in the Space
Week 12	Trusses in the Plane
Week 13	Trusses in the Space
Week 14	Centroid and Centers of Gravity.
Week 15	Centroid and Centers of Gravity.
Week 16	Preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Engineering Mechanics: Statics James L. Meriam and L. G. Kraige Publisher: John Wiley & Sons In.	Yes
Recommended Texts	Engineering Mechanics: Statics R.C. Hibbeler Publisher: Printice Hall In.	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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Description

وصف المادة الدراسية

Engineering mechanics is the study of how physical systems behave under applied forces and moments. In this unit students are introduced to the fundamental tools and techniques used to analyze a range of 2D engineering mechanics problems. Topics deals with the equilibrium of bodies, that are at rest, coordinate systems, forces and moments, free body diagrams, static equilibrium for frames and trusses in palne and space.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Construction Materials		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020201014			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	1	Semester of Delivery		1
Administering Department	02	College Engendering	02	
Module Leader	Baraa Abbas Hamza		e-mail	baraa.albakry@gmail.com
Module Leader's Acad. Title	Assistant Lecturer		Module Leader's Qualification	M.Sc.
Module (second.)	Name		e-mail	E-mail
Peer Reviewer Name	Name		e-mail	E-mail
01/06/2023	01/06/2023	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 Objectives أهداف المادة الدراسية	1. Gives students a comprehensive understanding of the composition, and engineering behavior of materials used in civil engineering applications. 2. To get students more familiar with the properties of construction materials 3. Enables students to fully comprehend the mechanical properties of engineering materials 4. Gives students a comprehensive understanding of the properties of insulating and finishing materials. 5. enables pupils to comprehend the benefits of performing sanitary work 6. To familiarize students with the characteristics of admixtures materials
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand what "building materials" are as well as the other properties. 2. Describe the types and use of brick and blockwork material available locally. 3. Show fundamental plastering methods 4. Determine the benefits of insulating and Finishing materials 5. Describe the various admixtures used in building and their uses. 6. Determine the benefits of sanitary work
Indicative Contents المحتويات الإرشادية	7. Mechanical properties of Engineering materials: Elasticity, Plasticity, Ductility, Malleability, Brittleness, Strength, Stiffness, Toughness Resilience, Hardness ,Endurance, Durability
	8. Specification: Code, Standards
	9. Bricks (Production Testing and specification)
	10. Binding materials (Gypsum types and Lime)
	11. Wood (Uses of wood and Defects of wood)
	12. Finishing materials: (Paints)
	13. Insulating material: Properties of insulation, Types and Forms of insulation
	14. Tiles: Manufacture of tiles, Tests of Tiles
	15. Metals: Pig iron, cast iron, wrought iron, Steel, Aluminum, Copper
	16. Building stone: Classification of rocks, Main uses of stone
	17. Glass: Raw materials, Engineering Properties of Glass, Types of Glass and
	18. their Uses in Construction Works
	19. Sanitary works: factors must be considered in the design of sanitary sewers,
	20. Types of pipes
	21. water: properties of water used in concrete
	22. New building materials: Chemical admixtures, Mineral admixtures

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 types of simple experiments involving some sampling activities that are interesting to the students.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	<u>5 and 10</u>	LO #1 - LO #4
	Assignments	2	10% (10)	<u>2 and 12</u>	LO #5 - LO #6
	Projects / Lab.	3	10% (10)	<u>Continuous</u>	All
	Report	1	10% (10)	<u>13</u>	All
Summative assessment	Midterm Exam	1.5hr	10% (10)	<u>7</u>	LO #1- #3
	Final Exam	3hr	50% (50)	<u>16</u>	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Mechanical properties of Engineering materials
Week 2	Specification
Week 3	Bricks
Week 4	Binding materials
Week 5	Wood
Week 6	Finishing materials
Week 7	Insulating material
Week 8	Tiles
Week 9	Metals
Week 10	Building stone
Week 11	Glass
Week 12	Pipes
Week 13	water
Week 14	Sanitary works
Week 15	New building materials
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Tests of Bricks (dimensions, Absorption and Efflorescence tests) Compressive Strength test
Week 2	Lab 2: Tests of Bricks (Compressive Strength test)
Week 3	Lab 3: Tests of Tiles (Dimension and Shape, Water Absorption of Tiles)
Week 4	Lab 4: Tests of Tiles (Flexural Rapture test of Tiles)
Week 5	Lab 5: Tests of lime (Setting time)
Week 6	Lab 6: Tests of lime (compressive strength)
Week 7	Lab 7: Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Building Materials (Third Revised Edition), S. K. Duggal.	no
Recommended Texts	1- A Text Book of Building Materials, C.J. Kulkarni. 2- Building Materials, P. C. Varghese, PHI, Pvt. Ltd. 3- Building Construction, P. C. Varghese, PHI, Pvt. Ltd	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 جداً	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 DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Mathematics-II		Module Delivery
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	AU020201021		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	2
Administering Department	02	College	02
Module Leader	Baraa Abbas Hamza		e-mail baraa.albakry@gmail.com
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics-I	Semester	1
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. Having an awareness of the basic concepts of calculus theories (functions, vectors, derivatives, and integrations). 2. Learning the calculus tools necessary for dealing with the engineering problems (calculations of areas, quantities, length of curves and minimum and maximum values for functions). 3. Understanding the behavior and drawing of different types of series and functions can be represented by these series and their potential employments in 37 engineering applications. 4. Learning different methods for representation of functions by polar coordinates and calculation of their integrals by this form. 5. Developing the knowledge, skills and attitudes necessary to pursue further studies in mathematics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The formulation of sequences and infinite series, representation of different functions by infinite series. 2. Learning how to formulate the vectors and using it in many applications such as projections, areas and volumes. 3. The finding of equations of lines and planes using the vectors, also finding of angle between planes and distances between the points and the lines and planes. 4. Learning of transformation of Cartesian formulas to polar formulas, representations of points and curves by polar coordinates. 5. Calculations of curve length using polar coordinates 6. Calculations of areas between curves using polar coordinates 7. Learning of computation of double integral and areas of regions between the different curves. 8. Evaluation of double integrals by changing it from Cartesian form to polar form. 9. Learning of derivative process for functions of two or more variables. 10. Using the partial derivatives in some engineering applications and determination of approximate values for some algebraic expression. 11. Finding the maximum and minimum values for different functions with their applications.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <u>Sequences and infinite series</u> Formulation of sequences and infinite series, determination of series nature (divergent or convergent) and representation of different functions by infinite series using Maclaurn and Taylor series. [18 hrs] <u>Polar coordinates</u>

	Learning of representation of points and graphing diagram using polar, transformation of Cartesian formulas to polar formulas , calculations of curve length using polar coordinates, then calculations of areas between curves using polar coordinates. [12 hrs]. <u>Vectors</u> Learning how to formulate the vectors, mathematical processes on them such as addition, subtraction, dot product, cross product and triple product. Using it in many applications such as projections, areas and volumes. Also finding of equations of lines and planes using the vectors and determination of angle between planes and distances between the points and the lines and planes. [24 hrs] <u>Partial derivative</u> Learning of derivative process for functions of two or more variables, using chain rule, total derivative using the partial derivatives in some engineering applications, higher partial derivative and finding the maximum and minimum values for different functions. [18 hrs]. <u>Double integral</u> Learning of computation of double integral and areas of regions between the different curves, determination of function value on region bounded by different functions, and evaluation of double integrals by changing it from Cartesian form to polar form. [12 hrs].
--	---

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to develop students' knowledge and understanding of linear algebra and calculus and broaden their ideas about what it means to learn and use these mathematical tools. This will be achieved through interactive class lectures, tutorial problems and assignments which offer the students opportunities to develop their logical reasoning skills.

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	4,10	LO #1-3 and 9-11
	Assignments	2	10% (10)	8,13	LO # 5-8
	Classwork	30 min. /2	10% (10)	6,12	LO #3 and 7
	Report	2	10% (10)	14	LO # 4 and 15
	Midterm Exam	1 hr	10% (10)	9	LO # 1-8
Summative assessment	Final Exam	3hr	50% (50)	16	All
			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Sequences and Geometric Series
Week 2	Convergence and divergence
Week 3	Mclaurin and Taylor series
Week 4	Representation of polar coordinates and graphing
Week 5	Curve length and area between curves
Week 6	Vector definitions and basic processes
Week 7	Dot product, cross product and triple product
Week 8	Equations for lines and planes
Week 9	Distance from a point to line, Distance from a point to plane and angle between planes
Week 10	Partial derivatives, chain rule and applications
Week 11	Total derivatives and applications
Week 12	Higher order derivatives, Maxima, minima and saddle points with application
Week 13	Evaluation of double integral by Cartesian coordinates
Week 14	Evaluation of double integral by changing Cartesian coordinates to polar coordinates
Week 15	Revisions: Preparatory week before the final exam
Week 16	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	George B. Thomas, Maurice D. Weir, Joel R. Hass and Frank R. Giordano, “ Thomas' Calculus ” 14 th Edition, Publisher: Addison-Wesley Longman publishing Co. (2018)	No
Recommended Texts	Howard Anton, Irl C. Bivens and Stephen Davis “ Calculus with Analytic Geometry ” 10 th Edition, Publisher: John Wiley & Sons; 10 th Edition (2012)	No
	A. Howard, C.B. Iri, D. Stephen “ Calculus: Late Transcendental ”, 9 th edition, 2010	
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	قيد المعالجة (راسب)	(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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Computer Aided Design (CAD)		Module Delivery	
Module Type	Basic		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020201022			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	1	Semester of Delivery		2
Administering Department	02	College	02	
Module Leader	Ass.Lect. Ali Malik Jasim		e-mail	alimalik917366@gmail.com
Module Leader's Acad. Title	Lecturer.	Module Leader's Qualification	Master's	
Module Tutor	Name (if available)		e-mail	
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	01/06/2023	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- Gives students essential software application for Computer-Aided Drafting (CAD) skills that will be useful for their studies or career goals. 2- Give knowledge about, how to draw two-dimensional objects drawings in AutoCAD. 3- Learn how to start a New drawing file, open an existing drawing file, Save drawing file in AutoCAD. 4- - The basic information about work space, Application Menu, Quick Access Toolbar, Title Bar, Command Line. 5- The essential understanding of about different draw commands available in AutoCAD. 6- Learn how to use selection methods available in AutoCAD to select objects. 7- Learn how to use some drawing aids or Drafting Setting Tools that can help you to draw different drawings 8- Study the some modify commands to do modifications in the drawings 9- In AutoCAD., the students will learn the options and commands available for Text, dimensions, layers tables and how to use them.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this course, the students should be able to: 1- Build your confidence with use Auto cad and gaining the essential drawing skills that will be useful for your study or career goals. 2- Adjust the program interface and Basics of two-dimension drawing board. 3- Working with Auto cad files and templates. 4- Use shortcuts so that work can be carried out at high speed. 5- Drawing plans for buildings, shapes sections and organizing the drawing in layers. 6- Converting plans to a specific drawing scale, preparing the drawing for printing, and gaining the necessary skills to know dimensions and calculate areas 7- learn the different methods of drawing on AutoCAD absolute coordinates, relative coordinates, polar coordinate
Indicative Contents المحتويات الإرشادية	The concepts of computer aided drawing • Overview of Auto cad work space, tools, orders • Simplest Working Program, modify menu (scale, array, mirror, rotate, lengthen, break, blend, stretch) • line Types, Multiline, construction line, Ray • Commands (offset, trim , extend)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage students to use computer programs to draw different plans. The unit also aims to instill sound principles of program to draw structural drawings for complete projects with all their details
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	86	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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)	<u>5 and 10</u>	LO #1 - LO #4
	Assignments	2	10% (10)	<u>2 and 12</u>	LO #5 - LO #6
	Projects / Lab.	3	10% (10)	<u>Continuous</u>	All
	Report	1	10% (10)	<u>13</u>	All
Summative assessment	Midterm Exam	1.5hr	10% (10)	<u>7</u>	LO #1- #3
	Final Exam	3hr	50% (50)	<u>16</u>	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري

	Material Covered
Week 1	Introduction to the AutoCAD
Week 2	Why AutoCAD? Versions of AutoCAD
Week 3	Main window of AutoCAD program
Week 4	Drawing Tool Bar
Week 5	Modified Tool Bar

Week 6	Simple Project I
Week 7	Simple Project II
Week 8	Mid-term Exam
Week 9	Dimensions
Week 10	Layers
Week 11	Properties
Week 12	Navigations
Week 13	Professional Project I
Week 14	Professional Project II
Week 15	Professional Project II
Week 16	Preparatory week before the Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Information about workspace, Quick Access Toolbar, Title Bar, Command Line.
Week 2	Lab 2: Exercises on draw command
Week 3	Lab 3: Exercises on draw command
Week 4	Lab 4: Exercises on modify command
Week 5	Lab 5: Exercises on text and dimensions command
Week 6	Lab 6: Exercises on layers command
Week 7	Lab 7: Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Autodesk AutoCAD 2021 Learn CAD With Ease.	No
Recommended Texts	AutoCAD 2021 beginning and intermediate No	No
Websites	Websites https://auroncad.de/buecher-shop/autodesk-autocad?gad_source	

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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Description

وصف المادة الدراسية

AutoCAD is a general drafting and design application used in different industries by the wide range of Architects, Civil Engineers, Mechanical Engineers, Graphic designers, and many other working professionals. Parametric functionality and mesh modeling was firstly introduced in AutoCAD 2010. The software supports both 2D and 3D formats. The software is developed and sold by Autodesk.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Engineering Mechanics -II		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020201023			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	1	Semester of Delivery		2
Administering Department	02	College	02	
Module Leader	Asst. Lect. Ali Mahmood		e-mail	ali.mahmood.hamed@au.edu.iq
Module Leader's Acad. Title	Asst. Lect.	Module Leader's Qualification	M.Sc	
Module Tutor	Name (if available)		e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Mechanics-I	Semester	1
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. The course focuses at developing the basic background in engineering mechanics-dynamics that will be required by an engineering student. 2. The fundamental concepts and applications of the laws of dynamics through real life applications are embodied in the course. 3. The course starts with an introduction to the dynamics, Kinematics, and dynamics of motion

	so that the students can understand its application in their advanced courses in higher semesters. 4. Throughout the course, the waves, oscillation and wave equation in perspective of engineering application will be learned. 5. Throughout the course, the fundamentals and concept of resonance will be learned. 6. Overall, the course aims for use of an integrated system were mathematical and scientific skills such as measuring, predicting, formulating explanations, drawing conclusions, and solving problems that are used in technology and its development.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On successful completion of course, the students will be able to: LO#1- Determine the moment of inertia LO#2- Determine friction forces and their effects on rigid bodies LO#3- Understand basic kinematics concepts – displacement, velocity and acceleration LO#4-. Understand basic dynamics concepts – force, momentum, work and energy. LO#5. Understand and be able to apply Newton's laws of motion.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Moment of inertia of shapes, friction forces on bodies, Kinematics of motion, Newton's Laws, Free body diagrams, Work and energy, potential energy, Conservation of mechanical energy, Linear momentum.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	20min./3	10% (10)	5 and 10	LO #1 - LO #4
	Assignments	30min./3	10% (10)	2 and 12	All
	Projects / Lab.	3	10% (10)	Continuous	-
	Report	30 min./1	10% (10)	None	-
Summative assessment	Midterm Exam	1hr	10% (10)	8	LO #1- #3
	Final Exam	3hr	50% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Moment of inertia-regular shapes
Week 2	Moment of inertia-irregular shapes
Week 3	Friction
Week 4	Friction
Week 5	Newton's Second Law of Motion
Week 6	Equation of Motion for a System of Particles
Week 7	Equation of Motion for a System of Particles
Week 8	Mid-term Exam
Week 9	Principle of Work and Energy for a System of Particle
Week 10	Principle of Work and Energy for a System of Particle
Week 11	Equations of Motion: General Plane Motion
Week 12	The Work of a Force
Week 13	The Work of a Couple
Week 14	Principle of Work and Energy
Week 15	Linear and Angular Momentum
Week 16	Preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Engineering Mechanics: Dynamic: Timoshenko	Yes
Recommended Texts	Engineering Mechanics: Dynamic R.C. Hibbeler Publisher: Printice Hall In.	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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Description

وصف المادة الدراسية

The engineering mechanics-II includes the study of a different topics related to the civil engineering. It aims to give an understanding of the laws of dynamic both by observation and by prediction of the way in which objects behave. Concrete knowledge of engineering mechanics laws, analysis and applications in various fields of engineering and technology are given prominence in this course content. The course gives examples of engineering applications of various concepts and principles in each topic so that students are able to learn and appreciate these concepts and principles.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Statistics		Module Delivery
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	AU020201024		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level		1	
Administering Department		02	College
Module Leader		Nida Hussein Abid Aown	
Module Leader's Acad. Title		Lecturer	Module Leader's Qualification
Module Tutor		Zahraa Amad Salem	e-mail
Peer Reviewer Name			e-mail
Scientific Committee Approval Date		01/06/2023	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 Objectives أهداف المادة الدراسية	1- Learning how to apply statistical concepts to data, describe it, make inference and draw conclusions. 2- Developing students' skills to graphically represent data. 3- Describing data using measures of central tendency and variation 4- Constructing a frequency distribution to analyze data. 5- Determining the chance that an event will occur using probability theory. 6- Using sampling concepts to make inferences about a population
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	LO#1- The course can equip students with consequently essential quantitative skills. LO#2- The course can equip students with skills in description, interpretation and exploratory analysis of data by using graphical methods. LO#3- The students will be able to collect, classify and analyze data and they will learn how to convert raw data to grouped data. LO#4- The students will recognize different types of frequency distributions. LO#5- The students will learn to determine central tendency measures and variation measures. LO#6- The students will understand probability theory and sampling theory.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • -Types of Data and Levels of Measurement • -Graphical Display for Quantitative and Qualitative Data • -Elementary Probability Theory • -Combinatorial Analysis • -Sampling Theory

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main learning and teaching strategies include interactive classes, group assignments to stimulate creative thinking and sharing knowledge between students, reviewing practical reports and making field visits.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	20min./3	15% (15)	2,4, and 10	LO #2, #3, #4
	Assignments	30 min./3	20% (20)	3,5 and 12	LO #1, #5, #6
	Projects / Lab.	30 min./1	5% (5)	None	-
	Report	None	None	None	-
Summative assessment	Midterm Exam	1hr	10% (10)	8	All Los
	Final Exam	3hr	50% (50)	16	All Los
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Engineering Statistics and Types of Data
Week 2	Measures of Central Tendency, Types of Mean
Week 3	Median, Quantiles and Mode
Week 4	Measures of Variation (Range, Mean Deviation, Standard Deviation)
Week 5	Quantiles Range, Coefficient of Variation, Standard Score
Week 6	Types of Frequency Distributions
Week 7	Graphical Display for Data
Week 8	Mid-term Exam
Week 9	Probability Theory: Dependent and Independent Events
Week 10	Probability Rules: Conditional Probability, General Addition Rule
Week 11	Permutations, Combinations, Mathematical Expectation
Week 12	Discrete Probability Distribution: Binomial Distribution and Poisson Distribution
Week 13	Continuous Probability Distribution: Standard Normal Distribution
Week 14	Sampling Theory
Week 15	Statistical Estimation Theory
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Theory and Problems of Statistics, Murray R. Spiegel.	Yes
Recommended Texts	- Introduction to Statistics and Data Analysis, Christian - Heumann, Michael Schomaker and Shalabh.	Yes
Websites	- https://chem.libretexts.org/Bookshelves/organic_statistic/Book%3A_A - https://www.statista.com/	

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.

