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

دليل وصف البرنامج الأكاديمي والمقرر الدراسي

2025-2024

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 للسمات الرئيسة للبرنامج ومقرراته مبيناً 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 ت م2906/3 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 الاكاديمية والمقررات الدراسية لضمان حسن سير العملية التعليمية.

مفاهيم ومصطلحات:

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

وصف المقرر: يوفر إيجازاً مقتضياً لأهم خصائص المقرر ومخرجات التعلم المتوقعة من الطالب تحقيقها مبرهناً 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.

اهداف 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 اهداف 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 : الجامعة التقنية الشمالية
الكلية/ المعهد : الكلية التقنية الهندسية / الموصل
القسم العلمي : قسم تقنيات الهندسة الكهربائية
اسم البرنامج الأكاديمي او المهني : بكالوريوس تقنيات الهندسة الكهربائية
اسم الشهادة النهائية : بكالوريوس في تقنيات الهندسة الكهربائية
النظام الدراسي : بولونيا
تاريخ اعداد الوصف : 2024/9/30
تاريخ ملء الملف : 2024/10/3

التوقيع:
اسم رئيس القسم: أ.د. محمد يحيى سليمان
التاريخ: 6 / 10 /2024

التوقيع:
اسم المعاون العلمي: ا.م.د. محمد صباح جرجيس
التاريخ :6 / 10 / 2024

دقق الملف من قبل شعبة ضمان الجودة والأداء الجامعي
التوقيع :
اسم مدير شعبة ضمان الجودة والأداء الجامعي : م.م. ورقاء هاشم محمود
التاريخ : 8 / 10 /2024

مصادقة السيد العميد
ا.د. ماجد خليل نجم
8 / 10 /2024

1. رؤية البرنامج
مواكبة التطور العلمي في كافة مجالات تقنيات الهندسية الكهربائية من خلال اعداد مهندسين لديهم القدرة العلمية والعملية .

2. رسالة البرنامج
يسعى القسم الى بناء كفاءات هندسية عاملة وفعالة تمتلك المهارات الهندسية والفنية في تخصص الطاقة الكهربائية وذلك خدمة لاحتياجات المجتمع وما تتطلبه المشاريع الحكومية والخاصة في الدولة.

3. اهداف البرنامج
1- اعداد مهندسين تقنيين لديهم القدرة على الخوض في المجالات التقنية لهندسة القدرة الكهربائية . 2- تعضيد الجانب التقني في خريجها من خلال زيادة الوحدات العملية والتقنية بما لايتعارض مع الجوانب النظرية . 3- تأهيل الخريجين بما يتلائم مع متطلبات سوق العمل . 4- مواكبة الحداثة والتطور العالمي في البرامج والخطط الدراسية والتركيز على الجوانب العملية . 5- العمل على تعزيز معايير الاداء بما يضمن تطبيق المعايير الدولية في مجال تقنيات الهندسة الكهربائية.

4. الاعتماد البرامجي
برنامج وزارة التعليم العالي والبحث العلمي

5. المؤثرات الخارجية الأخرى
لا يوجد

6. هيكلية البرنامج				
هيكل البرنامج	عدد المقررات	وحدة اوربية	النسبة المئوية	ملاحظات *
متطلبات المؤسسة	6	14	11.7	مقرر ثانوي
متطلبات الكلية	6	30	11.7	مقرر اساسي
متطلبات القسم	37	196	70.5	مقرر اساسي
التدريب الصيفي	2	–	3.9	مقرر اساسي
أخرى	لا يوجد			

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

7. وصف البرنامج				
المستوى / الفصل	رمز المقرر أو المساق	اسم المقرر أو المساق	الساعات المعتمدة	
الاول / الاول	EET103	الرياضيات	نظري	6
الاول / الاول	EET101	التقنيات الرقمية	نظري	4
			عملي	2
الاول / الاول	EET102	الرسم الهندسي	عملي	4
الاول / الاول	EET100	دوائر التيار المستمر	نظري	4
			عملي	2
الاول / الاول	NTU100	حقوق الانسان والديمقراطية	نظري	2
الاول / الاول	NTU 101	اللغة الانكليزية	نظري	2
الاول / الثاني	EET104	المكيانيك الهندسي	نظري	3
	EET105	الورش الهندسية	عملي	3
الاول / الثاني	EET106	دوائر التيار المتناوب	نظري	4
			عملي	3
الاول / الثاني	EET107	الفيزياء	نظري	3
			عملي	2
الاول / الثاني	NTU102	اللغة العربية	نظري	2
الاول / الثاني	NTU103	اساسيات الحاسوب	نظري	2
			عملي	2
الثاني / الاول	EET200	محركات التيار المستمر	نظري	4
			عملي	2
الثاني / الاول	EET201	اساسيات الالكترونيات	نظري	4
			عملي	2