Description

وصف المادة الدراسية

The course description provides a summary of the most important characteristics of engineering statistics and its study, which gives an idea about dealing with data and outputs for engineering projects and scientific research in civil engineering, demonstrating whether the student has made the most of the available learning opportunities and the expected learning outcomes. If students have basic statistical knowledge, they will be able to collect data accurately, conduct analyses, draw conclusions, and make their decisions based on facts, not assumptions.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Geology		Module Delivery	
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020201025			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	1	Semester of Delivery		2
Administering Department	02	College	02	
Name	Zahraa Amad Salem		E-mail	zahraa.amad@au.edu.iq
Module Leader's Acad. Title	Assist. Lecturer	Module Leader's Qualification	MS.c	
Name (if available)			E-mail	
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The purposes of the course are: 1- To provide the students with basic knowledge of the principles of Earth's structure. 2. To impart knowledge about Rock, soil, water, and the interaction among these three constituents, as well as with engineering materials and structures. 3. The ability to interpret the geological. 4. To enable the student to get the Mechanical and dynamic properties of rock materials 5. To provide information about the finding of stable foundations. 6. To identify the detailed knowledge of soil or rock mechanics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of the course, the student will be able to: LO#1- Understand the knowledge of structural Geology. LO#2- In some cases the engineer can recognize common rock types and simple geological structures, and knows where he can obtain geological information for his preliminary investigation. LO#3- Provide good knowledge about the geology of Dams, and reservoirs. and tunnels. LO#4- learn the Basic principles of soil mechanics. LO#5- Learn good knowledge about principles and stages of Site investigations.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Earth structure Earth crust Earthquakes Rocks and minerals Surface processes Weathering and erosion Nature and properties of engineering soils Geological structures Folds and faults Geological maps

	Physical Mechanical and dynamic properties of rock materials Engineering applications Geology of tunnels and demists Rock extraction Geophysical methods engineering applications Groundwater Hydrology Topographic maps Geological maps.
--	---

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	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	20 min./3	15% (10)	2,4,and 10	LO #1, #3, and #5
	Assignments	20 min./3	20% (5)	3, 5 and 12	LO #2 and #4
	Projects / Lab.	None	None	None	-
	Report	10 min./3	5% (5)	None	-
Summative assessment	Midterm Exam	1hr	10% (20)	8	LO #1- #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction: review of Geology and Engineering Geology.
Week 2	Structure of the Earth, types of Structure of the Earth,
Week 3	Classifications and Determinacy of Rocks and Minerals.
Week 4	Determination of the Historical Geology.
Week 5	Determination of the Weathering, Erosion, and soil formation.
Week 6	Analysis of Structural Geology.
Week 7	Determinate the geology of the water supply.
Week 8	Mid-term Exam
Week 9	Basic Principles of Soil Mechanics
Week 10	Basic Principles of Rock Mechanics
Week 11	Building Materials
Week 12	Principles Characteristics of Minerals
Week 13	Folds and Faults.
Week 14	Geology of Dams, Reservoirs, and Tunnels.
Week 15	Geologic maps and contour lines.
Week 16	The preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Principles of engineering geology, 2 nd Edition Kinan M. Thabet	Yes
Recommended Texts	Das, B. M. (2006) . Principles of Geotechnical Engineering	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	قيد المعالجة (راسب)	(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 DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	English Language I		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture (Online) ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
Module Code	AU01			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	1	Semester of Delivery		02
Administering Department	02	College	02	
Module Leader	Mustafa Yahya Mohammed		e-mail	Mustafa.yahya@au.edu.iq
Module Leader's Acad. Title	Teacher		Module Leader's Qualification	
Module Tutor			e-mail	
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	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 students' skills to understand grammar. 2. To use real-world speaking skills - Everyday English, Spoken English, Music of English. 3. To write effectively, to describe figures and writing essays 4. To learn the reading skills

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of the course, students are expected to: 1. to provide material for the students to learn pronunciation of the English sounds, to learn to read, write, and to know the fundamentals of English grammar and vocabulary; (at basic level); 2. to develop the students' reading skills to enable them to skim an adapted text for main idea, to scan an adapted text for specific information, to interpret an adapted text for inferences; (at basic level); 3. to develop the students' writing skills to enable them to respond to input applying information to a specified task, by writing their opinion in essays (140-160 words); (at basic level); 4. to develop the students' listening skills to enable them to understand and apply specific information from the input (at basic level); 5. to develop the students' speaking skills to enable them to use general language (at basic level); 6. to develop the students' general capacity to a level that enables them to use English in their academic environment (at basic level);
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Chapter 1, includes grammar, listening and reading. [2 hrs.] Introduction, Writing skills. [2 hrs.] Chapter 2, includes grammar, listening and reading. [2 hrs.] Writing, writing essays (part one). [2 hrs.] Chapter 3, includes grammar, listening and reading. [2 hrs.] Chapter 4, includes grammar, listening and reading. [2 hrs.] Chapter 5, includes grammar, listening and reading. [2 hrs.] Chapter 6, includes grammar, listening and reading. [2 hrs.] Chapter 7, includes grammar, listening and reading. [2 hrs.] Chapter 8, includes grammar, listening and reading. [2 hrs.] Writing, writing essays (part two). [2 hrs.] Chapter 9, includes grammar, listening and reading. [2 hrs.] Chapter 10, includes grammar, listening and reading. [2 hrs.] Writing, writing essays (part three) [2 hrs.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	This course is designed for the Middle East students, by Oxford's university press, who learn English at university level to acquire and develop the English language knowledge and skills.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	34	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	16	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

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, and 5
	Assignments	2	10% (10)	2, 12	LO # 1, 2, and 3
	Projects / Lab.	1	10% (10)	Continuous	
	Report and presentation	1	10% (10)	13	LO # 1, 2, 4, and 5
Summative assessment	Midterm Exam	2 hrs.	10% (10)	7	LO # 1-3
	Final Exam	3 hr.	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Chapter 1
Week 2	Introduction, Writing skills
Week 3	Chapter 2
Week 4	Writing, writing essays (part one)
Week 5	Chapter 3
Week 6	Chapter 4
Week 7	Chapter 5
Week 8	Review + Mid-term Exam
Week 9	Chapter 6
Week 10	Chapter 7
Week 11	Chapter 8
Week 12	Writing, writing essays (part two)
Week 13	Chapter 9
Week 14	Chapter 10
Week 15	Writing, writing essays (part three)
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Headway Academic Skills Introductory level third edition	Yes
Recommended Texts	English grammar in use Raymond Murphy fifth edition	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 DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Democracy and Human Rights		Module Delivery
Module Type	Basic		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	AU02		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	1	Semester of Delivery	2
Administering Department	02	College	02
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1-تعلم الطالب بالإعلان العالمي لحقوق الإنسان والديمقراطية 2- تعليم الطالب اهم المواثيق الدولية الخاصة بحقوق الانسان 3-التعرف على القرارات القديمة وعلاقتها بحقوق الانسان والديمقراطية
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	في نهاية الفصل الدراسي يصبح الطالب قادرا على فهم ا-فهم مبادئ الديمقراطية ب-القانون الدولي الخاص بحقوق الإنسان والديمقراطية ج-حقوق المرأة والطفل

Indicative Contents المحتويات الإرشادية	الجزء الأول ستضمن المفاهيم العامة - التعرف على بعض المصطلحات التي تخص الديمقراطية الجزء الثاني يخص تعريف مبادئ الديمقراطية الجزء الثالث يخص دراسة الحضارات القديمة وآراء الفلاسفة حول الديمقراطية
---	---

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	الإستراتيجية الرئيسية التي سيم اعتمادها في تقديم هذه الوحدة في تشجيع الطلاب على إجراء ورش عمل، تحسين وتوسيع مهارات التفكير النقدي لديهم. سيتم تحقيق ذلك من خلال الفصول الدراسية والبرامج التعليمية التفاعلية والنظر

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

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

Delivery Plan (Weekly Syllabus)

النظري الاسبوعي المنهاج

	Material Covered
Week 1	مبادئ الديمقراطية – التعاريف والمبادئ الأساسية
Week 2	الديمقراطية وعلاقتها بالحضارات القديمة
Week 3	راي الفلاسفة الاغريق بالديمقراطية
Week 4	اهم ركائز الديمقراطية
Week 5	الانتخابات والمشاركة السياسية
Week 6	مقومات الديمقراطية
Week 7	مقارنة ما بين الحرية السياسية والاجتماعية
Week 8	الديمقراطية والمجتمع المدني
Week 9	المراقبة – مراقبة الحاكم
week 10	الدستور في البلدان الديمقراطية
week 11	الفصل بين السلطات
week12	اعداد المواطن الصالح
week 13	الديمقراطية وحل الصراعات
Week 14	الحوار الاجتماعي – شروطه – فوائده
Week 15	التكافل الاجتماعي
Week 16	the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	موسوعة حقوق الانسان	Yes
Recommended Texts	كتاب حقوق الانسان والاديان طبعة الاولى 2002 القاهرة	No
Websites		

Grading Scheme

الدرجات مخطط

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جدا جيد	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	(قيد راسب 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.

Description

وصف المادة الدراسية

تهتم الشعوب الديمقراطية بتزسيخ مبادئ حقوق الانسان والديمقراطية بالاستعانة بالمواثيق والعهود الدولية وذلك من خلال تدريس مبادئ حقوق الانسان على طلبة الكليات والمعاهد وزرع هذه المبادئ في نفوس الطلبة والتعرف عليها منذ فجر التاريخ وحتى علاقاتها بالحضارات والاديان.

هذه الموضوعات تجعل الطالب محمل بالمعرفة التي تخص الحقوق والديمقراطية كما يتعرف على دور الامم المتحدة في إنضاج المواثيق والاعلانات مثل الاعلان العالمي لحقوق الانسان لعام 48 وكذلك دور الانتخابات والساتير في اخراج حكومات ديمقراطية ذات صبغة شعبية لاستلام الحكم من خلال هذه الانتخابات اضافة الى التعرف على حقوق الطفل والمرأة ودور الانتخابات في تشكيل الحكومات الديمقراطية.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Computer I		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU04			
ECTS Credits	4			
SWL (hr/sem)	75			
Module Level	1	Semester of Delivery		1
Administering Department	02	College Engender ing	02	
Module Leader	Zahraa Amad Salem		E-mail	zahraa.amad@au.edu.iq
Module Leader's Acad. Title	Teacher	Module Leader's Qualification	M.Sc.	
Module (second.)			e-mail	
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1- Gives students essential computer components and Visual Basic programming skills that will be useful for their studies or career goals. 2- The basic information about a computer system's components (external and internal hardware parts). 3- The essential understanding of system software and application software. In addition, how to install it on the computer. 4- Learn how to use Windows Defender and antivirus programs. 5- Learn how to use Windows operating system. It is a software program that manages computer resources. 6- Study the algorithm and flowchart. An algorithm is a step-by-step analysis of the process, while a flowchart explains the steps of a program in a graphical way. The algorithms and flow charts topics covered the critical steps to write the programming codes. 7- In Visual Basic programming, the students will understand a design process using essential aspects of object-oriented processing and algorithmic analysis and show how to write code for a specific topic.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this course, the students should be able to: 1- Build your confidence with use computers and gaining the essential computer skills that will be useful for your study or career goals. 2- Navigate the operating system and start applications. 3- Develop solutions to solve the problems using an algorithmic approach and flowcharts. 4- Describe and demonstrate Visual Basic programming methodology 5- Design, code, document, analyze, and test Visual Basic programs using the most common features and standards of the language. 6- Create user-friendly interfaces and help systems using Visual Basic as a tool for creation and front-end interface. 7- Use standard Visual Basic constructs to define program logic.
Indicative Contents المحتويات الإرشادية	☐ The concepts of computer components
	☐ Overview of operating system types
	☐ Simplest Working Program, and Simple Output
	☐ Data Types and Variables
	☐ Decisions and Branching Program Flow
	☐ Loops and Iterative Program Flow
	☐ Methods, Properties and Access Control
	☐ File Input and Output
	☐ Object Oriented Programming Techniques and Interfaces

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage students to use computation to solve real problems. The unit also aims to instill sound principles of program design that can be utilized in many units throughout the students' course. The basic elements and structures of a high-level language are taught. Students are exposed to numerous engineering problems and are encouraged to implement solutions using an algorithmic and programming approach.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المناهج الأسبوعي النظري

	Material Covered
Week 1	Introduction to computer
Week 2	Essentials information about hardware and software and understand computer security.
Week 3	Operation system, Microsoft windows system
Week 4	Microsoft office programs
Week 5	Definition and applications on algorithms and flowcharts
Week 6	Assignment's discussion
Week 7	Mid-term Exam

Week 8	Programming with Visual Basic
Week 9	Design the profile of applications in Visual Basic
Week 10	Variables and constants, Input and output statements
Week 11	Conditional statements, Counters, Arrays
Week 12	Examples on Visual basic
Week 13	Examples on Visual basic
Week 14	Assignment's discussion
Week 15	Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Information about hardware and software
Week 2	Lab 2: Windows operating system
Week 3	Lab 3 : Microsoft office programs
Week 4	Lab 4: Microsoft office programs
Week 5	Lab 5: Applications on Visual basic
Week 6	Lab 6: Applications on Visual basic
Week 7	Lab 7: Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Computer basics Student Edition Complete	No
Recommended Texts	Microsoft Visual basic 6.0 user guide	No
Websites	Comprehensive Computer Learning - Google Books	

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 DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Arabic Language I		Module Delivery	
Module Type	Basic		☐ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	(AU06)			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	03	Semester of Delivery		05
Administering Department	02	College	02	
Module Leader	Ahmed thaaer mohammed		e-mail	Ahmed.thaaer@au.edu.iq
Module Leader's Acad. Title	Lecturer.	Module Leader's Qualification	A .I	
Module Tutor	Name (if available)		e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	01/06/2023	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. تطوير مهارات الطالب في فهم اللغة العربية وآدابها 2. تجاوز المصاعب في الكتابة الصحيحة لغويا 3. تقوية الملكة الفكرية الأدبية لدى الطالب لتذوق الأساليب الأدبية الصحيحة 4. معرفة الطالب بطبيعة اللغة العربية وخصائصها ووظائفها 5. مقدرة الطالب على تجاوز الأغلاط الإملائية الشائعة

	6. الكتابة والقراءة بصورة سليمة 7. تحسن الأسلوب الكلامي والكتابي لدى الطالب 8. الحفاظ على اللغة العربية لغة القرآن الكريم فإنها هوية كل عربي. 9. اللغة العربية أدبا من أفضل اللغات المعبرة عن الروح الإنسانية ومشاعرها 10. الحفاظ على السلامة اللغوية عن طريق الإلمام بمفاهيمها
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. إن يكون الطالب في نهاية الفصل قد فهم اللغة العربية فهما جيدا وان يعي بان لغة القرآن هي اللغة المعبرة والجميلة عن المشاعر والأحاسيس والأسلوب الجيد. 2. ان يكون مدركا للأخطاء الإملائية الشائعة، الاعتزاز بالأدب العربي ومعرفة جماليات اللغة العربية. 3. تحسين أسلوب الطالب في الكتابة المعبرة.
Indicative Contents المحتويات الإرشادية	ارشاد الطالب لمهارة الاستماع الانه اب الملكة اللغوية، ارشاد الطالب لمهارة التحدث باللغة المنهجية، ارشاد الطالب لمهارة الكتابة، ارشاد الطالب لمهارة القراءة

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	يجهز التدريسي محاضرات عن المادة على شكل ورقي وإلكتروني ويقدمها للطلبة يقوم التدريسي بإلقاء المحاضرات بشكل تفصيلي يقوم التدريسي بطلب تقارير دورية وواجبات بيتية عن المواضيع الأساسية للمادة
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5,10	LO #1 - 3
	Assignments	2	10% (10)	2,12	LO #1 - 3
	Classwork	1	10% (10)	Continuous	LO #1 - 3
	Report	1	10% (10)	13	LO #1 - 3
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO #1 - 3
	Final Exam	3hr	50% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	حفظ سورة قرآنية
Week 2	الشاعر المتنبي مع حفظ قصيدته
Week 3	الكلام والكلم
Week 4	اقسام الكلام
Week 5	نشأة علم النحو
Week 6	مؤسس علم النحو
Week 7	اعراب الجمل في اللغة العربية
Week 8	الفعل الماضي
Week 9	الفعل المضارع
Week 10	فعل الامر
Week 11	امتحان نصف الفصل
Week 12	الجمل الاسمية
Week 13	الجمل الفعلية
Week 14	علامات الترقيم
Week 15	العدد والمعدود

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	شرح ابن عقيل على الفية ابن ملك	NO
Recommended Texts	كتاب الادب العربي د. شوقي ضيف	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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Description

وصف المادة الدراسية

تُعَدُّ مادة اللغة العربية من المواد الأساسية التي تهدف إلى تمكين الطلبة من إتقان مهارات اللغة الأربع: الاستماع، والتحدث، والقراءة، والكتابة، بما يساهم في تنمية قدرتهم على التواصل الفعال واستخدام اللغة استخدامًا صحيحًا في المواقف المختلفة. تركز المادة على دراسة القواعد النحوية والإملائية بصورة تطبيقية، وتنمية مهارات القراءة والفهم والاستيعاب، إلى جانب تدريب الطلبة على التعبير الكتابي والشفهي بأسلوب واضح ومنظم. كما تتضمن المادة نصوصًا أدبية وعلمية مختارة تساهم في تنمية الذوق اللغوي وتعزيز الثروة اللفظية لدى الطلبة. وتهدف المادة كذلك إلى ربط اللغة بحياة الطالب اليومية، وتنمية التفكير النقدي من خلال تحليل النصوص وفهم مضامينها، فضلًا عن تعزيز القيم الثقافية والهوية العربية.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Mathematics-III		Module Delivery
Module Type	Basic		☒ Theory
Module Code	AU020202031		☐ Lecture
ECTS Credits	7		☐ Lab
SWL (hr/sem)	175		☒ Tutorial
			☐ Practical
			☐ Seminar
Module Level	02	Semester of Delivery	03
Administering Department	02	College	02
Module Leader	Asst. Lect. Massara Ali	e-mail	massara.ali@au.edu.iq
Module Leader's Acad. Title	Asst. Lect.	Module Leader's Qualification	M.Sc.
Module Tutor	Name (if available)	e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics-II	Semester	02
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	- Having an awareness of the basic concepts of calculus theories (functions, vectors, derivatives, and integrations). - Learning the calculus tools necessary for dealing with the engineering problems (calculations of areas, quantities, length of curves and minimum and maximum values for functions). - Understanding the behavior of different types of series and the functions that can be represented by these series and their potential employments in engineering applications. - Defining of vectors, which provide simple ways to define equations for lines, planes, curves, and surfaces in space

	- Learning derivatives of function with two and three independent variables. - Learning procedures for evaluation of double integrals of functions in Cartesian form and polar form. - Developing the knowledge, skills and attitudes necessary to pursue further studies in mathematics.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- The formulation of sequences and infinite series, representation of different functions by infinite series. - Learning how to formulate the vectors and using it in many applications such as projections, areas and volumes. - The finding of equations of lines and planes using the vectors, also finding of angle between planes and distances between the points and the lines and planes. - Learning of computation of double integral and areas of regions between the different curves. - Evaluation of double integrals by changing it from Cartesian form to polar form. - Learning of derivative process for functions of two or more variables. - Using the partial derivatives in some engineering applications and determination of approximate values for some algebraic expression. - Finding the maximum and minimum values for different functions with their applications.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <u>Sequences and infinite series</u> Formulation of sequences and infinite series, determination of series nature (divergent or convergent) and representation of different functions by infinite series using Maclaurn and Taylor series. [18 hrs] <u>Vectors</u> Learning how to formulate the vectors, mathematical processes on them such as addition, subtraction, dot product, cross product and triple product. Using it in many applications such as projections, areas and volumes. Also finding of equations of lines and planes using the vectors and determination of angle between planes and distances between the points and the lines and planes. [24 hrs.] <u>Partial derivative Learning</u> of derivative process for functions of two or more variables, using chain rule, total derivative using the partial derivatives in some engineering applications, higher partial derivative and finding the maximum and minimum values for different functions. [18 hrs]. <u>Double integral</u> Learning of computation of double integral and areas of regions between the different curves, determination of function value on region bounded by different functions, and evaluation of double integrals by chancing it from Cartesian form to polar form. [12 hrs].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies

The main strategy that will be adopted in delivering this module is to develop students' knowledge and understanding of linear algebra and calculus and broaden their ideas about what it means to learn and use these mathematical tools. This will be achieved through interactive class lectures, tutorial problems and assignments which offer the students opportunities to develop their logical reasoning skills.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	81	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	30 min. /2	10% (10)	4,10	LO #1-3 and 9-11
	Assignments	10 min. /6	10% (10)	2,3,4,5,7,9,11	LO # 1-8
	Classwork	30 min. /2	10% (10)	6,10	LO #3 and 7
	Report	2	10% (10)	14	LO # 4 and 15
	Midterm Exam	1 hr	10% (10)	9	LO # 1-8
Summative assessment	Final Exam	3hr	50% (50)	16	All
	100% (100 Marks)				

Delivery Plan (Weekly Syllabus)

المناهج الأسبوعية النظرية

	Material Covered
Week 1	Sequences and Geometric Series
Week 2	Convergence and divergence
Week 3	Maclaurin and Taylor series
Week 4	Matrices and determinants
Week 5	Vector definitions and basic processes
Week 6	Dot product, cross product and triple product
Week 7	Equations for lines and planes
Week 8	Distance from a point to line, Distance from a point to plane and angle between

	planes
Week 9	Partial derivatives, chain rule and applications
Week 10	Total derivatives, directional derivatives and applications
Week 11	Midterm exam
Week 12	Higher order derivatives, Maxima, minima and saddle points with application
Week 13	Evaluation of double integral by Cartesian coordinates
Week 14	Evaluation of double integral by changing Cartesian coordinates to polar coordinates
Week 15	Revisions: Preparatory before the final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	None
-------------	-------------

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	George B. Thomas, Maurice D. Weir, Joel R. Hass and Frank R. Giordano, “ Thomas' Calculus ” 14 th Edition, Publisher: Addison-Wesley Longman publishing Co. (2018)	No
Recommended Texts	, Irl C. Bivens and Stephen Davis Howard Anton “ Calculus with Analytic Geometry ” 10 th Edition, Publisher: John Wiley & Sons; 10 th Edition (2012)	No
	A. Howard, C.B. Iri, D. Stephen “ Calculus: Late Transcendental ”, 9 th edition, 2010	
Websites	https://3lihandam69.files.wordpress.com/2018/10/calculus-10th-edition-anton.pdf	

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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Description

وصف المادة الدراسية

This course involves development of engineering student skills in basic mathematical processes required to performing all engineering computations such as calculations of areas, quantities, length of curves and minimum and maximum values for different functions. Also, the course helps the student understanding the behavior and drawing of different types of series and functions and teaching him methods for differentiation and integration and using them for many engineering applications. Finally, it developing the knowledge, skills and attitudes necessary to pursue further studies in mathematics.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Strength of Materials-I		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020202032			
ECTS Credits	7			
SWL (hr/sem)	175			
Module Level	2	Semester of Delivery		3
Administering Department	02	College	02	
Module Leader	ZAHRAA HAYDER ALI		e-mail	Zahraa.hayder@au.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification		
Module Tutor			e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Mechanics-I	Semester	1
	Engineering Mechanics-II	Semester	2
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. The purpose of the course is to provide the students for basic knowledge in material behavior, stress-strain relations and their analysis. 2. During the course, students will review on mechanics first and obtain knowledge in stress-strain relations, their types. 3. Students will review modern sources, and show the problems and their solving methods for all problems related to the strength of materials 4. At the end students will have basic concept on theory of shear, flexure, deflection and column buckling.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of the module the student is expected to be able to: LO#1- Understand the basics of the strength of materials, effect of forces, moments, stresses, and strains on materials behavior. LO#2- applies the principle of static, forces and moments equilibrium to rigid bodies and 2D structures to determine internal stresses. LO#3- applies the principle of static, forces and moments equilibrium to rigid bodies and 2D structures to determine internal strains. LO# 4-Discusses and solves problems related to Hooke's law, deformations in axially loaded bars, deformations in a system of axially loaded bars, LO#5- Learn the statically indeterminate axially loaded members and thermal effects on axial deformation. LO# 6- Learn the fundamentals of shear force and bending moment diagrams
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Stresses: Normal Stress, Direct Shear Stress, Bearing Stress, Strain: Displacement, Deformation, Normal strain, Shear strain, Thermal strain. The stress-strain diagram, Hooke's law, Poisson's ratio. Deformations in axially loaded bars, Deformations in a system of axially loaded bars, statically indeterminate axially loaded members, Thermal effects on axial deformation. Shear Force and Bending Moment Diagrams. Torsional shear strain, Torsional shear stress.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	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	20min. /3	10% (10)	3, 5 and 10	LO #2, #3, and #5
	Assignments	30min. /3	10% (10)	2, 7 and 12	LO #1, #4, and #6
	Projects / Lab.		10% (10)	continuous	continuous
	Report		10% (10)	3, 7 and 13	continuous
Summative assessment	Midterm Exam	1hr	10% (10)	8	LO #1- #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Stress: Introduction, Normal Stress under Axial Loading, Direct Shear Stress, Bearing Stress.
Week 2	Strain: Displacement, Deformation, and the concept of strain, Normal strain, Shear strain, Thermal strain.
Week 3	Mechanical Properties of Materials: The stress-strain diagram, Hooke's law, Poisson's ratio.
Week 4	Axial Deformation: Deformations in axially loaded bars, Deformations in a system of axially loaded bars, statically indeterminate axially loaded members, Thermal effects on axial deformation.
Week 5	Shear Force and Bending Moment Diagrams: Shear and moment in beams, frames and arches.
Week 6	Graphical method for constructing shear force and moment diagrams,
Week 7	Discontinuity functions to represent load, shear and moment.
Week 8	Mid-term Exam
Week 9	Torsion: Torsional shear stress and strain.
Week 10	Torsional, Deformations.
Week 11	Statically indeterminate torsion members.
Week 12	Bending Stress in Beams: Flexural strains, Normal stresses in beams.
Week 13	Analysis of bending stresses in beams, Flexural stresses in beams of two materials.
Week 14	Bending due to an eccentric axial load, Unsymmetrical bending.
Week 15	Bending of curved bars.
Week 16	Preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Strength of Materials Ferdinand L. Singer and Andrew Pytel Publisher: Addison-Wesley Educational Publishers, Incorporated	Yes
Recommended Texts	Mechanics of Materials Egor Paul Popov Publisher: Printice Hall In.	Yes
Websites	Lectures (Academic Profile for teachers)/ https://uomustansiriyah.edu.iq/e-learn/register.php	

Grading Scheme

مخطط الدرجات

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

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

Description

وصف المادة الدراسية

The strength of materials-I covers the following topics; stress and strain concepts, axial load, statically indeterminate axially loaded members, thermal stress, torsion, angle of twist, statically indeterminate torque-loaded members, bending, eccentric axial loading of beams, transverse shear, shear flow in build-up members, combined loadings, stress and strain transformation, deflection of beams and shafts, statically indeterminate beams and shafts.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Engineering Surveying I		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU02022033			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	02	Semester of Delivery		03
Administering Department	02	College	02	
Module Leader	Asst. lect.Sarah Sattar		e-mail	Sarah.sattar@au.edu.iq
Module Leader's Acad. Title	Assistant Lecturer		Module Leader's Qualification	M.Sc.
Module (second.)	Name		e-mail	E-mail
Peer Reviewer Name	Name		e-mail	E-mail
Scientific Committee Approval Date	01/06/2023		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The main objectives of Engineering Surveying modules are: 1-Understanding Surveying Principles: The modules aim to provide students with a solid foundation in the fundamental principles of surveying. This includes topics such as distance measurements, accuracy, precision, leveling, measurement of angles and directions, traverse adjustment analysis, topographic surveying, and horizontal and vertical curves. Techniques and technologies used to manage data in surveying, such as global positioning system (GPS) and geographic information systems (GIS), will also be covered. 2-Developing Field Surveying Skills: Students are expected to gain practical experience in conducting field surveys using various surveying instruments and techniques. This may involve learning how to set up and operate total stations, leveling instruments, Theodolite, and other surveying tools. 3-Learning Data Analysis and Presentation: The modules aim to teach students how to analyze survey data and present it effectively. This includes topics such as adjustment computations, error propagation, and creating maps, and reports based on survey results. 4-Exploring Construction Surveys: Construction surveys focus on providing accurate and precise measurements for construction projects. The module may cover topics such as setting out, alignment surveys, monitoring structures, as-built surveys, and construction stakeout. 5-Incorporating Technology: With the rapid advancements in surveying technology, the module may aim to familiarize students with modern tools and techniques used in the field. This may include topics such as GPS, and (GIS). 6-Enhancing Communication and Teamwork Skills: Surveying often involves working as part of a team, collaborating with engineers, and other professionals. The modules may include activities and projects that enhance communication, teamwork, and collaboration skills
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	LO#1- Understanding of Surveying Principles LO#2- Proficiency in Surveying Instruments and Techniques: Students will develop proficiency in using various surveying instruments and techniques, such as total stations, leveling, theodolite and geographic information systems (GIS). They will learn how to set up and operate these instruments, collect accurate data, and process it for analysis. LO#3- Data Collection and Analysis: Students will acquire the skills to collect survey data accurately and efficiently. They will learn how to analyze the collected data using mathematical computations. They will be able to interpret survey data and draw meaningful conclusions. LO#4- Use of Geomatic Tools and Technologies: Students will become familiar with the latest geomatic tools and technologies used in the industry. This includes knowledge of advanced surveying instruments. They will understand how the tools can be applied to solve engineering and geospatial challenges. LO#5- Problem-solving: During the course, the student will be able to apply surveying principles and techniques to solve real-world engineering problems. They can work individually or in groups to analyze survey data and present their findings. This approach enhances critical thinking, problem-solving, and communication skills.
Indicative Contents المحتويات الإرشادية	The indicative content for Engineering Surveying I module includes: Part A- Theory Course introduction, Distance measurement, Introduction to Leveling, Differential Leveling, Profile Leveling, Cross-Section Leveling, Land Leveling, Introduction to

	angles and directions, Traverse angle definitions, Travers computations, Traverse Adjustment overview, Error of closure, Balancing Departure and latitude, Inverse Travers computations. [28 hrs] Part B- Practical Introduce Level instrument, Series leveling, Two Peg Test, Reciprocal Leveling, Longitudinal profile, Cross-Section, Inverted Staff reading, Mid-term Exam, Electronic Distance measurement using Leica Disto A2, Introduce Theodolite instrument, Horizontal and vertical angle measurements using Theodolite, Measurement the, width of a building using Theodolite, measuring an object height using Theodolite, Data layout using Theodolite, Data collection using Theodolite. [42 hrs]
--	--

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategies that will be used in delivering these modules are: □ Lectures: Lectures provide a structured way to deliver theoretical concepts and principles related to engineering surveying. □ Practical Field Work: Practical field work plays a crucial role in engineering surveying education. It involves hands-on experience using surveying instruments and techniques in real-world settings. Students can practice leveling, angle measurement, distance measurement, and other surveying tasks under the guidance of instructors. □ Laboratory Sessions: Laboratory sessions provide opportunities for students to apply theoretical knowledge to practical situations. They can work with surveying instruments and software in controlled environments, conduct experiments, analyze data, and solve problems. These sessions reinforce concepts learned in lectures and develop technical skills. □ Collaborative Learning: Group discussions, peer learning, and collaborative activities foster interaction and knowledge sharing among students. Working in teams, students can solve surveying problems, discuss concepts, and exchange ideas. This promotes teamwork, communication, and a deeper understanding of surveying principles. □ Assessment and Feedback: Regular assessments, including quizzes, exams, assignments, and practical evaluations, provide feedback on students' progress and understanding. Constructive feedback helps students identify areas for improvement and reinforces their learning.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	30 min/2	10% (10)	3 and 10	LO #1 and #5
	Assignments	1hrs:30min /2	10% (10)	5 and 13	LO #1, #3 and #5
	Projects / Lab.	1	10% (10)	<u>Continuous</u>	
	Report	1	10% (10)	<u>15</u>	All
Summative assessment	Midterm Exam	2hr	10% (10)	<u>8</u>	LO #1, #3 and #5
	Final Exam	3hr	50% (50)	<u>16</u>	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Course introduction
Week 2	Distance measurement
Week 3	Introduction to Leveling
Week 4	Differential Leveling
Week 5	Profile Leveling
Week 6	Cross-Section Leveling
Week 7	Land Leveling
Week 8	Mid-term Exam
Week 9	Introduction to angles and directions
Week 10	Traverse angle definitions
Week 11	Travers computations
Week 12	Traverse Adjustment overview
Week 13	Error of closure
Week 14	Balancing Departure and latitude
Week 15	Inverse-Travers computations
Week 16	Preparatory week before the Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Introduce Level instrument
Week 2	Series leveling
Week 3	Two Peg Test
Week 4	Reciprocal Leveling
Week 5	Longitudinal profile
Week 6	Cross-Section
Week 7	Inverted Staff reading
Week 8	Mid-term Exam
Week 9	Electronic Distance measurement using Leica Disto A2
Week 10	Introduce Theodolite instrument
Week 11	Horizontal and vertical angle measurements using Theodolite
Week 12	Measurement the width of a building using Theodolite
Week 13	Measuring an object height using Theodolite
Week 14	Data layout using Theodolite
Week 15	Data collection using Theodolite

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Elementary Surveying An Introduction to Geomatics 13th edition (2012). Wolf, Paul R.	Yes
Recommended Texts	Surveying, 6th Edition (2012) Jack C. McCormac, Wayne Sarasua, William Davis.	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.

Description

وصف المادة الدراسية

Engineering surveying is a specialized branch of surveying that focuses on providing accurate measurements and data for engineering and construction projects. It involves the application of surveying principles, techniques, and technologies to support the planning, design, and execution of various engineering projects.