الثاني / الاول	EET202	تحليل الدوائر الكهربائية	نظري	2
			عملي	2
الثاني / الاول	EET203	المتحسسات	نظري	2
الثاني / الاول	EET204	الرياضيات التطبيقية	نظري	4
الثاني / الاول	EET205	تطبيقات الحاسوب	عملي	4
الثاني / الاول	ntu200	جرائم حزب البعث	نظري	2
الثاني / الثاني	EET207	محركات التيار المستمر	نظري	3
			عملي	2
الثاني / الثاني	EET208	الدوائر الكترونية	نظري	2
			عملي	2
الثاني / الثاني	EET209	تحليل الدوائر الكهربائية	نظري	2
			عملي	2
الثاني / الثاني	EET210	الأجهزة والقياس	نظري	3
			عملي	2
الثاني / الثاني	EET2211	التحليلات الهندسية	نظري	4
الثاني / الثاني	EET212	اللغة الانكليزية	نظري	2
الثالث / الاول	EET300	مبادئ هندسة القدرة	نظري	2
			عملي	2
الثالث / الاول	EET301	مغيرات القدرة المستمرة	نظري	2
			عملي	2
الثالث / الاول	EET302	المحولات الكهربائية والمكائن الحثية	نظري	3
			عملي	2
الثالث / الاول	EET303	المجالات الكهرومغناطيسية	نظري	4
			عملي	2
الثالث / الاول	EET304	المعالج الدقيق	نظري	2
			عملي	2
الثالث / الاول	EET305	التحليلات العددية	نظري	2
الثالث / الثاني	EET306	هندسة القدرة المتقدم	نظري	2
			عملي	2
الثالث / الثاني	EET307	مغيرات القدرة المتناوبة	نظري	2
			عملي	2
الثالث / الثاني	EET308	المكائن الزمانية والخاصة	نظري	4
			عملي	2
الثالث / الثاني	EET309	المسيطرات الرقمية	نظري	3
			عملي	2
الثالث / الثاني	EET310	اللغة الإنكليزية (مستوى متقدم)	نظري	2
الرابع / الاول	EET400	أنظمة التوزيع والنقل	نظري	4
			عملي	2
الرابع / الاول	EET401	مسوقات المكائن الكهربائية	نظري	4
			عملي	2
الرابع / الاول	EET402	تحليل أنظمة القدرة	نظري	4
			عملي	2
الرابع / الاول	EET403	محطات توليد القدرة الكهربائية	نظري	3
			عملي	2
الرابع / الاول	EET404	تحليل أنظمة السيطرة	نظري	3

			عملي	2
الرابع / الاول	EET405	مشروع 1	عملي	2
الرابع / الثاني	EET406	اخلاقيات المهنة	نظري	2
الرابع / الثاني	EET407	حماية أنظمة القدرة	نظري	2
			عملي	2
الرابع / الثاني	EET408	استقرارية أنظمة القدرة	نظري	2
			عملي	2
الرابع / الثاني	EET409	تقنيات الضغط العالي	نظري	2
			عملي	2
الرابع / الثاني	EET410	مشروع 2	مشروع	2

8. مخرجات التعلم المتوقعة للبرنامج	
المعرفة	
1. إجراء الحسابات الرياضية وتصميم الدوائر الكهربائية باستخدام الحواسيب، ودراسة الجدوى الاقتصادية لمشاريع مختلفة في مجال التخصص. 2. تشخيص الأعطال وإجراء أعمال الصيانة والإصلاح للمحطات الكهربائية في الأغراض الصناعية والخدمية. 3. إجراء البحوث والدراسات والبحث عن بدائل في ميدان التخصص وبأحدث التقنيات. 4. تصميم المحطات الكهربائية وأنظمة النقل باستخدام طرق التصنيع المتنوعة لتحقيق أقصى كفاءة.	
المهارات	
1. اجراء الحسابات الرياضية وتصميم الدوائر الكهربائية. 2. اجراء التحاليل غير الاتلافية والفحوصات للمعدات الكهربائية. 3. اجراء التجارب واختبار الفشل للمعدات. 4. القدرة على الاستنتاج والتحليل.	
القيم	
1- تنمية قدرات الطلبة على مشاركة الأفكار. 2- تطوير المهارات الأساسية اللازمة لتصميم وتنفيذ وصيانة المنظومات والمشاريع المختبرية. 3- تقديم تقدير واسع للمشاكل التي قد تنشأ في الممارسة المهنية، بما في ذلك العمل الجماعي، القيادة، السلامة المهنية، التعامل والأخلاق المهنية، والجدوى الاقتصادية.	التدريب الصيفي والمهني، المختبرات ، افلام علمية وفيديوهات (الكتروني وحضوري) التعليم المدمج ومشاريع التخرج.