Engineering surveying plays a crucial role in the construction industry by providing accurate and reliable data that is used in the design and construction of infrastructure projects such as buildings, roads, bridges, tunnels, dams, and pipelines. It helps engineers and architects to understand the terrain, establish precise locations, and ensure that structures are constructed in accordance with design plans and specifications.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Concrete Technology-I		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020202034			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	2	Semester of Delivery		3
Administering Department	02	College	02	
Module Leader	Howraa Jawad khadim		e-mail	houraa1999@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Asst. Lecturer.	Module Leader's Qualification		
Module Tutor	Name (if available)	e-mail		
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	01/06/2023	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 purposes of the course are: 1- To learn the manufacturing process of cement 2- To learn the hydration of cement 3- To understand the properties of the material in concrete 4- To illustrate the properties of Admixture 5- To illustrate the properties of Aggregate 6- To provide the students with basic knowledge in principles of sieve analysis of aggregate
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The student will be able to: 1. Recognize the definition of cement and types of cement. 2. Summarize what is meant by the hydration of cement. 3. Comprehend the properties of types of cement, 4. Comprehend the properties of Admixtures, 5. Provide quick solutions to elementary problems of aggregate 6- Understand the concept of sieve analysis of aggregate
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Industry of cement, compounds of cement, hydration of cement, types of cement, admixtures, aggregate, sieve analysis of aggregate

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 course, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	20min./3	10% (10)	2,4,and 10	LO #1, #3, and #5
	Assignments	30 min./3	15% (15)	3, 5 and 12	LO #2, #4 and #6
	Projects / Lab.	2hr	10%(10)	2, 4 and 6	continuous
	Report		5%(5)	continuous	continuous
	Midterm Exam	1hr	10% (10)	7	LO #1- #3
Summative assessment	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)	20min./3	10% (10)

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction
Week 2	Portland cement
Week 3	Manufacturing of Portland cement
Week 4	Chemical compounds of Portland cement
Week 5	Hydration of cement
Week 6	The heat of hydration of cement
Week 7	Setting time of cement
Week 8	Testing of Portland cement
Week 9	Types of Portland cement
Week 10	. Admixtures
Week 11	Types of Admixtures
Week 12	Aggregates
Week 13	Sieve Analysis of Aggregate
Week 14	Density of Aggregate
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Consistency of cement
Week 2	Setting time of cement

Week 3	Compressive strength of mortar
Week 4	Tensile strength of mortar
Week 5	Sieve analysis of aggregate
Week 6	Density of aggregate
Week 7	The specific gravity of aggregate

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Concrete Technology, 2nd edition, A.M. Neville	Yes
Recommended Texts		
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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Description

وصف المادة الدراسية

Understanding the characteristics of concrete and gaining hands-on experience is fundamental to the field of concrete technology.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Fluid Mechanics I		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020202035			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	02	Semester of Delivery		03
Administering Department	02	College	02	
Module Leader	Asst.Lect.Hiba Ahmed Saleh		e-mail	hiba.ahmed@au.edu.iq
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	01/06/2023		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 Objectives أهداف المادة الدراسية	The purposes of the course are: 1. It is expected that the students will gain a fundamental physical and mathematical understanding of fluid mechanics rather than memorizing equations. 2. It is expected that the students will gain skills to calculate the forces exerted on gases in hydraulic structures 3. Known formulate basic equations for fluid engineering problems; calculate pressure distribution forces on surfaces, and buoyancy analyze flow situations. 4. Understand the flow in pipes and forces exerted on it, also understand the equations governing flow 5. To make the student familiar with latest computational techniques and software used in solving engineering problems 6. To impart knowledge about various methods involved in the analysis of Hydraulic structures
Module Learning	On completion of course, the student will be able to:

Outcomes مخرجات التعلم للمادة الدراسية	LO #1 The essential facts, concepts, theories and principles of fluid related issues in civil engineering. LO #2 Provide quick solutions to elementary problems of Fluid Mechanics LO # 3 To be able to determine the forces acting on the gates in hydraulics structures LO #4 To be able to analyze the problems related to elementary fluid dynamics especially for incompressible flows using Bernoulli equation LO #5 To be able to determine the forces exerted by jet of fluids on pipes and other hydraulic structures LO #6 Design of open channels using different methods
Indicative Contents المحتويات الإرشادية	Indicative content includes the following:- The Concept of a Fluid Dimensions and Units, Properties of the fluid, Viscosity and Other Secondary Properties, Pressure Distribution in a Fluid, Hydrostatic Pressure Distributions, Application to Manometer, Buoyancy, Hydrostatic Forces on plane Surfaces, Hydrostatic Forces on curved Surfaces, Dimensional Analysis, Fluid Flow Concepts, One and Two Dimensional Flow Concepts, Fluid dynamics, Kinematic of fluid motion, Continuity equation, Application on continuity eq., Bernoulli Equation, Application of energy equation, Momentum equation and Application, Minor and major losses, Pipes in series, Parallel Pipes, Branch Pipes, Networks

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample 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	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	0
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	min./3 20	10% (10)	2,4,and 10	LO #1, #3, and #5
	Assignments	30 min./3	10% (10)	3, 5 and 12	LO #2, #4
	Projects / Lab.	None	None	None	-
	Report/ Lab.	2 hr/week	10%(10)	-	-
Summative assessment	Midterm Exam	1hr	10% (10)	8	LO #1- #5
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Preliminary Remarks, The Concept of a Fluid Dimensions and Units
Week 2	Properties of the fluid. Viscosity and Other Secondary Properties
Week 3	Pressure Distribution in a Fluid, Hydrostatic Pressure Distributions
Week 4	Application to Manometer, Buoyancy
Week 5	Hydrostatic Forces on plane Surfaces,
Week 6	Hydrostatic Forces on curved Surfaces
Week 7	Dimensional Analysis
Week 8	Mid-term Exam
Week 9	Fluid Flow Concepts, One- and Two-Dimensional Flow Concepts
Week 10	Fluid dynamics, Kinematic of fluid motion,
Week 11	Continuity equation, Application on continuity eq.
Week 12	Energy equation, Application of energy equation,
Week 13	Momentum equation, Application of momentum equation
Week 14	Minor and major losses, Pipes in series
Week 15	Open channel
Week 16	Preparatory week before the Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Mass and Wight density of water
Week 2	Calibration of Bourdon gauge
Week 3	Centre of pressure
Week 4	Flow measurement using orifice
Week 5	Flow through Venturi meter
Week 6	Impact of jet
Week 7	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	.Engineering Fluid Mechanics", Crowe, C. T., D. F" & Elger, B. C. Williams and J. A. Roberson, John Wiley .Sons, New York, 2010 Fluid Mechanics, Streeter " & Wylie, McGraw-Hill, New" .York	Yes
Recommended Texts	"Fluid Mechanics and hydraulic Mechanics", Er.R.K. Rajput	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.

Description

وصف المادة الدراسية

This course includes understanding the behavior, properties, and definition of a fluid. The key concepts to be acquired include density, viscosity, specific gravity, pressure, shear stress, and fluid forces. Also it is able to define the different types of fluid flow (laminar, turbulent, and transition) and the appropriate discharge model for each and to understand the application of the continuity, Bernoulli and momentum equations for engineering hydraulics problems for both steady-state and transient systems.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Building Construction		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020202036			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	2	Semester of Delivery		4
Administering Department	02	College	02	
Module Leader	Asst.Lect.Hiba Ahmed Saleh		e-mail	hiba.ahmed@au.edu.iq
Module Leader's Acad. Title	ASS. Lec.		Module Leader's Qualification	Ms.cs.
Module Tutor			e-mail	E-mail
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	01/06/2023	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 Objectives أهداف المادة الدراسية	The lesson aims to teach students about the stages of building construction, which are • Developing the idea of the project, its objectives and the need for it. • Details of project requirements for building construction. • The engineering design of the project includes architectural, civil, electrical, and mechanical designs. • Stages of building implementation and methods of implementation. • Types of buildings in the construction of buildings according to the method of implementation.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	This course will let the students know the following: 1. The life cycle of any building project. 2. The different types of foundations including piles and the method of testing. 3. The method of construction of brick work and stone work. 4. The kinds of floors and roofs. 5. The kinds of joint in buildings. 6. The stairs which construction from many types of building materials with different shapes.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A – Engineering projects</u> Types of buildings and stages of their implementation, starting from the excavation process, equipment used in excavation, soil treatment, and groundwater withdrawal methods. [12hrs] Construction works in bricks and stone and methods of bonding in construction. [10hrs] Columns, beams, arches and stresses applied to them. [8hrs] Floors, ceilings and stairs types and materials used in finishing them. [8hrs] <u>Part B – Concrete works in engineering projects</u> Concrete works and types of molds used in the concrete pouring process. [6hrs] Joints in building and moisture barriers. [4hrs] Doors and windows used in engineering projects and their requirements. [2hrs]

Learning and Teaching Strategies

استراتيجية التعلم والتعليم

Strategies	Type something like: 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 types of simple experiments involving some sampling activities that are interesting to the students.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	20min./2	10% (10)	5 and 10	LO #1, and #6
	Assignments	30min./2	10% (10)	2 and 12	LO #3 and #6
	Projects / Lab.	1	10% (10)	continuous	continuous
	Report	1	10%(10)	13	LO #4 and #5
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO #1- #3, and #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction
Week 2	Earth work, excavation and filling.
Week 3	Brick work.
Week 4	Stone work.
Week 5	Concrete works, mixing, transport, costing, and finishing.
Week 6	Form work.
Week 7	Foundations and piles.
Week 8	Water proofing of building.
Week 9	Arches, lintels and sills.
Week 10	Columns and piers.
Week 11	Beams and girders.
Week 12	Floors and slabs.
Week 13	Stairs.
Week 14	Finishing door and windows.
Week 15	Details of steel and wooden structures & Joint in building.
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	انشاء المباني زهير ساكو وارئين ليفون	Yes
Recommended Texts	Construction principles, materials, and methods BY : Harold , B , Olin	No
Websites	Lectures (Academic Profile for teachers)/ https://uomustansiriyah.edu.iq/e-learn/register.php	

Grading Scheme

مخطط الدرجات

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

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

Description

وصف المادة الدراسية

Building construction is considered one of the basic lessons in the Department of Civil Engineering, as it is closely related to the practical side of civil engineering. It addresses many of the problems that arise during the implementation of buildings and contributes to educating the student on the different types of buildings, as well as the different and varied methods of implementation. Referred of tenders and how to select raw materials that conform to the technical specifications at the work site. In addition, the study of building construction deals with the design aspect of buildings, the load and stresses to which the structure is exposed, according to which the design is made, and how to choose the type of foundation based on the soil examination report. This lesson also teaches students how to draw structural and take sections that show the details of the foundations, ceiling and walls. One of the important things that this lesson explains to the student is the equipment that is used for earthworks, how to choose the type of equipment and the comparison between them, and clarify the positive and negative matters for each equipment.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Analysis		Module Delivery
Module Type	Core		☒ Theory 1. Lecture 2. Lab ☒ Tutorial 3. Practical 4. Seminar
Module Code	AU020202041		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	3
Administering Department	02	College	02
Module Leader	Asst. lect. Massara Ali	e-mail	Massara.ali@au.edu.iq
Module Leader's Acad. Title	Lecturer.	Module Leader's Qualification	Asst.lect.
Module Tutor	Name (if available)	e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics-II	Semester	2
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. This course is intended for under graduate students in Civil Engineering. 2. The overall goal of the course is to provide the students with sufficient exposure to advanced mathematical methods. 3. Provide the students tools that are relevant to theoretical and mathematical aspects of civil engineering research.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Comprehensive introduction to ordinary differential equations for engineering students. 2. Apply the principles of Engineering Mathematics to solve a variety of practical problems in Civil Engineering. 3. Complete illustrative diagrams are used to facilitate mathematical modeling of application problems. 4. Theory and techniques for solving differential equations are then applied to solve practical engineering problems. 5. Detailed step-by-step analysis is presented to model the engineering problems using differential equations from physical principles. 6. Solve the differential equations using the easiest possible method.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <u>First Order Ordinary Differential Equations</u> First order ordinary differential equations, Definition and classification, Separable variables differential equations. Homogeneous differential equations, exact differential equations, linear differential equations. Applications. [10 hrs] <u>Second and Higher Order Ordinary Differential Equations</u> Second order ordinary differential equations, Linear differential equations with constant parameters. Non-homogenous order ordinary differential equations (method of undetermined coefficients and method of variation of parameters), Applications. [10 hrs] <u>Higher Order Ordinary Differential Equations</u> Higher order ordinary differential equations, Euler-Cauchy equations, Applications. [10 hrs] <u>Fourier Series</u> Fourier series, Determination of Fourier series coefficients, Trigonometric Fourier series, Applications. [10 hrs] <u>Partial Differential Equations</u> Partial differential equations, Separation of variables, Applications. [10 hrs] <u>Solution of Set Of Linear Differential Equations</u> Solution of set of linear differential equations (using elimination and substitution method, D-operator method and Cramer's method), Applications. [10 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies

The strategy of this course is to provide an introduction to the branches of post calculus mathematics with which average analytical civil engineers need to be reasonably familiar in order to carry on their own work effectively and to keep abreast of current developments in their fields.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	30 min. /2	10% (10)	4,10	LO #1 and 3
	Assignments	15 min. /4	10% (10)	2,5,8,13	LO #4-5
	Classwork	30 min. /2	10% (10)	6,12	LO #1 and 5
	Report	2	10% (10)	7,14	LO #2 and 6
	Midterm Exam	1 hr	10% (10)	9	LO #1-4
Summative assessment	Final Exam	3hr	50% (50)	16	All
	100% (100 Marks)				

Delivery Plan (Weekly Syllabus)

المناهج الأسبوعي النظري

	Material Covered
Week 1	First order ordinary differential equations, Definition and classification, Separable variables differential equations,
Week 2	Homogeneous differential equations, Exact differential equations, Linear differential equations
Week 3	Applications
Week 4	Second and higher order ordinary differential equations, Linear differential equations with constant parameters
Week 5	Non-homogenous order ordinary differential equations (method of undetermined coefficients and method of variation of parameters)
Week 6	Euler-Cauchy equations, Applications.
Week 7	Applications.
Week 8	Solution of set of linear differential equations (using elimination and substitution method, D- operator method and Cramer's method),
Week 9	Fourier series,
Week 10	Determination of Fourier series coefficients,
Week 11	Trigonometric Fourier series,
Week 12	Partial differential equations,
Week 13	Separation of variables
Week 14	Applications,
Week 15	Revisions: Preparatory week before the final exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Advanced Engineering Mathematics", Wylie, C.R. and Barrett, L.C., 5th Edition, 1982.	Yes
Recommended Texts	"Advanced Engineering Mathematics", Kreyszig, E., 9th Edition, 2006.	Yes
	"Advanced Engineering Mathematics", Merle C. Potter , Jack L. Lessing, Edward F. Aboufadel, 4th Edition, 2019.	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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Description

وصف المادة الدراسية

This course is intended for under graduate students in Civil Engineering. The overall goal of the course is to provide the students with sufficient exposure to advanced mathematical methods and tools that are relevant to theoretical and mathematical aspects of civil engineering research.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Strength of Materials-II		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020202042			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	2	Semester of Delivery		4
Administering Department	02	College	02	
Module Leader	ZAHRAA HAYDER ALI		e-mail	Zahraa.hayder@au.edu.iq
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	01/06/2023	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Mechanics-I&II	Semester	1
Co-requisites module	None	Semester	-

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1-A thorough understanding of structural members and their strength, stiffness, and stability. 2-Develop an understanding of, and the capability to, solve practical engineering problems involving stress and strain analysis in elementary structural members, such as bars and beams.

	3- A thorough understanding of concepts related to strength of structural members needed for engineering analysis and design. 4- Develop the capability to analyze simple structural members based on strength of materials requirements. 5- Develop the capability to determine stresses and strains to check and verify the safety of several structural members.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of course, the student will be able to: LO#1- Provide quick solutions to elementary problems of shear stress in beams and beam deflection. LO#2- Estimate stress and strain transformations at a general point in an arbitrarily loaded body. LO#3- Estimate Principal stresses and maximum shear stress using Mohr's circle and equilibrium method for plane stress. LO#4- Learn the fundamentals of pressure vessels and their applications in thin-walled spherical pressure vessels and thin-walled cylindrical pressure vessels. LO# 5- Learn the fundamentals of axially loaded compression members, effective length, slenderness ratio and determination of critical load using Euler's equation.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Shear stress in beams, beam deflection, stress transformations, stress at a general point in an arbitrarily loaded body, Principal stresses and maximum shear stress, Mohr's circle for plane stress and general state of stress at a point. Strain Transformations, Transformation equations for plane strain, Principal strains and maximum shearing strain, Mohr's circle for plane strain, Strain measurements and strain rosettes. Thin-walled spherical pressure vessels, thin-walled cylindrical pressure vessels. Combined axial and torsional loads, principal stress in a flexural member, general combined loadings. Axially loaded compression members, effective length, slenderness ratio, critical load and Euler's equation.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	20 min./3	10% (10)	5 and 10	LO #2, and #3
	Assignments	30 min. /3	10% (10)	2 and 12	LO #1, and #4
	Assignments (hw)	4	10% (10)	2,5 and 11	LO #1, LO #2, and #11
	Report	1	10% (10)	continuous	continuous
Summative assessment	Midterm Exam	1hr	10% (10)	8	LO #1- #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Shear Stress in Beams: The shear stress formula, the first moment of area (Q), Shear stresses in beams of rectangular cross section, Shear stresses in beams of circular cross section, Shear flow in built up members, Shear stress and shear flow in thin-walled members
Week 2	Stress Transformations: Stress at a general point in an arbitrarily loaded body.
Week 3	Equilibrium method for plane stress transformations.
Week 4	Principal stresses and maximum shear stress, Mohr's circle for plane stress, General state of stress at a point.
Week 5	Strain Transformations: Transformation equations for plane strain.
Week 6	Principal strains and maximum shearing strain.
Week 7	Mohr's circle for plane strain, Strain measurements and strain rosettes
Week 8	Mid-term Exam
Week 9	Pressure Vessels: Thin walled spherical pressure vessels, Thin walled cylindrical pressure vessels.
Week 10	Combined axial and torsional loads, Principal stress in a flexural member.
Week 11	Combined Loads: General combined loadings.
Week 12	Beam Deflections: Moment-curvature relationship, the differential equation of the elastic curve, determining deflections by integration of a moment equation.
Week 13	Determining deflections by integration of shear force or load equations.
Week 14	Determining deflections by using discontinuity functions, determining deflections by the method of superposition.
Week 15	Axially loaded compression members, effective length, slenderness ratio, critical load, Euler's equation.
Week 16	Preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Strength of Materials Ferdinand L. Singer and Andrew Pytel Publisher: Addison-Wesley Educational Publishers, Incorporated	Yes
Recommended Texts	Mechanics of Materials Egor Paul Popov Publisher: Printice Hall In.	Yes
Websites	Lectures (Academic Profile for teachers)/ https://uomustansiriyah.edu.iq/e-learn/register.php	

Grading Scheme

مخطط الدرجات

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

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

Description

وصف المادة الدراسية

The strength of materials-II is the foundation for structural analysis and Engineering design courses. The course covers material behavior, stresses, strains and deformations with simple applications in engineering designs. Topics to be chosen from: shear stress in beams, deflection of beams, plane stress and strain; constitutive relationships, principal stress and strain; failure criteria; stresses in thin-walled pressure vessels; Mohr's circle; Euler buckling; short and long columns; combined axial and torsional loads, principal stress in a flexural member, general combined loadings.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Engineering Surveying-II		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020202043			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	2	Semester of Delivery		4
Administering Department	02	College	02	
Module Leader	Asst. lect.Sarah Sattar		e-mail	Sarah.sattar@au.edu.iq
Module Leader's Acad. Title	Assistant Lecturer		Module Leader's Qualification	M.Sc.
Module (second.)	Name	e-mail	E-mail	
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Indicative Contents المحتويات الإرشادية	The indicative content for the Engineering Surveying II module includes: Part A- Theory Measuring Angles and Directions with Total Stations, Topographic Surveying Area Computation, Areas by coordinates and Areas for cross-section, Computation of Earthwork Volumes, Mass Diagram, Volume by spot level, Volume by contour and volume formula for geometric shapes, Engineering & Construction surveying, The Global Positioning System (GPS), Introduction to Geographic Information Systems (GIS), Horizontal Curves, offset curves & computation, Compound circular curve and Vertical curves. [28 hrs] Part B- Practical Introduce Total Station instrument, Setting up, Distance measurement Stake out & Angle measurements, Execution of coordinate measurement, Remote elevation measurement & Calculation of Z-coordinate, Missing line measurement & Area calculation, Mid-term Exam, Data collect & Data layout, Data Transfer Introduction to GIS software, Registration of various maps and digitization and editing of features, Database creation and management, Map preparation and composition, Spatial and Mathematical operations. [42 hrs]
---	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ٥١ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	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	20min. /3	10% (10)	3, 5 and 10	LO #2, #3, and #5
	Assignments	30min. /3	10% (10)	2, 7 and 12	LO #1, #4, and #6
	Projects / Lab.		10% (10)	continuous	continuous
	Report		10% (10)	3, 7 and 13	continuous
Summative assessment	Midterm Exam	1hr	10% (10)	8	LO #1- #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			Total assessment	100% (100 Marks)	

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Stress: Introduction, Normal Stress under Axial Loading, Direct Shear Stress, Bearing Stress.
Week 2	Strain: Displacement, Deformation, and the concept of strain, Normal strain, Shear strain, Thermal strain.
Week 3	Mechanical Properties of Materials: The stress-strain diagram, Hooke's law, Poisson's ratio.
Week 4	Axial Deformation: Deformations in axially loaded bars, Deformations in a system of axially loaded bars, statically indeterminate axially loaded members, Thermal effects on axial deformation.
Week 5	Shear Force and Bending Moment Diagrams: Shear and moment in beams, frames and arches.
Week 6	Graphical method for constructing shear force and moment diagrams,
Week 7	Discontinuity functions to represent load, shear and moment.
Week 8	Mid-term Exam
Week 9	Torsion: Torsional shear stress and strain.
Week 10	Torsional, Deformations.

Week 11	Statically indeterminate torsion members.
Week 12	Bending Stress in Beams: Flexural strains, Normal stresses in beams.
Week 13	Analysis of bending stresses in beams, Flexural stresses in beams of two materials.
Week 14	Bending due to an eccentric axial load, Unsymmetrical bending.
Week 15	Bending of curved bars.
Week 16	Preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Elementary Surveying An Introduction to Geomatics 13th edition (2012). Wolf, Paul R.	Yes
Recommended Texts	Surveying, 6th Edition (2012) Jack C. McCormac, Wayne Sarasua, William Davis	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 DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Fluid Mechanics II		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU 020202044			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	2	Semester of Delivery		4
Administering Department	02	College Engender ing	02	
Module Leader	Asst. lect.Sarah Sattar		e-mail	Sarah.sattar@au.edu.iq
Module Leader's Acad. Title	Assistant Lecturer		Module Leader's Qualification	M.Sc.
Module (second.)	Asst.Lect.Hiba Ahmed Saleh		e-mail	hiba.ahmed@au.edu.iq
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The purposes of the course are: 1. It is expected that the students will gain a fundamental physical and mathematical understanding of fluid mechanics rather than memorizing equations. 2. ability to Apply basic mathematical and scientific concepts for the description and solution of engineering problems 3. The ability to formulate basic equations for fluid engineering problems, including the continuity equation, Bernoulli's equation, and the energy equation. 4. Understand the flow in pipes and forces exerted on it, also understand the equations govern these flow 5. To make the student familiar with latest computational techniques and software used for fluid engineering problems 6. To impart knowledge about various methods involved in the analysis of Hydraulic structures.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of course, the student will be able to: LO #1 Understanding the fundamentals of the continuity equation in fluid mechanics and the principle of mass conservation. LO #2 understanding the concepts and the basic principles of the Bernoulli equation and solve problems related to its application. LO # 3 Acquiring skills in dealing with the momentum equation and calculating the forces exerted by fluids on enclosed pipes, ducts and other hydraulic structures. LO #4 Gain the ability to calculate major and minor losses in pipes. LO #5 Learn the basic concepts of flow in series or parallel pipes and how to calculate energy losses in these pipes. LO #6 Design of open channels using different methods
Indicative Contents المحتويات الإرشادية	Indicative content includes the following:- Review of Continuity equation , Application on continuity Equation, Bernoulli Equation, Application of energy equation, Momentum equation and Application, Minor and major losses, Pipes in series, Parallel Pipes, Branch Pipes, Networks
Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students..

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	26	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	0
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	30min./3	10% (10)	2,4, and 10	LO #1, #3, and #6
	Assignments	30 min./3	10% (10)	3, 5 and 14	LO #2, #4 and #6
	Projects / Lab.	30 min./6	10% (10)	continue	LO #1-3 and 9-11
	Report	2 hr/week	10% (10)	-	-
Summative assessment	Midterm Exam	1hr	10% (10)	8	LO #1- #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)	Total assessment	100% (100 Marks)

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Material Covered

Week 1	Review of Continuity equation, Application on continuity Equation
Week 2	Bernoulli Equation
Week 3	Application on Bernoulli Equation
Week 4	Momentum equation
Week 5	Application of momentum equation
Week 6	Energy equation
Week 7	Application of energy equation
Week 8	Mid-term Exam
Week 9	Major losses and Minor losses
Week 10	Pipes in series
Week 11	Parallel Pipes
Week 12	Parallel Pipes
Week 13	Drag and Lift
Week 14	Flow in open channel and weirs
Week 15	Design of open channel
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Material Covered

Week 1	Bernoulli's Theorem
Week 2	Impact of jet
Week 3	Flow over weirs
Week 4	Reynolds's number measurement devices
Week 5	Friction losses
Week 6	Flow rate measurement in open channel
Week 7	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"Fluid Mechanics and hydraulic Mechanics", Er.R.K. Rajput	Yes
Recommended Texts	Engineering Fluid Mechanics", Crowe, C. T., D. F. Elger, B. C. Williams and J. A. Roberson, John Wiley & Sons, New York, 2010. "Elementary Fluid Mechanics", Vennard, & Streeter, John Wiley & Sons Inc.,5th edition	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.

Description

وصف المادة الدراسية

Course of Fluid Mechanic II, this course includes understanding the behavior, properties, and definition of fluids. It also involves defining different types of fluid flow, such as laminar, turbulent, and transition flows. Additionally, the course covers One- and Two-Dimensional Flow Concepts and selecting the appropriate discharge model for each type of flow.

Furthermore, students will learn about the application of continuity, Bernoulli, and momentum equations in solving engineering hydraulics problems. They will be able to determine the flow rate over weirs and in open channels, as well as develop the skills to design open channels.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Concrete Technology-II		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	AU020202045		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level		2	
Administering Department		02	College
Module Leader		Asst. Lect Howraa Jawad khadim	e-mail
Module Leader's Acad. Title		Asst .Lecturer.	Module Leader's Qualification
Module Tutor	Name (if available)		e-mail
Peer Reviewer Name			e-mail
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Concrete technology-I		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 purposes of the course are: 1- To learn the manufacturing process of concrete 2- To learn the properties of concrete 3- To understand the properties of the material in concrete 4- To illustrate the properties of Fresh Concrete 5- To illustrate the properties of hardened Concrete 6- To provide the students with basic knowledge in principles of mix design of concrete
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The student will be able to: 1. Comprehend the properties of Fresh Concrete, 2. Recognize the definition of workability, segregation. 3. Recognize the definition of consistency of concrete 4. Summarize what is meant by testing of fresh concrete. 5. Comprehend the properties and testing of hardened Concrete 6. 6- Understand the concept of mix design of concrete
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Fresh concrete, the workability, types of segregation, hardened concrete, testing of hardened concrete, and mix design of concrete
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 course, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	20min./3	10% (10)	2,4,and 10	LO #1, #3, and #5
	Assignments	30 min./3	15% (15)	3, 5 and 12	LO #2, #4 and #6
	Projects / Lab.	2hr	10%(10)	2, 4 and 6	continuous
	Report	1	5%(5)	continuous	continuous
	Midterm Exam	1hr	10% (10)	7	LO #1- #3
Summative assessment	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)	20min./3	10% (10)

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	properties of fresh concrete
Week 2	Workability of fresh concrete
Week 3	Testing of fresh concrete
Week 4	Segregation of concrete
Week 5	Types of segregation
Week 6	bleeding of concrete
Week 7	Pouring of concrete
Week 8	Properties of hardened concrete
Week 9	Testing of hardened concrete
Week 10	Cracks of concrete
Week 11	Compressive strength of concrete
Week 12	Tensile strength of concrete
Week 13	Flexure strength of concrete
Week 14	Mixing and compaction of concrete
Week15	Mix design of concrete
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Slump test

Week 2	Compaction factor
Week 3	V-time
Week 4	Compressive strength for cubes
Week 5	Compressive strength for cylinders
Week 6	Tensile strength
Week 7	Flexure strength

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Concrete Technology, 2nd edition , A.M. Neville	Yes
Recommended Texts		NO
		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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Description

وصف المادة الدراسية

Understanding the characteristics of concrete and gaining hands-on experience is fundamental to the field of concrete technology.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Crimes of The Baath Regime in Iraq		Module Delivery
Module Type	Basic		☒ Theory ☒ Lecture ☐ Tutorial ☐ Lab ☐ Practical ☒ Seminar
Module Code	AU03		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	2	Semester of Delivery	
Administering Department	02	College	02
Module Leader		e-mail	
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	MSc
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	تعليم الجيل الحالي وخاصة طلبة الجامعات بالجرائم التعسفية التي قام بها نظام البعث في العراق وما ارتكبه البعث بحق كافة العراقيين.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	في نهاية الفصل الدراسي يصبح الطالب على علم ودراية بمفهوم جرائم البعث لأنهم عاشوا في زمن مختلف ونظام مختلف ومن هذه الجرائم: 1 - الجرائم النفسية 2 - الجرائم الاجتماعية 3 - المقابر الجماعية
Indicative Contents المحتويات الإرشادية	تتضمن تعليم مفهوم الجرائم واقسامها وانواع الجرائم الدولية وانتهاكات القوانين العراقية من قبل نظام البعث وصور انتهاكات حقوق الانسان وجرائم المقابر الاجتماعية من قبل نظام البعث

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	تعليم وترسيخ مادة جرائم البعث لدى في الوحدة هذه تقديم في اعتمادها سيم التي الرئيسية الاستراتيجية شريحة الطلبة الذين لم يعاصروا المرحلة السابقة المظلمة في حكم البعث وما ارتكبه من جرائم بشرية .
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

النظري الاسبوعي المنهاج

	Material Covered
Week 1	جرائم نظام البعث في قانون المحكمة الجنائية
Week 2	مفهوم الجرائم وأقسامها
Week 3	جرائم التهجير
Week 4	انتهاكات حقوق الانسان
Week 5	انواع الجرائم الدولية
Week 6	الجرائم النفسية والاجتماعية وأثارها
Week 7	آليات الرعب والتخويف والتجويد
Week 8	آلية جريمة التطهير العرقي والمذهبي
Week 9	أثار الجرائم التعسفية
week 10	عسكرة المجتمع
week 11	موقف النظام البعثي من الدين
week 12	انتهاكات القوانين العراقية
week 13	الانتهاكات السياسية والعسكرية لنظام البعث
Week 14	اماكن السجون والاحتجاز لنظام البعث
Week 15	جرائم المقابر الجماعية
Week 16	the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	التأسيس المعرفي لدراسة جرائم حزب البعث	Yes
Recommended Texts	موسوعة الوثائقية للمقابر الجماعية تقارير الامم المتحدة في أدانة نظام البعث بانتهاكات حقوق الانسان	No
Websites		

Grading Scheme الدرجات مخطط				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جدا جيد	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	(المعالجة قيد) راسب	(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 DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	English Language II		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture (Online) ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU11			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	2	Semester of Delivery		4
Administering Department	02	College	02	
Module Leader	Asst. Lect. Safa Tariq Ahmed		e-mail	62147@moheer.gov.iq
Module Leader's Acad. Title	Asst. Lect.	Module Leader's Qualification	M.Sc.	
Module Tutor		e-mail		
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	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 students' skills to understand grammar. 2. To use real-world speaking skills - Everyday English, Spoken English, Music of English. 3. To write effectively, to describe figures and writing essays 4. To learn the reading skills
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of the course, students are expected to: 1. to provide material for the students to learn pronunciation of the English sounds, to learn to read, write, and to know the fundamentals of English grammar and vocabulary; (at pre - intermediate level); 2. to develop the students' reading skills to enable them to skim an adapted text for main idea, to scan an adapted text for specific information, to interpret an adapted text for inferences; (at pre - intermediate level); 3. to develop the students' writing skills to enable them to respond to input applying information to a specified task, by writing their opinion in essays (140-160 words); (at pre - intermediate level); 4. to develop the students' listening skills to enable them to understand and apply specific information from the input (at pre - intermediate level); 5. to develop the students' speaking skills to enable them to use general language (at pre - intermediate level); 6. to develop the students' general capacity to a level that enables them to use English in their academic environment (at pre - intermediate level);
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Chapter 1, includes grammar, listening and reading. [2 hrs.] Introduction, Writing skills. [2 hrs.] Chapter 2, includes grammar, listening and reading. [2 hrs.] Writing, writing essays (part one). [2 hrs.] Chapter 3, includes grammar, listening and reading. [2 hrs.] Chapter 4, includes grammar, listening and reading. [2 hrs.] Chapter 5, includes grammar, listening and reading. [2 hrs.] Chapter 6, includes grammar, listening and reading. [2 hrs.] Chapter 7, includes grammar, listening and reading. [2 hrs.] Chapter 8, includes grammar, listening and reading. [2 hrs.] Writing, writing essays (part two). [2 hrs.] Chapter 9, includes grammar, listening and reading. [2 hrs.] Chapter 10, includes grammar, listening and reading. [2 hrs.] Writing, writing essays (part three) [2 hrs.]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies

This course is designed for the Middle East students, by Oxford's university press, who learn English at university level to acquire and develop the English language knowledge and skills.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

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, and 5
	Assignments	2	10% (10)	2, 12	LO # 1, 2, and 3
	Projects / Lab.	1	10% (10)	Continuous	
	Report and presentation	1	10% (10)	13	LO # 1, 2, 4, and 5
Summative assessment	Midterm Exam	2 hrs.	10% (10)	7	LO # 1-3
	Final Exam	3 hr.	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
Week 1	Chapter 1 Present Simple/Present Continuous
Week 2	Introduction, Writing skills
Week 3	Chapter 2 Past Simple/Past Continuous
Week 4	Writing, writing essays (part one)

Week 5	Chapter 3 some/any/a
Week 6	Chapter 4 Articles and Verb patterns
Week 7	Chapter 5 Comparatives/Superlatives
Week 8	Review + Mid-term Exam
Week 9	Chapter 6 Past Simple/Present Perfect Part 1
Week 10	Chapter 7 Past Simple/Present Perfect Part 2
Week 11	Chapter 8 ever, never, for, since
Week 12	Writing, writing essays (part two)
Week 13	Chapter 9 (don't) have to/should
Week 14	Chapter 10 so/such
Week 15	Writing, writing essays (part three)
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	New Headway Plus Pre-Intermediate third edition	Yes
Recommended Texts	English grammar in use Raymond Murphy fifth edition	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 DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Computer II		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU14			
ECTS Credits	3			
SWL (hr/sem)	75			
Module Level	2	Semester of Delivery		4
Administering Department	02	College	02	
Module Leader	Asst. Lect. Massara Ali		e-mail	massara.ali@au.edu.iq
Module Leader's Acad. Title	Asst. Lect.		Module Leader's Qualification	M.Sc.
Module Tutor	-		e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	01/06/2023	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. Utilize the computer for fundamental tasks and discuss the hardware components of the computer system. 2. Network Security Basics. Understanding network threats 3. An introduction to Artificial Intelligence. 4. Applications and Tools of AI.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of the course, students are expected to learn: 1. Enable the students to deal with computer security and networking 2. Teaching students the concepts of E-commerce and online banking services. 3. Enable students to diagnose hardware, and software problems and troubleshoot. 4. Teaching students what is artificial intelligence, techniques, and methods. 5. Enable the students to deal with AI in Daily Lives. 6. Developing students' skills in using artificial intelligence applications. 7. To enable students to understand how artificial intelligence affects society, international relations, and the future of humanity. 8. Enable students to understand the ethical challenges facing AI and the future of this recent technology.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Theoretical lectures through adequate explanation of all the curriculum components, and clarification of many solved issues related to all the curriculum components. 2. Practical lessons in the computer lab by applying theoretical lectures on the 3. computer and ensuring that students fully understand the curriculum vocabulary.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Teaching the students the basics of security and networking. 2. Enable the students to learn concepts of electronic banking and deal with e-commerce. 3. Teaching the students how to diagnose computer problems and troubleshoot them. 4. Enable the students to understand the AI, techniques AI. 5. Teaching students how to use the AI in Our Daily Lives. 6. Enabling students to use AI applications in some fields such as education and health care.
-------------------	--

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

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

Delivery Plan (Weekly Syllabus) المناهج الأسبوعي النظري	
Week	Material Covered
Week 1	Security and Networking: What is a network? Types of networks. Basic network components.
Week 2	Security and Networking (Cont.): Network Security Basics. Understanding network threats.
Week 3	E-Commerce: Concepts of Electronic banking services this include online banking: ATM and debit card services, Phone banking, SMS banking, electronic alert, Mobile banking.
Week 4	Computer Troubleshooting: Identifying and solving common hardware and software problems that computer users encounter
Week 5	Computer Troubleshooting (Cont.): Basic troubleshooting techniques and tools for and resolving issues.