4- القدرة على التحليل والاستنباط وحل المشكلات بأسلوب هندسي وفق المعايير المطلوبة.	

9. استراتيجيات التعليم والتعلم
- شرح المادة العلمية للطلاب بشكل تفصيلي. - مشاركة الطلاب في حل المسائل الرياضية - مناقشة وحوار حول مفردات متعلقة بالموضوع. - اختبارات يومية ، امتحانات نصف فصلية ـ الامتحانات النهائية ، تقارير اسبوعية ضمن المادة ، واجبات بيتية وصفية.

10. طرائق التقييم
- اختبارات يومية ، امتحانات نصف فصلية ـ الامتحانات النهائية ، تقارير اسبوعية ضمن المادة ، واجبات بيتية وصفية

11. الهيئة التدريسية						
أعضاء هيئة التدريس						
الرتبة العلمية	التخصص		المتطلبات/المهارات الخاصة (ان وجدت)		اعداد الهيئة التدريسية	
	عام	خاص			ملاك	محاضر
استاذ مساعد	هندسة ميكانيك	حراريات	لايوجد		7	0
مدرس	هندسة ميكانيك	حراريات	لايوجد		9	0
مدرس مساعد	هندسة ميكانيك	حراريات	لايوجد		8	0

التطوير المهني
توجيه أعضاء هيئة التدريس الجدد
مهارات العمل الجماعي . مهارات الحاسبة والأنترنت .

مهارات الاتصال كاللغة الإنكليزية والعرض . مهارات القيادة وتحمل المسؤولية. مهارات التعليم الذاتي والتعلم مدى الحياة.
التطوير المهني لأعضاء هيئة التدريس
- دورات تدريبية داخل المؤسسة. - دورات تدريبية خارج المؤسسة. - البحوث العلمية - الحلقات الدراسية والندوات العلمية. - التعليم الذاتي.

12. معيار القبول
- الفرع العلمي - الدراسة المهنية - المعدل

13. أهم مصادر المعلومات عن البرنامج
- كتب منهجية . - مصادر مساعدة (الأنترنت). - البحوث العلمية واخر مستجداتها.

14. خطة تطوير البرنامج
- الاطلاع على تجارب الجامعات والكليات النظيرة العربية ولاجنبية والاستفادة من التطور الحاصل معهم.

مخطط مهارات البرنامج																		
			مخرجات التعلم المطلوبة من البرنامج															
المستوى / الفصل	رمز المقرر	اسم المقرر	اساسي أم اختياري	المعرفة				المهارات				القيم						
				أ1	أ2	أ3	أ4	ب1	ب2	ب3	ب4	ج1	ج2	ج3	ج4			
الاول / الاول	EET103	الرياضيات	ثانوي			√					√	√		√				
الاول / الاول	EET101	التقنيات الرقمية	اساسي	√	√	√	√	√	√				√		√			
الاول / الاول	TEMO 100	مبادئ الرياضيات	اساسي	√		√	√	√	√		√		√		√			
الاول / الاول	EET102	الرسم الهندسي	اساسي		√	√	√			√		√	√					
الاول / الاول	EET100	دوائر التيار المستمر	اساسي		√					√			√	√				
الاول / الاول	NTU 102	حقوق الانسان والديمقراطية	ثانوي									√	√	√				
الاول / الاول	NTU100	حقوق الانسان والديمقراطية	اساسي	√	√	√	√	√		√	√	√	√		√			
الاول / الاول	NTU 101	اللغة الانكليزية	اساسي	√	√			√		√					√			
الاول / الثاني	EET104	المكيانيك الهندسي				√					√	√		√				
	EET105	الورش الهندسية			√					√		√	√					
الاول / الثاني	EET106	دوائر التيار المتناوب	اساسي	√	√	√	√	√	√				√		√			
الاول / الثاني	TEMO 103	رسم هندسي	اساسي	√		√	√						√					