Week 6	Introduction to AI: Definition of AI, History Techniques and Approaches. of AI, AI, with Quiz
Week 7	Introduction to AI (Cont.): Key Characteristics of AI, Benefits of AI, Challenges and Ethical considerations.
Week 8	The Role of AI in Modern Smartphones: AI-Driven Mobile Technologies, Virtual Assistants (Siri, Google Assistant, Alexa).
Week 9	The Role of AI in Modern Smartphones (Cont.): Adaptive Learning, Real-Time Translation Services.
Week 10	Applications and Tools of AI: Overview of AI Applications in Various Industries, Education and Healthcare.
Week 11	Applications and Tools of AI (Cont.): Transportation, Marketing and Advertising.
Week 12	Applications and Tools of AI (Cont.): Finance, Robotics and Automation Technologies.
Week 13	AI and Society: How AI affects social, AI and international relations, AI and the future of humanity.
Week 14	Ethical Challenges in AI: AI ethics, privacy and surveillance, the impact of AI on the job market.
Week 15	The Future of AI: Future trends in AI, recent research and emerging technologies.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Security and Networking: Types of networks. Basic network components.
Week 2	Lab 2: E-Commerce: Concepts of Electronic banking services include online banking.
Week 3	Lab 3: Computer Troubleshooting: Identifying and solving common hardware and software.
Week 4	Lab 4: Introduction to AI: AI Techniques and Approaches, Challenges and Ethical Considerations.
Week 5	Lab 5: Applications of AI 1: Education and Healthcare, Finance and Transportation.
Week 6	Lab 6: Applications of AI 2: Marketing and Advertising.
Week 7	Lab 7: The Role of AI in Modern Smartphones: Adaptive Learning, Real-Time Translation Services.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	" Introduction to Artificial Intelligence" First Edition 2024	No
Recommended Texts	" كتاب مدخل الى عالم الذكاء الاصطناعي " 2005	No
Websites	Any website deals with computer concepts and their applications.	

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 DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Arabic Language II		Module Delivery	
Module Type	Basic		☐ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU16			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	02	Semester of Delivery		03
Administering Department	02	College	02	
Module Leader	Ahmed thaaer mohammed		e-mail	Ahmed.thaaer@au.edu.iq
Module Leader's Acad. Title	Lecturer.	Module Leader's Qualification	A.I	
Module Tutor	Name (if available)	e-mail		
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	01/06/2023	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. تطوير مهارات الطالب في فهم اللغة العربية و آدابها 2. تجاوز المصاعب في الكتابة الصحيحة لغويا 3. تقوية الملكة الفكرية الأدبية لدى الطالب لتنويع الأساليب الأدبية الصحيحة 4. معرفة الطالب بطبيعة اللغة العربية وخصائصها ووظائفها 5. مقدرة الطالب على تجاوز الأغلاط الإملائية الشائعة 6. الكتابة والقراءة بصورة سليمة 7. تحسن الأسلوب الكلامي والكتابي لدى الطالب 8. الحفاظ على اللغة العربية لغة القرآن الكريم فإنها هوية كل عربي. 9. اللغة العربية أدبا من أفضل اللغات المعبرة عن الروح الإنسانية ومشاعرها 10. الحفاظ على السالمة اللغوية عن طريق الإلمام بمفاهيمها
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- إن يكون الطالب في نهاية الفصل قد فهم اللغة العربية فهما جيدا وان يعي بان لغة القرآن هي اللغة المعبرة والجميلة عن المشاعر والأحاسيس والأسلوب الجيد. 2. ان يكون مدركا للأخطاء الإملائية الشائعة ، الاعتزاز بالأدب العربي ومعرفة جماليات اللغة العربية. 3. تحسين أسلوب الطالب في الكتابة المعبرة.
Indicative Contents المحتويات الإرشادية	ارشاد الطالب لمهارة الاستماع الانه اب الملكة اللغوية، ارشاد الطالب لمهارة التحدث باللغة المنهجية، ارشاد الطالب لمهارة الكتابة، ارشاد الطالب لمهارة القراءة

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	يجهز التدريسي محاضرات عن المادة على شكل ورقي وإلكتروني ويقدمها للطلبة يقوم التدريسي بإلقاء المحاضرات بشكل تفصيلي يقوم التدريسي بطلب تقارير دورية وواجبات بيتية عن المواضيع الأساسية للمادة
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	33	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	17	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	50		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5,10	LO #1 - 3
	Assignments	2	10% (10)	2,12	LO #1 - 3
	Classwork	1	10% (10)	Continuous	LO #1 - 3
	Report	1	10% (10)	13	LO #1 - 3
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO #1 - 3
	Final Exam	3hr	50% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	حفظ سورة قرآنية
Week 2	الشاعر محمد مهدي الجواهري مع حفظ قصيدته
Week 3	اللغة العربية والحضارة الحديثة
Week 4	قضية الكتابة العربية
Week 5	التعبير القرآني
Week 6	هندسة النحو
Week 7	اعراب الجمل في اللغة العربية
Week 8	المفعول به
Week 9	المفعول المطلق وانواعه
Week 10	المفعول لأجلة
Week 11	امتحان نصف الفصل
Week 12	المفعول معه
Week 13	المفعول فيه وانواعه
Week 14	زيادة وحذف الحروف عند الكتابة
Week 15	الاف الممدودة والالف المقصورة \ الفرق بين الضاد والطاء

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	شرح ابن عقيل على الفية ابن ملك	NO
Recommended Texts	كتاب الادب العربي د. شوقي ضيف	NO
Websites	https://www.for9a.com/learn/	

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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Description

وصف المادة الدراسية

تُعَدُّ مادة اللغة العربية من المواد الأساسية التي تهدف إلى تمكين الطلبة من إتقان مهارات اللغة الأربع: الاستماع، والتحدث، والقراءة، والكتابة، بما يساهم في تنمية قدرتهم على التواصل الفعال واستخدام اللغة استخدامًا صحيحًا في المواقف المختلفة. تركز المادة على دراسة القواعد النحوية والإملائية بصورة تطبيقية، وتنمية مهارات القراءة والفهم والاستيعاب، إلى جانب تدريب الطلبة على التعبير الكتابي والشفهي بأسلوب واضح ومنظم. كما تتضمن المادة نصوصًا أدبية وعلمية مختارة تساهم في تنمية الذوق اللغوي وتعزيز الثروة اللفظية لدى الطلبة. وتهدف المادة كذلك إلى ربط اللغة بحياة الطالب اليومية، وتنمية التفكير النقدي من خلال تحليل النصوص وفهم مضامينها، فضلًا عن تعزيز القيم الثقافية والهوية العربية.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Structural Analysis-I		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020203051			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	3	Semester of Delivery		5
Administering Department	02	College	02	
Module Leader	Dr. Ammar Ahmed Saeed		e-mail	ammar.ahmed.saeed@au.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.	
Module Tutor	Name (if available)		e-mail	
Peer Reviewer Name	Name		e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

Relation with other Modules				
العلاقة مع المواد الدراسية الأخرى				
Prerequisite module	Strength of Materials-II		Semester	4
Co-requisites module	None		Semester	-

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The purposes of the course are: 1- To provide the students for basic knowledge in principles of elastic structural analysis and behavior of determinate structures. 2. To impart knowledge about various methods involved in the analysis of determinate structures. 3. To apply these methods for analyzing the determinate structures to evaluate the response of structures 4. To enable the student, get a feeling of how real-life structures behave. 5. To make the student familiar with latest computational techniques and software used for structural analysis 6. To enable the student to solve elementary problems of structural analysis of statically determinate structures.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of course, the student will be able to: LO#1- Understand analysis of Determinate structures and adopt an appropriate structural analysis technique. LO#2- Determine response of structures by classical analysis methods. LO#3- Provide quick solutions to elementary problems of structural analysis. LO#4- Estimate Deflection of beams, trusses, frames and arches using unit load method (virtual work) LO#5- Learn the latest computational techniques and software used for structural analysis
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Theory of structures, Structural Elements, modeling of member Material and Geometry, types of loads, types of supports, Equations of Equilibrium and Equation of Conditions, Stability and Determinacy of Structures, Analysis of Determinate Beams, Frames, Trusses, and Arches. Influence Lines, moving concentrated load, uniformly distributed live load, series of moving concentrated loads, absolute maximum response, Floor Girder, Deflection, Unit Load Method (Virtual Work)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	86	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	64	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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	20 min./2	10% (10)	2,4,and 10	LO #1, #3, and #5
	Assignments	30 min./3	10% (10)	3, 5 and 12	LO #2, #4 and #6
	Projects / Lab.	4	10% (10)	continuous	continuous
	Report	1	10% (10)	continuous	continuous
Summative assessment	Midterm Exam	1hr	10% (10)	8	LO #1- #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري

	Material Covered
Week 1	Introduction: review to main topics of strength of materials, concepts of theory of structures.
Week 2	Structural Elements, modeling of member Material and Geometry, types of loads, types of supports, Equations of Equilibrium and Equation of Conditions
Week 3	Classifications of structures, Stability and Determinacy of Structures.
Week 4	Analysis of Determinate Beams
Week 5	Analysis of Determinate Frames
Week 6	Analysis of Determinate Trusses
Week 7	Analysis of Determinate Arches
Week 8	Mid-term Exam
Week 9	Influence Lines for Statically Determinate Beams, response to moving concentrated load, response to a uniformly distributed live load, response to a series of moving concentrated loads, absolute maximum response.
Week 10	Influence Lines for Statically Determinate Floor Girder
Week 11	Influence Lines for Statically Determinate Frames
Week 12	Influence Lines for Statically Determinate Truss
Week 13	Deflection of Statically Determinate beams by Unit Load Method (Virtual Work)
Week 14	Deflection of Statically Determinate Frames by Unit Load Method (Virtual Work)
Week 15	Deflection of Statically Determinate Trusses and Arches by Unit Load Method (Virtual Work)
Week 16	Preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Elementary Theory of Structures, 2nd Edition Yuan-Yu Hsieh	Yes
Recommended Texts	Structural Analysis, 8th edition R. C. Hibbeler	Yes
Websites	Lectures (Academic Profile for teachers)/ https://uomustansiriyah.edu.iq/e-learn/register.php	

Grading Scheme

مخطط الدرجات

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

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

Description

وصف المادة الدراسية

The Structural analysis is the process of calculating and determining the effects of loads and internal forces on a structures (buildings, bridges, industrial building,...). Structural Analysis is particularly important for structural engineers to ensure they completely understand the load paths and the impacts the loads have on their engineering design. It allows engineers or designers to ensure a piece of equipment or structure is safe for use under the estimated loads it is expected to withstand. Structural Analysis can either be performed during design, testing or post-construction and will generally account for the materials used, geometry of the structure and applied loads.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Soil Mechanics - I		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	AU020203052		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	3	Semester of Delivery	
Administering Department	02	College	02
Module Leader	Name	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	01/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Strength of Materials-II, Geology	Semester	Four Two
Co-requisites module	None	Semester	-

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The purposes of the course are: 1- Teaching the students, how to employ the laws of engineering mechanics and hydraulics to engineering problems relating to soils. 2- Teaching the students the different types of soil and their origin and formation. 3- Teaching the students the physical relationship and how to classify different types of soils according to standard specifications. Also, teaching the students the aspects of lab. And field compaction. 4- Teaching the students the distribution of stresses under the foundation base to different depths of the soil mass. stresses. 5- Teaching the students how to determine the total and effective stresses within the soil mass. 6- Teaching the students, the fundamental concept of one-dimensional flow.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of course, the student will be able to: LO#1- Understanding the analysis of soil and application of engineering mechanics and hydraulics laws. LO#2- Solving the problems related to weight- volumes relationships according to void ratio, water content, specific gravity, degree of saturation, etc. LO#3- Classifying different type of soils and understanding the concept of lab and field compaction. LO#4- Determining the variation of stresses within the soil transmitted from the base of footing. LO#5 Determining the variation of total and effective stresses and pore water pressure within the soil at different depth levels. LO#6 Calculating the variation of stresses and heads (total and pressure) within the soil according to flow of water through the soil.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Soil formation, physical relations, soil classification, stresses with a soil mass, one dimensional flow.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	20min./2	10% (10)	3,5,and 9	LO #2, #3, and #5
	Assignments	5-10	10% (10)	4, 6 and 10	LO #2, #3 and #6
	Projects / Lab.	1hr min./1	10% (10)	Continuous	Continuous
	Report	1	10% (10)	11	Continuous
Summative assessment	Midterm Exam	1hr	10% (10)	8	LO #1- #4
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction, definition, Texture of Soil Particles.
Week 2	Description of an individual Soil Particle, Soil Formation.
Week 3	Weight-Volume Relationship.

Week 4	Physical relationship.
Week 5	Physical relationship.
Week 6	Grain Size Distribution, Sieve Analysis, Hydrometer, Soil description and classification, Unified Soil Classification System.
Week 7	Soil description and classification.
Week 8	Plasticity Chart, Atterberg Limits, Liquidity index.
Week 9	Unified Soil Classification System.
Week 10	Lab and field Compaction.
Week 11	Stress in Soil; Concept of total and effective stresses
Week 12	Stress in Soil; distribution of stresses within a soil mass
Week 13	One dimensional flow
Week 14	One dimensional flow
Week 15	One dimensional flow
Week 16	Preparatory week before the Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Water content test.
Week 2	Specific gravity.
Week 3	Atterberg's limits.
Week 4	Sieve analysis.
Week 5	Hydrometer test.
Week 6	Compaction test.
Week 7	Field compaction determination

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Craig, R.F. "Soil Mechanics", Taylor & Francis Group.	Yes
Recommended Texts	Das, B. "Principles of Geotechnical Engineering", Cengage Learning.	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.

Description

وصف المادة الدراسية

This Course Specification provides a concise summary of the main features of the Foundation Engineering and the learning how to design different types of footing and piles safely that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Reinforced Concrete Design -I		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	AU020203053		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	3	Semester of Delivery	
Administering Department	02	College	02
Module Leader	Asst.Lect.Hassanein Hamddn		e-mail
Module Leader's Acad. Title	Asst.lect.	Module Leader's Qualification	Ms.cs.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Strength of Materials-II	Semester	4
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	• This course deals with the basic concept and general behavior of reinforced concrete structures and philosophy of the design. • To understanding the beam and develop problem solving skills • To understand the effect of irregular cross section on strength. • To understand, analysis and design of doubly reinforced beams. • To recognize the basic subject for shear design of beams. • To understand the effect of torsion on beams and design for this requirement.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	12. Identify load carrying by each structure's members. 13. List the various types of beams. 14. Review for analysis methods of beams. 15. Discuss the shear and its effect on strength of beams. 16. Recognize the basics for analysis and design of beams under torsion effect.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <u>Introduction</u> Properties of concrete, properties on reinforcing steel, loads. (4hrs) <u>Beams- flexural behavior</u> - Working stresses. (4hrs) -Analysis and design of singly reinforced section, working stresses. (8hrs) -Ultimate strength method. (4hrs) -Analysis and design of singly reinforced sections. (8hrs) - Analysis and design of doubly reinforced sections. (8hrs) - Analysis and design of T- reinforced sections. (4hrs) - Analysis and design of irregular reinforced sections. (4hrs) <u>Beams- shear and diagonal tension</u> -Shear analysis and design. (8hrs) -Torsion analysis and design. (8hrs)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Type something like: 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 types of simple experiments involving some sampling activities that are interesting to the students.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
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)	4 and 12	LO #1,3 and #9,11
	Assignments	2	10% (10)	2,3,4,5,6,7,	LO #3 -8
	classwork	2	10% (10)	6,11	LO #4 and #9
	Report	2	10% (10)	13	LO #4 and #5
Summative assessment	Midterm Exam	1.5hr	10% (10)	9	LO #1-8
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction- Properties of concrete, properties of reinforcing steel, loads
Week 2	Working stress method
Week 3	Analysis of singly reinforced concrete sections by working stress method
Week 4	Design of singly reinforced concrete sections by working stress method
Week 5	Ultimate strength method
Week 6	Analysis of singly reinforced concrete sections by ultimate strength method
Week 7	Design of singly reinforced concrete sections by ultimate strength method
Week 8	Analysis of doubly reinforced concrete sections
Week 9	design of doubly reinforced concrete sections
Week 10	Analysis and design of T- sections
Week 11	Analysis and design of irregular sections
Week 12	Shear and diagonal tension
Week 13	Shear analysis
Week 14	Design of beams for shear requirements
Week 15	Torsion analysis and design of beams
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Design Guide on the ACI 318, Building Code Requirements for Structural Concrete. A comprehensive guide to assist design professionals on the design and detailing of reinforced concrete buildings based on ACI 318-19. 1 st ed. 2020	No
Recommended Texts	Ibrahim M. Arman, Design of Reinforced Concrete Structures: A Practical Approach. 3 rd ed. 2021	No
Websites	https://www.concrete.org/middleeast.aspx	

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 DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Numerical Methods		Module Delivery	
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020203054			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	03	Semester of Delivery		05
Administering Department	02	College	02	
Module Leader	Dr. Nida Hussein Abid Aown		e-mail	nida.hussein@au.edu.iq
Module Leader's Acad. Title	Lecturer.	Module Leader's Qualification	Ph. D.	
Module Tutor	Name (if available)		e-mail	
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Engineering Analysis	Semester	04
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. This course presents numerical methods for solving mathematical problems 2. Deals with the theory and application of numerical approximation techniques as well as their computer implementation. 3. Covers computer arithmetic, solution of nonlinear equations, interpolation and approximation, numerical integration and differentiation, solution of differential equations, and matrix computation.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Develop an understanding of the core ideas and concepts of Numerical Methods. 2. Be able to recognize the power of abstraction and generalization, and to carry out investigative mathematical work with independent judgment. 3. Be able to apply rigorous, analytic, highly numerate approach to analyze and solve problems using Numerical Methods. 4. Be able to communicate problem solutions using correct mathematical terminology. 5. Solved through analytical techniques, and to which numerical techniques provide quite good approximate solutions. 6. using numerical techniques to investigate research problems.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: <u>Introduction</u> Divided Difference, Difference Table, Application. [4 hrs] <u>Interpolation</u> Lagrange Formula, Gregory-Newton's Formula, Newton's Divided Difference, Least Square Method, Application. [6hrs] <u>Roots of Equation</u> Bisection Method, The Secant Method, Newton-Raphson Method, Modified Newton-Raphson Method, Application. [6 hrs] <u>Solutions of Simultaneous Linear Algebraic Equation</u> Choleski's Method, Gauss-Seidal Iteration, Relaxation Method, Application. [6 hrs] <u>Eigen Value Problems</u> Analytical Solution, Numerical Solution (Iteration Method), Application. [6 hrs] <u>Numerical Integration</u> Newton-Cote Formulas, Gauss Quadrature Formulas, Application. [8 hrs] <u>Numerical differentiation</u>

	Method Of Undetermined Coefficient, Application. [8 hrs] <u>Ordinary Differential Equations:</u> Initial Value Problems; First Order Differential Equations; Taylor Series; Euler Method; Modified Euler Method; Runge-Kutta Method; Second Order Differential Equations; Euler Method; Runge-Kutta Method. Boundary Value Problems, Application. [8 hrs] <u>Numerical Solution of Partial Differential Equations:</u> Finite Difference Method, Application. [8 hrs]
--	--

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The strategy of this course is to provide methods to solve complex numerical problems using only the simple operations of arithmetic, to develop and evaluate methods for computing numerical results from given data and solve civil engineering problems.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	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	30 min. /2	10% (10)	4,10	LO #1 and 3
	Assignments	5-10	10% (10)	2,5,8,13	LO #1-5
	Classwork	30 min. /2	10% (10)	6,12	LO #1 and 5
	Report	1	10% (10)	7,14	LO #2 and 6
	Midterm Exam	1 hr	10% (10)	9	LO #1-4
Summative assessment	Final Exam	3hr	50% (60)	16	All
	100% (100 Marks)				

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction, Divided Difference, Difference Table
Week 2	Interpolation, Lagrange Formula, Gregory-Newton's Formula, Newton's Divided Difference, Least Square Method.
Week 3	Roots of Equation; Bisection Method, The Secant Method, Newton-Raphson Method, Modified Newton-Raphson Method.
Week 4	Solutions of Simultaneous Linear Algebraic Equation, Gaussian Elimination Method, Gauss-Jordan Method, Applications, Choleski's Method, Gauss-Seidal Iteration, Relaxation Method
Week 5	Eigen Value Problems, Analytical Solution, Numerical Solution (Iteration Method)
Week 6	Numerical Integration, Newton-Cote Formulas, Gauss Quadrature Formulas
Week 7	Application
Week 8	Numerical differentiation; Method of Undetermined Coefficient
Week 9	Application
Week 10	Ordinary Differential Equations; Initial Value Problems; First Order Differential Equations; Taylor Series; Euler Method; Modified Euler Method; Runge-Kutta Method; Second Order Differential Equations; Euler Method; Runge-Kutta Method.
Week 11	Boundary Value Problems
Week 12	Application
Week 13	Numerical Solution of Partial Differential Equations; Finite Difference Method
Week 14	Application
Week 15	Revisions: Preparatory week before the final exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	“Numerical methods in engineering” · M. Salvadori, M. Baron, D. C. Drucker	Yes
Recommended Texts	“Numerical methods”, S.R.K. Iyengar, R.K. Jain, , 2009.	NO
	“Numerical Methods Fundamentals and Applications”, Rajesh Kumar Gupta, Cambridge University Press ,2019.	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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Description

وصف المادة الدراسية

This course presents numerical methods for solving mathematical problems. It deals with the theory and application of numerical approximation techniques as well as their computer implementation. It covers computer arithmetic, solution of nonlinear equations, interpolation and approximation, numerical integration and differentiation, solution of differential equations, and matrix computation.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Construction Projects Management			Module Delivery
Module Type	Core			☒ Theory
Module Code	AU020203055			☐ Lecture
ECTS Credits	4			☐ Lab
SWL (hr/sem)	100			☒ Tutorial
				☐ Practical
				☐ Seminar
Module Level	3	Semester of Delivery	5	
Administering Department	civil	College	ENGINEERING	
Module Leader	Asst. lect.Sarah Sattar	e-mail	sarah.sattar@au.edu.iq	
Module Leader's Acad. Title	Asst.lect.	Module Leader's Qualification	Ms.cs.	
Module Tutor	Name (if available)	e-mail		
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Building Construction		Semester 3
Co-requisites module	-		Semester -

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. Calculate Total Duration for a construction project 2. Determine Critical Path for a construction project 3. Draw Bar chart for a construction project 4. Draw Activity on Arrow AOA and Activity on Node AON construction project
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of course, the student will be able to: LO#1- Identifies construction project problems as distinguished from other problems also identified and engineering resources necessary to address it. LO#2- Use math concepts to formulate a model of the construction project problem. LO#3- Well based in concepts of construction project disciplines. LO#4- Can apply advanced engineering concepts to solve engineering problems. LO#5- Calculate Total Duration and Critical Path, Draw Bar chart, AOA and AON
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Introduction to Engineering Management (Construction Project Management) Construction Projects: Types, Parties, and Phases Construction Contracting Methods (Project Delivery Methods) Types and Characteristics of Construction Contracts Construction Planning Techniques (Scheduling Techniques) Scheduling Techniques: Bar Chart (Gantt Chart) Scheduling Techniques: Network Diagrams- Activity on Arrow Scheduling Techniques: Network Diagrams- Activity on Arrow Scheduling Techniques: Network Diagrams- Activity on Node Scheduling Techniques: Network Diagrams- Activity on Node Scheduling Techniques: PERT Scheduling Techniques: Line of Balance Time-Cost Relationship (Optimization)- Crash Program Resource Allocation and Leveling Linear Programming: Transportation Problems

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample 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	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	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	20 min./3	10% (10)	2,4, and 10	LO #1, #3, and #5
	Assignments	30 min./3	10% (10)	3, 5 and 12	LO #2, #4 and #6
	Projects / Lab.	1	10% (10)	continuous	continuous
	Report	1	10% (10)	continuous	continuous
Summative assessment	Midterm Exam	1hr	10% (10)	8	LO #1- #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Engineering Management (Construction Project Management)
Week 2	Construction Projects: Types, Parties, and Phases
Week 3	Construction Contracting Methods (Project Delivery Methods)
Week 4	Types and Characteristics of Construction Contracts
Week 5	Construction Planning Techniques (Scheduling Techniques)
Week 6	Scheduling Techniques: Bar Chart (Gantt Chart)
Week 7	Scheduling Techniques: Network Diagrams- Activity on Arrow
Week 8	Mid-term Exam
Week 9	Scheduling Techniques: Network Diagrams- Activity on Arrow
Week 10	Scheduling Techniques: Network Diagrams- Activity on Node
Week 11	Scheduling Techniques: PERT
Week 12	Scheduling Techniques: Line of Balance
Week 13	Time-Cost Relationship (Optimization)- Crash Program
Week 14	Resource Allocation and Leveling
Week 15	Linear Programming: Transportation Problems
Week 16	Preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Peurifoy, "Construction Planning, Equipment, and Methods", 2nd. Ed. McGraw-Hill book Co., 1976.	Yes
Recommended Texts	Meredith, J. R., & Mantel, S. J. (2017). Project management: A managerial approach (9th ed.). Wiley.	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.

Description

وصف المادة الدراسية

This is an introductory course on Construction Project Management, focusing on fundamental concepts, principles and techniques. The course will introduce basic Construction Management concepts, including: General Information about Construction Management and Construction Projects, Executive Approaches Analysis, Principles of Construction Management, Construction Contracts and Relative Engineering Works, Types of Construction Contracts, Construction Contracts Analysis, Construction Planning Techniques: Bar-Chart (Gantt Chart), Construction Planning Techniques: Network Analysis Technique (A.O.A & A.O.N), and Construction Planning Techniques: PERT Analysis Technique.

Topics covered in this course include: Project management, Construction project, Time scheduling and planning.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Irrigation and drainage Engineering		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	AU020203056		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	03	Semester of Delivery	
Administering Department	02	College	02
Module Leader	Name:	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	01/06/2023	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 Objectives أهداف المادة الدراسية	1-To understand the fundamental principles and concepts of irrigation and drainage engineering, including water distribution, water management, and soil-water interactions. 2-To learn the various techniques and technologies used in designing irrigation systems, such as drip irrigation, sprinkler irrigation, and furrow irrigation. 3-To explore the factors influencing the selection and sizing of irrigation components, including pumps, pipes, valves, and emitters. 4-To gain knowledge of drainage system design and implementation, including the use of subsurface drainage, surface drainage, and erosion control measures. 5-To develop skills in assessing soil and water quality for effective irrigation and drainage planning, including soil moisture monitoring and water quality testing. 6-To analyze and solve common issues related to irrigation and drainage, such as waterlogging, salinity management, and water conservation strategies.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of course, the student will be able to: LO#1- Demonstrate a comprehensive understanding of the principles and theories related to irrigation and drainage engineering LO#2- Apply knowledge and skills in designing and optimizing irrigation systems, taking into account factors such as crop water requirements, soil characteristics, and water source availability. LO#3- Evaluate and select appropriate irrigation methods and technologies based on specific agricultural and environmental conditions, considering factors such as water efficiency, cost-effectiveness, and sustainability. LO#4- Assess and design effective drainage systems to manage excess water, prevent waterlogging, and minimize soil erosion, considering factors such as topography, soil permeability, and land use. LO#5- Analyze and solve problems related to irrigation and drainage, including addressing water-related challenges, optimizing water use efficiency, and mitigating environmental impacts LO#6- Evaluate the performance of irrigation and drainage systems, identify areas for improvement, and propose innovative solutions for sustainable water management in agricultural and environmental contexts.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Introduction, soil – water – plant- relations, Water resources and soil moisture, Consumptive use, Irrigation system Canals and construction, Silt theories and design of irrigation canals, Lining of irrigation canals, Irrigation system and methods

	Ground water, Darcy's Law and well hydraulics, Drainage Definition, drainage coefficient, closed and open drains, cross sectional design of open and closed drains, design of drain spacing, vertical drainage system
--	---

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	34	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	66	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Irrigation: Introduction, definition, purposes, necessity, soil – water – plant- relations, field capacity, permanent wilting point, available water, readily available water,
Week 2	Water resources and soil moisture, Irrigation water resources
Week 3	Consumptive use: Duty of water, relation between D, B and Δ , factors affecting duty, importance of duty, different irrigation efficiencies
Week 4	Consumptive use direct measurements and estimation by empirical methods
Week 5	U Irrigation system Canals and construction: alignment of canals, distribution system, design capacity, typical cross-section
Week 6	Silt theories and design of irrigation canals, regime canals
Week 7	Lining of irrigation canals
Week 8	Mid-term Exam
Week 9	Irrigation system and methods: system of irrigation, gravity and lift irrigation,
Week 10	methods of irrigation (surface, subsurface, sprinkler and drip irrigation)
Week 11	Ground water: Aquifer, occurrence
Week 12	Darcy's Law and well hydraulics
Week 13	U Drainage: U Definition, drainage coefficient,
Week 14	closed and open drains, cross-sectional design of open and closed drains,
Week 15	design of drain spacing, vertical drainage system
Week 16	Preparatory week before the Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	None
Week 2	None
Week 3	None
Week 4	None
Week 5	None
Week 6	None
Week 7	None

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Irrigation and Drainage Engineering, 2016 by Peter Waller , Muluneh Yitayew	yes
Recommended Texts	Irrigation And Drainage, 2005 By D. Lenka	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.

Description

وصف المادة الدراسية

Irrigation and drainage engineering is a specialized field that focuses on the design, implementation, and management of systems to efficiently control water resources for agricultural, landscape, and environmental purposes. It involves the use of various engineering techniques and technologies to ensure the proper distribution of water to crops, gardens, and other areas, as well as the effective removal of excess water to prevent waterlogging and soil erosion. By optimizing water usage and drainage systems, irrigation and drainage engineering plays a crucial role in maximizing agricultural productivity and maintaining sustainable water resources.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Structural Analysis-II		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020203061			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	3	Semester of Delivery		6
Administering Department	02	College	02	
Module Leader	Prof. Esraa Khudhair Mohsin		e-mail	p114746@siswa.ukm.edu.my
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.	
Module Tutor	Dr. Ammar Ahmed Saeed		e-mail	ammar.ahmed.saeed@au.edu.iq
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	2026	Version Number	1.0	

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Structural Analysis-I	Semester	5
Co-requisites module	None	Semester	-

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	The purposes of the course are: 1- To provide the students for basic knowledge in principles of elastic structural analysis and behavior of indeterminate structures. 2. To impart knowledge about various methods involved in the analysis of indeterminate structures. 3. To apply these methods for analyzing the indeterminate structures to evaluate the response of structures 4. To enable the student get a feeling of how real-life indeterminate structures behave. 5. To make the student familiar with latest computational techniques and software used for structural analysis. 6. To enable the student to solve elementary problems of structural analysis of statically indeterminate structures.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of course, the student will be able to: LO#1- Understand analysis of indeterminate structures and adopt an appropriate structural analysis technique. LO#2- Determine response of indeterminate structures by classical analysis methods. LO#3- Provide quick solutions to elementary problems of structural analysis of statically indeterminate structures. LO#4- Learn the latest computational techniques and software used for structural analysis of statically indeterminate structures.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following:- Consistent Deformation Method [f], Frames without side-sway, Frames without side-sway, Trusses with Support Redundant, Trusses with Member Redundant, slope-deflection method, Moment Distribution Method, Stiffness (Displacement) Method [k].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	20min./3	10% (10)	5 and 10	LO #2, and #3
	Assignments	30min./3	10% (10)	2 and 12	LO #1, and #4
	Projects / Lab.	30min./3	10% (10)	2 and 12	LO #1, and #4
	Report	1	10% (10)	continuous	continuous
Summative assessment	Midterm Exam	1hr	10% (10)	8	LO #1- #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction: review to main topics of structural analysis-I
Week 2	Consistent Deformation Method (Force or Flexible method) [f].
Week 3	Analysis of Statically Indeterminate Beams by Method of Consistent Deformation.
Week 4	Analysis of Statically Indeterminate Frames (without side-sway) by Method of Consistent Deformation.
Week 5	Analysis of Statically Indeterminate Frames (with side-sway) by Method of Consistent Deformation.
Week 6	Analysis of Statically Indeterminate Trusses (with Support Redundant) by Method of Consistent Deformation.
Week 7	Analysis of Statically Indeterminate Trusses (with Member Redundant) by Method of Consistent Deformation.
Week 8	Mid-term Exam
Week 9	Slope-Deflection Method (SDM).
Week 10	Analysis of statically Indeterminate Beams and Frames (with and without side-sway) by SDM.
Week 11	Moment Distribution Method (MDM).
Week 12	Analysis of statically Indeterminate Beams and Frames (with side-sway) by MDM.
Week 13	Analysis of statically Indeterminate Beams and Frames (with side-sway) by MDM
Week 14	Analysis of statically Indeterminate Beams and Frames (without side-sway) by MDM
Week 15	Analysis of statically Indeterminate Beams and Frames (without side-sway) by MDM
Week 16	Preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Elementary Theory of Structures, 2nd Edition Yuan-Yu Hsieh	Yes
Recommended Texts	Structural Analysis, 8th edition R. C. Hibbeler	Yes
Websites	Lectures (Academic Profile for teachers)/	

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.