الاول / الثاني	EET107	الفيزياء	اساسي	√	√	√	√		√	√	√	√	√	√		√	√
الثاني / الثالث	PM 205	مبادئ التبريد والتكييف	اساسي	√	√	√	√	√	√	√	√	√	√	√	√	√	√
الاول / الثاني	NTU102	اللغة العربية	اساسي	√		√	√	√	√		√	√		√	√	√	√
الاول / الثاني	NTU103	اساسيات الحاسوب	ثانوي										√	√	√	√	
الثاني / الثالث	PM 202	رسم ميكانيكي	اساسي	√		√	√							√			
الثاني / الاول	EET200	محركات التيار المستمر	اساسي	√	√	√	√	√	√		√	√		√			
الثاني / الرابع	PM 204	مواد هندسية	اساسي	√	√	√	√	√	√		√	√		√			
الثاني / الاول	EET201	اساسيات الالكترونيات	اساسي	√	√	√	√	√	√	√	√	√	√	√	√		√
الثاني / الرابع	PM 206	مكائن كهربائية	اساسي	√	√	√		√	√	√	√			√			
الثاني / الاول	EET202	تحليل الدوائر الكهربائية	ثانوي		√						√		√	√		√	
الثاني / الرابع	TEMO 202	تدريب منهجي	اساسي		√		√			√	√	√	√	√	√	√	√
الثاني / الاول	EET203	المتحسسات				√					√	√	√		√	√	
الثاني / الاول	EET204	الرياضيات التطبيقية		√	√	√	√	√	√					√			√
الثاني / الاول	EET205	تطبيقات الحاسوب		√		√	√	√	√		√	√		√			√
الثاني / الاول	ntu200	جرائم حزب البعث			√	√	√			√	√		√	√			
الثاني / الثاني	EET207	محركات التيار المستمر			√						√		√	√		√	
الثاني / الثاني	EET208	الدوائر الكترونية										√	√	√		√	

الثاني / الثاني	EET209	تحليل الدوائر الكهربائية		√	√	√	√	√		√	√	√	√		√	√	√	√
الثاني / الثاني	EET210	الأجهزة والقياس		√	√			√		√		√						√
الثاني / الثاني	EET2211	التحليلات الهندسية				√					√	√		√		√		
الثاني / الثاني	EET212	اللغة الانكليزية			√						√			√	√			
الثالث / الاول	EET300	مبادئ هندسة القدرة		√	√	√	√	√	√	√			√	√				√
الثالث / الاول	EET301	مغيرات القدرة المستمرة		√		√	√						√					
الثالث / الاول	EET302	المحولات الكهربائية والمكائن الحثية		√	√	√	√	√		√	√	√	√	√	√	√		√
الثالث / الاول	EET303	المجالات الكهرومغناطيسية		√	√	√	√	√	√	√	√	√	√	√	√	√		√
الثالث / الاول	EET304	المعالج الدقيق		√		√	√	√	√	√		√		√		√		√
الثالث / الاول	EET305	التحليلات العددية											√	√		√	√	
الثالث / الثاني	EET306	هندسة القدرة المتقدم		√		√	√									√		
الثالث / الثاني	EET307	مغيرات القدرة المتناوبة		√	√	√		√	√	√	√					√		
الثالث / الثاني	EET308	المكائن الترمانية والخاصة		√	√	√		√	√	√	√					√		
الثالث / الثاني	EET309	المسيطرات الرقمية		√	√	√	√	√		√	√	√	√	√	√	√		√
الثالث / الثاني	EET310	اللغة الإنكليزية (مستوى متقدم)		√	√	√		√	√	√	√					√		
الرابع / الاول	EET400	أنظمة التوزيـع والنقل			√					√					√	√		
الرابع / الاول	EET401	مسوقات المكائن الكهربائية			√		√		√	√	√	√	√	√	√	√	√	√
الرابع / الاول	EET402	تحليل أنظمة القدرة				√						√	√	√		√	√	

الرابع / الاول	EET403	محطات توليد القدرة الكهربائية		√	√	√	√	√	√	√		√			√			√
الرابع / الاول	EET404	تحليل أنظمة السيطرة		√		√	√	√	√		√		√		√			√
الرابع / الاول	EET405	مشروع 1			√	√	√			√		√		√	√			
الرابع / الثاني	EET406	اخلاقيات المهنة			√					√		√		√		√	√	
الرابع / الثاني	EET407	حماية أنظمة القدرة										√	√	√	√	√	√	
الرابع / الثاني	EET408	استقرارية أنظمة القدرة		√	√	√	√	√	√		√	√	√	√	√		√	√
الرابع / الثاني	EET409	تقنيات الضغط العالي		√	√				√		√							√
الرابع / الثاني	EET410	مشروع 2				√						√	√	√		√	√	
الثالث / الثاني	EET307	مغيرات القدرة المتناوبة			√					√		√	√	√				
الثالث / الثاني	EET308	المكائن الترمانية والخاصة		√	√	√	√	√	√		√					√		√
الثالث / الثاني	EET309	المسيطرات الرقمية		√		√	√							√				√
الثالث / الثاني	EET310	اللغة الإنكليزية (مستوى متقدم)		√	√	√	√	√	√	√	√	√	√	√	√	√		√