Description

وصف المادة الدراسية

The Structural analysis is the process of calculating and determining the effects of loads and internal forces on a structure (buildings, bridges, industrial building,). Structural Analysis is particularly important for structural engineers to ensure they completely understand the load paths and the impacts the loads have on their engineering design. It allows engineers or designers to ensure a piece of equipment or structure is safe for use under the estimated loads it is expected to withstand. Structural Analysis can either be performed during design, testing or post-construction and will generally account for the materials used, geometry of the structure and applied loads.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Soil Mechanics II		Module Delivery	
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020203062			
ECTS Credits	6			
SWL (hr/sem)	150			
Module Level	03	Semester of Delivery		06
Administering Department	02	College	02	
Module Leader	Asst. Prof. Hadeel Ammar		e-mail	hadeelammar@uomustansiriyah.edu.iq
Module Leader's Acad. Title	Asst.professor	Module Leader's Qualification	M.SC.	
Module Tutor	Asst. Prof. Hadeel Ammar		e-mail	hadeelammar@uomustansiriyah.edu.iq
Module Lap	Ph. lecture Ammar Ahmed Saeed		e-mail	ammar.ahmed.saeed@au.edu.iq
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

Relation with other Modules				
العلاقة مع المواد الدراسية الأخرى				
Prerequisite module	Mechanical of engineering I + II		Semester	04
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- The purposes of the course are: 2- Teaching the students, the concept of the flow under dams and sheet piles (two-dimensional flow) and understanding the flow net. 3- Teaching the students how to determine the stresses, heads at any point within the soil under two-dimensional flow condition and also teaching how to check the stability of the dam and the sheet piles. 4- Teaching the students the basics of consolidation process of soil and teaching them how to calculate the consolidation settlement. 5- Teaching the students the variation of stresses and pore water pressure with time under different types of loadings. 6- Teaching the students, the fundamental concept of shear strength of soil. 7- Teaching the students how to determine the shear strength parameters of soil from different laboratory tests.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of course, the student will be able to: LO#1- Understanding the fundamental of the two dimensional flow theory. LO#2- Solving the problems related to flow under dams and sheet piles and determining the stresses and pore water pressure under any point within the soil mass under the dams and sheet piles also checking the stability and determining the factor of safety. LO#3- Determining the final consolidation settlement due to the applied load for different types of saturated clayey soils also calculating the applied load that cause a certain consolidation settlement. LO#4- Determining the variation of void ratio, total and effective stresses and pore water pressure within the soil transmitted from the base of footing with time. LO#5 Determining the shear strength of soil also calculating major and minor stresses and any stress acting at any plane of soil. LO#6 Calculating the shear strength parameter of the soil from different shear tests.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Two dimensional flow, stresses and heads within a soil mass under two dimensional flow condition, consolidation theory, the variation of stresses and pore water pressure with time under different types of loadings, the shear strength of soil , shear strength parameters

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	20min./3	15% (10)	3,5,and 9	LO #2, #3, and #5
	Assignments	30 min./3	10% (10)	4, 6 and 10	LO #2, #3 and #6
	Classwork	1hr min./1	10% (10)	10	-
	Report	1	10% (10)	13	LO #4 and #5
Summative assessment	Midterm Exam	1hr	15% (20)	12	LO #1- #4
	Final Exam	3hr	50% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Two dimensional flow
Week 2	Two dimensional flow
Week 3	Two dimensional flow
Week 4	Two dimensional flow
Week 5	Consolidation theory.
Week 6	Consolidation Settlement
Week 7	Consolidation Settlement
Week 8	Variation of stresses and pore water pressure with time under different types of loadings
Week 9	Variation of stresses and pore water pressure with time under different types of loadings
Week 10	Variation of stresses and pore water pressure with time under different types of loadings
Week 11	Shear strength concept of soil.
Week 12	Stresses within a soil at any plane of loading.
Week 13	Stresses within a soil at any plane of loading.
Week 14	Shear strength parameters of soil from different laboratory tests.
Week 15	Shear strength parameters of soil from different laboratory tests.
Week 16	Preparatory week before the Final Exam

Delivery Plan (Weekly Lab. Syllabus) للمختبر الاسبوعي المنهاج

Weeks	Material Covered
Week 1	Constant head method test
Week 2	Falling head method test
Week 3	Consolidation test
Week 4	Consolidation test
Week 5	Shear box test
Week 6	Triaxial shear test
Week 7	Unconfined shear test

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Craig, R.F. "Soil Mechanics", Taylor & Francis Group.	Yes
Recommended Texts	Das, B. "Principles of Geotechnical Engineering", Cengage Learning.	yes
	Lectures (Academic Profile for teachers)/	
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 overlook "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Description

وصف المادة الدراسية

This course presents numerical methods for solving mathematical problems. It deals with the theory and application of numerical approximation techniques as well as their computer implementation. It covers computer arithmetic, solution of nonlinear equations, interpolation and approximation, numerical integration and differentiation, solution of differential equations, and matrix computation.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Reinforced Concrete Design- II		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MU02023063		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	3	Semester of Delivery	
Administering Department	02	College	02
Module Leader			e-mail
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor			e-mail
Peer Reviewer Name			e-mail
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Reinforced Concrete Design I	Semester	5
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To understanding of one-way slab and develop problem solving skills 2. To understand continuous beams and one-way slabs. 3. This course deals with the basic concept of bond and development length.

	- This is the basic subject for all two-way slabs. - To understand serviceability (cracks, deflections). - To understand the column behavior and principles of design it.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	- Identify load carrying by each structure's members. - List the various types of slabs. - Review for analysis methods of slabs. - Discuss the bond and its effect by development length. - Describe serviceability, crack and deflections. - Recognize the basics for analysis and design of columns.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>One-way slabs</u> Continuous beams and one-way slab, flexural requirement, shear requirements and effect of temperature and shrinkage. [16 hrs] <u>Two-way slabs</u> Types of two-way slabs, behavior, analysis methods and design requirements. [10 hrs] <u>Bond</u> Bond equations, development length, cutoff, splices, anchor. [10 hrs] <u>Serviceability</u> Effect of Serviceability, cracks, deflection. [8 hrs] <u>Columns</u> Concentrically and eccentrically, uniaxial and biaxial effect, compression equations, interaction diagram. [16 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Type something like: 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 types of simple experiments involving some sampling activities that are interesting to the students.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	86	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	150		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	4 and 12	LO #1-3 and #9-11
	Assignments	2	10% (10)	3,5,7,9 and 11	LO #3 -8
	classwork	2	10% (10)	6,10	LO #3 and 7
	Report	2	10% (10)	13	LO #4 and #5
Summative assessment	Midterm Exam	1.5 hr.	10% (10)	7	LO #1-3, and #6
	Final Exam	3 hr.	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction – a brief review on ultimate flexure and shear
Week 2	Service loads, analysis methods, continuous beams and one way slabs
Week 3	Design of one-way slabs
Week 4	Shear requirements , temperature and shrinkage of one-way slabs
Week 5	Types of two way slabs, two-way solid edges slabs
Week 6	Design of two-way solid edges slabs
Week 7	Mid-term Exam
Week 8	Development length and bond strength
Week 9	Splices, cutoff points
Week 10	Serviceability requirements, deflection
Week 11	Deflection, crack width
Week 12	Types of R.C. Columns, ACI requirements for short columns
Week 13	Concentrically, eccentrically short column
Week 14	Interaction diagrams
Week 15	Moment modification
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Design Guide on the ACI 318, Building Code Requirements for Structural Concrete. A comprehensive guide to assist design professionals on the design and detailing of reinforced concrete buildings based on ACI 318-19. 1 st ed. 2020	No
Recommended Texts	Ibrahim M. Arman, Design of Reinforced Concrete Structures: A Practical Approach. 3 rd ed. 2021	No
Websites	https://www.concrete.org/middleeast.aspx	

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.

Description

وصف المادة الدراسية

This course covers the mechanical properties of concrete materials; a brief description on ultimate strength theory of flexure and shear; service load behavior; continuous beams and one-way slabs; bond properties of reinforcing bars; design of solid and ribbed one-way slabs; types of two-way slabs; design of two-way solid edges slabs. Also, covers serviceability requirements (crack widths and deflection); short columns; biaxial bent columns.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Transportation Engineering -I		Module Delivery	
Module Type	Core		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU02023064			
ECTS Credits	4			
SWL (hr/sem)	64			
Module Level	3	Semester of Delivery		5
Administering Department	02	College	02	
Module Leader	Nida Hussein Abid Aown		e-mail	nida.hussein@au.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.	
Module Tutor		e-mail		
Peer Reviewer Name		e-mail		
Scientific Committee Approval Date	01/06/2023	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 Objectives أهداف المادة الدراسية	1. To introduce the students with the principles and practice of transportation engineering which focuses on Traffic and Transportation Engineering and Highway Engineering. 2. To enable the students to have a strong analytical and practical knowledge of Planning, Designing, and solving the transportation problems. 3. To introduce the recent advancements in the field of Sustainable Urban Development, Traffic Engineering and Management, Systems Dynamics Approach to Transport Planning, Highway Design and Construction, Economic and Environment Evaluation of Transport Projects. 4. To strength the students' knowledge to be efficient Transport Engineers.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Develop an understanding of the fundamental concepts and principles of highway planning, geometric design, traffic characteristics. 2. The students after completion of this course will have an in-depth knowledge in Traffic Engineering, Transport Planning, Highway Design and Construction, Sustainable Urban and Transport Development and will be efficient enough to take up projects in the field.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • Highway Engineering Principles / Route Location [4 hrs] • Traffic flow study, Speed and travel time, LOS concept, Vehicle and driver characteristics, Traffic volume forecasting [16 hrs] • Roads' number of lanes estimation, Roads functional classification [8 hrs] • Geometrics design / Vertical alignment, Horizontal alignment, cross sectional elements [20 hrs]. • Mass haul diagram – 1, Mass haul diagram - 2 [8 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, interactive tutorials.
-------------------	--

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	109	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	91	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Highway Engineering Principles / Route Location
Week 2	Traffic flow study,
Week 3	Speed and travel time, LOS concept
Week 4	Vehicle and driver characteristics
Week 5	Traffic volume forecasting
Week 6	Roads' number of lanes estimation
Week 7	Roads functional classification
Week 8	Geometrics design / Vertical alignment - 1
Week 9	Geometrics design / Vertical alignment - 2
Week 10	Geometrics design / Horizontal alignment – 1
Week 11	Geometrics design / Horizontal alignment - 2
Week 12	Geometrics design / cross sectional elements
Week 13	Mass haul diagram - 1
Week 14	Mass haul diagram - 2
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	1) "Principles of Highway Engineering and Traffic Analysis" by "Fred L. Mannering and Scott S. Washburn", Fifth Edition, 2013. 2) "Traffic and Highway Engineering" by "Nicholas J. Garber and Lester A. Hoel", Fourth Edition, 2010. 3) "Transportation Infrastructure Engineering" by "Lester A. Hoel, Nicholas J. Garber and Adel W. Sadek" International Student Edition, 2008. 4) "Highways: The Location, Design, Construction and Maintenance of Pavements" by "C. A. O'Flaherty", Fourth Edition, 2007.	Yes
Recommended Texts	- "Highway Engineering" by "Paul H. Wright and Karen K. Dixon", Seventh Edition, 2004. - "Pavement Analysis and Design" by "Yang H. Huang", Second Edition, 2004.	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.

Description

وصف المادة الدراسية

A branch of Civil Engineering which deals with “the improvement of traffic performance of road network and terminals.”

- This is achieved by systematic traffic studies, scientific analysis and engineering applications.
- The method includes planning and geometric design on one hand and regulation and control on the other. Traffic engineering therefore deals with “the application of scientific principles, tools, techniques, and findings for the safe, rapid, convenient, and economic movement of people and goods.

The basic objective of traffic engineering is to achieve free and rapid flow of traffic, with least number of traffic accidents.

Study of traffic characteristics is the most essential prerequisites for any improvement of traffic facilities. The traffic characteristics are quite complex with various types of road users in the roads moving with different motives. The study of vehicular characteristics is an essential part. The various studies to be carried out on the actual traffic include speed, volume, capacity, travel patterns, origin and destination, traffic flow characteristics, parking and accident studies

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Hydrology		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	AU020203065		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGIII	Semester of Delivery	
Administering Department		College	
Module Leader	Name:	e-mail	E-mail:
Module Leader's Acad. Title	Assist. Professor	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	01/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Fluid Mechanics	Semester	Four
Co-requisites module	None	Semester	-

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1-To understand the fundamental principles of the water cycle and its relevance to hydrological processes. 2- To analyze hydrological data using statistical methods to assess water availability and quality 3- To apply hydrological models to simulate and predict the behavior of watersheds and water resources 4- To evaluate the impacts of climate variability on hydrological systems 5- To investigate the occurrence and management of floods and droughts in hydrological systems. 6-To apply hydrological knowledge to practical problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of course, the student will be able to: LO#1- Understanding the water cycle and its processes, including precipitation, evaporation, infiltration, and runoff. LO#2- Analyzing and predicting the behavior of surface water and groundwater systems, including river flows, lake levels, and aquifer recharge. LO#3- Assessing and managing water resources, including estimating water availability, developing water allocation plans, and evaluating the impact of water use on the environment. LO#4- Evaluating and mitigating the risks associated with floods and droughts through the use of hydrological models and forecasting techniques LO#5- Investigating and quantifying the quality of water resources, including water pollution sources, and transport mechanisms. LO#6- Applying hydrological principles and data analysis techniques to address environmental and engineering challenges related to water management.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: - Introduction, Hydrologic cycle, Climate and water availability, Water balances, Precipitation: Forms, Classification, Variability, Measurement, Data analysis, Evaporation and its measurement, Evapotranspiration and its measurement. Infiltration: Factors affection infiltration, Hydrograph analysis: components of hydrograph, unit hydrograph, and conversion of unit hydrograph. (Note: Total hours= SSWL – ساعات الامتحانات)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	34	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	66	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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	5-8	10% (10)	5 and 10	LO #2, and #3
	Assignments	5-10	10% (10)	3 and 12	LO #1, and #4
	classwork	2	10% (10)	6,10	LO #3 and 7
	Report	1	10% (10)	13	LO #4 and #5
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO #1- #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to hydrology,
Week 2	Weather and hydrology.
Week 3	Water budget and hydrological circle
Week 4	Precipitation measurements and metrological data.
Week 5	Mean areal depth of precipitation (Arithmetic, Thiessen, and Isohyet)
Week 6	Estimating missing data and double mass curve analysis, rain gauge network.
Week 7	Frequency analysis of point rainfall (Plotting position, Depth-intensity-duration relation).
Week 8	Mid-term Exam
Week 9	Probability and return period, depth-intensity-duration relation.
Week 10	Evaporation, Factor controlling of evaporation.
Week 11	Hydrograph analysis.
Week 12	Infiltration, Factor controlling of infiltration.
Week 13	Runoff, rainfall, and runoff relationship.
Week 14	Movement of groundwater, hydraulics of wells.
Week 15	Introduction to reservoir sedimentation.
Week 16	Preparatory week before the Final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	None
Week 2	None
Week 3	None
Week 4	None
Week 5	None
Week 6	None
Week 7	None

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Engineering Hydrology , 4th Edition, 2013 by Dr. K Subramanya , Mr. Pratap Chandra Padhi , Mr. Y Hidayatullah Hydrology for engineers , by Linsley,R.K	yes
Recommended Texts	Handbook of Engineering Hydrology Fundamentals and Applications, 1st Edition, 2014 Edited By Saeid Eslamian	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.

Description

وصف المادة الدراسية

Hydrology is the scientific study of water in the Earth's atmosphere, on its surface, and underground. It focuses on understanding the movement, distribution, and behavior of water in various natural systems. It involves analyzing and interpreting data to investigate the water cycle, including precipitation, evaporation, and runoff processes. They assess and manage water resources, addressing issues such as water availability and its allocation. Hydrology plays a vital role in predicting and managing risks associated with floods, droughts, and water-related hazards, and contributes to sustainable water management and environmental protection.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Engineering Economy		Module Delivery	
Module Type	Core		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	AU020203066			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level	3	Semester of Delivery		6
Administering Department	02	College	02	
Module Leader	Ali Jabbar Kadhim AL-RABEEA		e-mail	alijabbar@au.edu.iq
Module Leader's Acad. Title	Ass.Professor		Module Leader's Qualification	
Module Tutor	Ali Jabbar Kadhim AL-RABEEA		e-mail	alijabbar@au.edu.iq
Peer Reviewer Name	ZAHRAA HAYDER ALI		e-mail	Zahraa.hayder@au.edu.iq
Scientific Committee Approval Date	01/06/2023	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	5. Understanding the role of engineering economy in construction project. 6. Understanding accounting and types of costs within construction project. 7. Understanding and Calculations of Interest and Money–Time Relationship 8. Understanding and Calculations of Depreciation and Economic Analysis of Alter
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completion of course, the student will be able to: LO#1- Understanding of Supply-Demand Law. LO#2- Calculation of Break-Even Point. LO#3- Understanding and Calculations of Interest and Money–Time Relationship, Depreciation, and Economic Analysis of Alternatives.
Indicative Contents المحتويات الإرشادية	Engineering Economy: Definitions and Concepts Supply-Demand Law Cost Accounting Break-Even Point Interest and Money–Time Relationship (The Time Value of Money) Methods of Calculating Interest: Simple Interest Methods of Calculating Interest: Compound Interest Gradient Payment Series Non-Uniform (Uneven) Payment Series Depreciation: Definitions, Classifications, and Methods Basic Methods of Conducting Economic Studies (Analysis) of Alternatives Decision Making Among Alternatives: Internal Rate of Return (I.R.R.) Decision Making Among Alternatives: Explicit Reinvestment Rate of Return (E.R.R.) Decision Making Among Alternatives: Annual-Worth (A.W.) Amount & Present-Worth (P.W.) Amount

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to refine and expand their critical thinking skills. This will be achieved through classes (lectures), interactive tutorials, quizzes, and by considering types of homework (assignments) that involve some sample activities that are interesting to the students.
-------------------	---

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	49	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	51	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	20 min./3	10% (10)	2,4, and 10	LO #1, #3, and #5
	Assignments	30 min./3	10% (10)	3, 5 and 12	LO #2, #4 and #6
	classwork	2	10% (10)	6,10	LO #3 and 7
	Report	1	10% (10)	13	LO #4 and #5
Summative assessment	Midterm Exam	1hr	10% (10)	8	LO #1- #3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري

	Material Covered
Week 1	Engineering Economy: Definitions and Concepts
Week 2	Supply-Demand Law
Week 3	Cost Accounting
Week 4	Break-Even Point
Week 5	Interest and Money–Time Relationship (The Time Value of Money)
Week 6	Methods of Calculating Interest: Simple Interest
Week 7	Methods of Calculating Interest: Compound Interest
Week 8	Mid-term Exam
Week 9	Gradient Payment Series
Week 10	Non-Uniform (Uneven) Payment Series
Week 11	Depreciation: Definitions, Classifications, and Methods
Week 12	Basic Methods of Conducting Economic Studies (Analysis) of Alternatives
Week 13	Decision Making Among Alternatives: Internal Rate of Return (I.R.R.)
Week 14	Decision Making Among Alternatives: Explicit Reinvestment Rate of Return (E.R.R.)
Week 15	Decision Making Among Alternatives: Annual-Worth (A.W.) Amount & Present-Worth (P.W.) Amount
Week 16	Preparatory week before the Final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Leland Blank , P. E. and Anthony Tarquin , P. E. "ENGINEERING ECONOMY", 7th. Ed. McGraw-Hill book Co., 2012.	Yes
Recommended Texts	R. Panneerselvam "Engineering Economics" PHI Learning Private Limited, New Delhi.. 2012.	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.

Description

وصف المادة الدراسية

This is an introductory course on Construction economy, focusing on fundamental concepts, principles and techniques. The course will introduce basic engineering economy concepts, including: Supply-Demand Law, Break-Even Point, Methods of Calculating Interest, Gradient Payment Series, Uneven Payment Series and Selection Between Alternatives.