- يرجى وضع اشارة في المربعات المقابلة لمخرجات التعلم الفردية من البرنامج الخاضعة للتقييم

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**DC ELECTRICAL CIRCUITS**	**Module Delivery**	
Module Type	**Core**	✓ **Theory**	
Module Code	**EET100**	**Lecture**	
ECTS Credits	**8**	✓ **Lab**	
SWL (hr/sem)	**200**	**Tutorial**	
		Practical	
		✓ **Seminar**	

Module Level	UGx11 1	**Semester of Delivery**	1
Administering Department	**Department of Electrical Engineering Techniques**	**College**	**Northern Technical University Engineering Technical College/Mosul**
Module Leader	Alya Hamid Ali	**e-mail**	alya.hamid@ntu.edu.iq
Module Leader's Acad. Title	Assist. Professor	**Module Leader's Qualification**	Master
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	14/06/2023	**Version Number**	1.0

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**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-Understanding the Fundamentals: The primary objective of a DC circuits course is to provide students with a solid foundation in the fundamental principles of direct current (DC) circuits. This includes concepts such as voltage, current, resistance, Ohm's law, power, and energy. 2-Analyzing Circuit Components: Students will learn how to analyze and work with various circuit components. They will understand their behavior in DC circuits and be able to calculate their effects on voltage, current, and power. 3-Circuit Laws and Theorems: Students will become familiar with important laws and theorems governing DC circuits, including Ohm's law, Kirchhoff's laws (KCL and KVL), Thevenin's theorem, Norton's theorem, and maximum power transfer theorem. They will gain proficiency in applying these principles to solve complex circuit problems. 4-Circuit Simulation and Design: The course may involve introducing students to circuit simulation software. They will learn how to use simulation tools to analyze and design DC circuits, verify their calculations, and gain practical insights into circuit behavior.

	5-Problem-Solving Skills: An important objective is to develop students' problem-solving skills in the context of DC circuits. They will learn how to analyze circuit diagrams, formulate appropriate strategies, and apply their knowledge to solve a variety of circuit problems efficiently. 6-Laboratory Skills: The course includes hands-on laboratory experiments to provide students with practical experience in building, testing, and troubleshooting DC circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-Fundamental Knowledge: Students will acquire a solid understanding of the fundamental concepts and principles of direct current (DC) circuits, including voltage, current, resistance, power, and energy. 2-Circuit Analysis Skills: Students will develop the ability to analyze DC circuits using various techniques such as applying Kirchhoff's laws, performing nodal and mesh analysis, and utilizing circuit theorems like Thevenin's and Norton's theorem. They will gain proficiency in solving complex circuit problems and calculating circuit parameters. 3-Circuit Design and Simulation: Students will be able to design and simulate DC circuits, using appropriate components and considering design constraints. They will learn to use circuit simulation software to verify their designs, analyze circuit performance, and troubleshoot circuit issues. 4-Laboratory Skills: Through hands-on laboratory experiments, students will develop practical skills in building, testing, and troubleshooting DC circuits. They will become proficient in using measuring instruments, interpreting experimental data, and ensuring safety precautions while working with electrical circuits. 5-Critical Thinking and Analysis: The course will promote critical thinking and analytical skills among students. They will learn to evaluate different circuit solutions, analyze circuit behavior, and make informed decisions based on their understanding of DC circuits. By the end of the course, students will possess a comprehensive knowledge of DC circuits, enabling them to analyze, design, and troubleshoot a wide range of electrical circuits. They will be prepared for further studies in electrical engineering or related fields and equipped with skills that can be applied in professional practice.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • Part A – General Electric System. Constituent parts of an electrical system (source, load, communication & control), Current flow in a circuit, Electromotive force and potential difference, Electrical units. Ohm's law, Resistors, Resistivity, Temperature rise & Temperature coefficient of resistance, Voltage & Current sources [8 hrs] • Part B DC circuits. Series circuits, Parallel circuits. Kirchhoff's laws. Power and energy [14 hrs] • Part C Network Theorems . Star-delta & delta-star transformation. Sources transformations Mesh analysis. Nodal analysis. Superposition theorem. Thevnin's theorem. Norton's theorem. Maximum power transfer theorem. [32 hrs] • Revision problem classes [6 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1-**Hands-on Experiments:** Engage students in practical experiments to deepen their understanding of circuits. 2-**Simulation Software:** Use circuit simulation software for virtual circuit design and analysis. 3-**Problem-solving Exercises:** Include various problem-solving exercises to apply circuit analysis techniques. 4-**Group Projects:** Assign collaborative projects for circuit design and construction. 5-**Real-world Applications:** Discuss practical applications of circuits in different devices and systems. 5-**Interactive Discussions:** Encourage student participation and critical thinking through open-ended questions. 6-**Conceptual Understanding:** Focus on intuitive understanding alongside mathematical analysis.

	7-**Assessment Variety:** Use diverse assessment methods to gauge student understanding. 8-**Office Hours and Support:** Offer individualized assistance through office hours or online support.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.12
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	107	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	7	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	9	10% (10)	Continuous	All
	Report	8	10% (10)	2, 12	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-8
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
1	**Fundamental electric quantities: voltage, current, power and energy**
2	• **Resistance, capacitance and inductance** **Dependent and Independent source.**
5	• **Series and parallel resistors** **voltage and current division**
6	**Kirchhoff's laws (KVL & KCL).**
7	• **Conversion of delta-connected resistance into an equivalent Wye connection & vice versa.**
8,9,10	• **Mesh analysis** **Node analysis**
11	• **Superposition's theorem.**
12,13	• **Thevenin's theorem** **Norton's theorem.**
14	• **Maximum power transfer.**
15	• **Final Examination**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
1	**Introduction to Measurement Devices**
2	**Color of Resistance**
3,4	**Ohm's Law and Resistance in Series and Parallel**
5,6	**Star& Delta Connection**
7	**Kirchhoff's Law**

8	**MID-TERM EXAM**
9,10	**Super Position Theorem**
11,12	**Thevenin's Theorem**
13,14	**Norton's Theorem & Maximum Power Transfer**
15	**Review**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Charles K. Alexander, Matthew N.O. Sdiku Fundamentals of Electrical Engineering, 4th Edition, 2009	Yes
Recommended Texts	Tony R. Kuphaldt, Lessons In Electric Circuits, Volume I - DC 5th edition, Pearson Education 2002	No
Websites	**Direct Current (DC)** https://www.allaboutcircuits.com/textbook/direct-current/	

APPENDIX:

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**DIGITAL TECHNOLOGIES**	**Module Delivery**
Module Type	**Core**	✓ **Theory** **Lecture** ✓ **Lab** **Tutorial** **Practical**
Module Code	**EET101**	
ECTS Credits	**6**	

SWL (hr/sem)	**150**			✓ **Seminar**	
Module Level		UGx11 1	**Semester of Delivery**		1
Administering Department		**Department of Electrical Engineering Techniques**	**College**	**Northern Technical University Engineering Technical College/Mosul**	
Module Leader	Hiba-allah tariq		**e-mail**	hibatallahtariq@ntu.edu.iq	
Module Leader's Acad. Title		Assist. Lect.	**Module Leader's Qualification**		M.Sc.
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name		None	**e-mail**	None	
Scientific Committee Approval Date		01/06/2023	**Version Number**		1.0

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

Module Objectives أهداف المادة الدراسية	**1-Training students on the basics of logical circuits used in electronic computers and how they work.** **2- Building logical circuits and learning about computer operation.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learning about the different number systems. 2. Learning the arithmetic operations related to different number systems. 3. Learning the different logic gates of computer system and their work. 4. Ability to design, simplify and implement different logical and arithmetic circuits that considered the basic of digital system. 5. Ability to design, simplify and implement different sequential circuits, counters and shift registers.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • Part 1 – Numbers Systems, Operations, and Codes Different Number Systems, Data representation (integer and fraction) using different number systems. Conversion Between Different Numbers Systems. Arithmetic operations using different number systems, and Digital Codes (BCD, Parity, Gray, etc.) [10 hrs] • Part 2- Logic Gates The Inverter (NOT Gate), AND Gate, OR Gate, NAND Gate, NOR Gate, the Exclusive-OR Gate and Exclusive-NOR Gates. [8 hrs] • Part 3 Boolean Algebra and Logic Simplification Boolean Operations and Expressions, Laws and Rules of Boolean Algebra, Simplification Using Boolean Algebra, DeMorgan's theorems,The Karnaugh Map (1, 2 , 3 and 4 variables) , SOP and POS Minimization. [8 hrs] • Part 4 Combinational Logic Analysis Basic Combinational Logic Circuits, Implementing Combinational Logic, Combinational Logic Using NAND and NOR Gates, Logic Circuit Operation with Pulse Waveform Inputs. [10 hrs] Revision problem classes [10 hrs] • Part 5 – Functions of Combinational Logic. Half , Full and Parallel Binary Adders and Subtractors. 1's and 2's Complement Subtractor, 2's Complement Adder-Subtractor, BCD Adder, etc. Comparators, Decoders, Encoders, Multiplexers, Demultiplexer [10 hrs] • Part 6- Latches, Flip-Flops, and Timers. Latches, Edge-Triggered Flip-Flops. Flip-Flop operating (R-S, T, J-K ,D) [12 hrs] • Part 7Counters Synchronous Counters, Asynchronous Counters. Design of Counters. [8 hrs] • Part 8 Shift Registers Basic Shift Register Operations: SISO, SIPO, PISO, PIPO, Bidirectional and special Types Shift Register. [6 hrs] • Revision problem classes [6 hrs] • Part 9– Microprocessor Introduction to Microprocessor: component of microprocessor, Microprocessor architecture [6 hrs]

Relation with other Modules
العلاقة مع المواد الدراسية الأخرى

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

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 للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**93**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**6.2**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**57**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**3.8**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	3,5 and 10	1,3,and 4
	Assignments	7	10% (10)	2 and 12	2,3
	Projects / Lab.	9	10% (10)	Continuous	All
	Report	8	10% (10)	2 and 12	LO #3, #4 and #5
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #5
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction - Difference between Circuit Theory and Field Theory
Week 1	• General number formula: Binary, octal, decimal and hexadecimal numbers
Week 2	• Arithmetic operations in different number system
Week 3	• complements, binary codes, BCD, Ex-3, Gray codes
Week 4	• Basic definitions, basic theorem and properties, Boolean functions
Week 5	• Canonical and Standard forms Digital Logic Gates
Week 6	• Karanough Maps: AND- OR implementation, don't care conditions
Week 7	• Subtractions, half and full adders and subtractions, binary parallel address
Week 8	• decoders, encoders, comparators
Week 9,10	• multiplexers and demultiplexers
Week 11	• Flip-flops (RS, T, D, JK …) • Master slave FF, counter • shift registers
Week 12,13	• Introduction to Microprocessor • Microprocessor architecture
Week 14	• component of microprocessor
Week 15	• Final Examination

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	• Lab 1: Introduction to digital laboratory kit operation • Lab 2: Logic Gates (AND, OR, NOT, NAND, NOR).
Week 2	• Lab 3: Logic Gates (XOR, XNOR). • Lab 4: De Morgan's Theorems 1st and 2nd Laws.
Week 3	• Lab 5: Designing a combinational Logic circuit. • Lab 6: The realization of the Boolean equation.
Week 4	• Lab 9: Half Binary Subtractor. • Lab 10: Full Binary Subtractor.
Week 5	• Lab 11:Binary comparator
Week 6	• Lab 12: 2's Complement Adder- Subtractor
Week 7	• Lab 13: Flip-Flop.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas L. Floyd, Digital Fundamentals, 11th Edition, Pearson Education 2015	Yes

Recommended Texts	1- Introduction to Digital Logic with Laboratory Exercises/James Feher, 2009. 2- M. Morris Mano, Michael D. Ciletti, Digital Design, 5th edition, Pearson Education 2013.	No
Websites	Digital Systems: From Logic Gates to Processors: https://www.coursera.org/learn/digital-systems	

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul

Department of Electrical Engineering Techniques

MODULE DESCRIPTOR 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	**EET102**		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		

Module Level	UGx11 1	**Semester of Delivery**	1
Administering Department	Electrical Engineering Techniques	**College**	Engineering Technical College/Mosul
Module Leader	Fatin M. shehab	**e-mail**	fatin.m.alobaid@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	M.Sc.
Module Tutor	None	**e-mail**	E-mail
Peer Reviewer Name	None	**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 explore further and confirm the reference of engineering drawing to the varied design applications found in engineering and technology in general. 2. To further the ability to communicate information by engineering drawings. 3. To develop knowledge to two dimensional (2D) computer-aided drawing(CAD). n Further and/or Higher Education who are required to learn how to use the computer-aided design (CAD) software package AutoCAD®
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	6. Learning types of engineering lines and their uses and how to draw 7. Drawing geometric shapes such as square, rectangular, parallelogram and circle 8.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: ● Part A – AutoCAD interface Setup, save, limits, grid, object snap and ortho mode [3 hrs.] ● Part B- Coordinate method Direct distance method, Absolute coordinate, Relative coordinate, Polar coordinate[3hrs] ● Part C Draw menu Line, polyline, rectangle, arc, circle, ellipse and hatch [12hrs] ● Part D Modify and Properties menu Copy, move, offset, erase, extend, trim and array, line shape and line size [9 hrs.] ● Part D Projection Front, side and top ortho projections [6 hrs.] ● Part E stereoscopic shapes Method for drawing stereoscopic shapes[6hrs] Revision problem classes [8 hrs.]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	Drawing engineering is an engineers language and consider a means to communicate between them and designers The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	5 and 10	LO #1, #2
	Assignments	8	10% (10)	2 and 12	LO #3
	Projects / Lab.	18	10% (10)	Continuous	All
	Report	0	10% (10)		
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - 3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
1	Introducing AutoCAD
2	Drawing settings
3 ,4 ,5 ,6	Drawing Tools: Line, Circle, Arc, Ellipse, Donut, Polygon, Rectangle, Point, Multiline, Pline, Spline, Xline.
7 ,8, 9	Modify Tools Erase, Undo, Redo, Explode, Move, Copy, Rotate, Mirror, Array, Align, Scale, Stretch, Lengthen, Trim, Extend, Break, Join, Chamfer, Fillet.
10	Display Control: Zoom, Pan, Redraw, Clean Screen.
11	Dimension - Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension Space, Dimension Break, Jogged radius, Ordinate dimensions.
12	Annotation Tools Text, Style, Mtext, Scale text, Spell,
13	Hatching Objects
14	Exercises drawing
15	Final Examination

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?

Required Texts	ENGINEERING GRAPHICS FOR First Year Student Specialized Scientific Programs (SSP) Faculty of Engineering Alexandria University Prepared By Assoc. Prof. / Raafat El sayed Shaker Ismail Introduction to AutoCAD 2011. 2D and 3D Design by Alf Yarwood	Yes
Recommended Texts	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	**Engineering Mathematics**		**Module Delivery**
Module Type	**Basic**		✓ **Theory** **Lecture** **Lab** ✓ **Tutorial** **Practical** ✓ **Seminar**
Module Code	**EET103**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		
Module Level	UGx11 1	**Semester of Delivery**	1
Administering Department	**Department OF ELECTRICAL ENGINEERING techniques**	**College**	**Northern Technical University Engineering Technical College/Mosul**
Module Leader	Sanabel muhson	**e-mail**	Sanabel.m.mohammed@ntu.edu.iq
Module Leader's Acad. Title	Ass.prof.	**Module Leader's Qualification**	M.Sc.
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	21/06/2023	**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	**To teach the students:** 1-Derivatives of trigonometric functions 2- Partial differentiation and Total differential 3- limit and derivative concepts 4- The Fundamental Theorem of Calculus, 5-Indefinite Integrals and the Net Change Theorem.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learning about the complex numbers. 2. Learning the Functions of several variables. 3. Learning the Lines and planes in space, Tangent and normal in the plane 4. Learning the Triple integrals in rectangular coordinates 5. Double Integral in rectangular and polar form, Areas and volumes 6. Applications (Surface Area, Green's theorem and Stokes' theorem
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: ❖ Complex Numbers– For most students the assumptions I've made above about their exposure to complex numbers is the extent of their exposure. Problems tend to arise however because most instructors seem to assume that either students will see beyond this exposure in some later class or have already seen beyond this in some earlier class. Students are then suddenly expected to know more than basic arithmetic of complex numbers but often haven't actually seen it anywhere and have to quickly pick it up on their own in order to survive in the class. [13 hrs] ❖ Vector Fields – In this section we introduce the concept of a vector field and give several examples of graphing them. We also revisit the gradient that we first saw a few chapters ago. Line Integrals – Part I – In this section we will start off with a quick review of parameterizing

	curves. This is a skill that will be required in a great many of the line integrals we evaluate and so needs to be understood. We will then formally define the first kind of line integral we will be looking at : line integrals with respect to arc length. Line Integrals – Part II – In this section we will continue looking at line integrals and define the second kind of line integral we'll be looking at : line integrals with respect to x, y, and/or z. We also introduce an alternate form of notation for this kind of line integral that will be useful on occasion. Line Integrals of Vector Fields – In this section we will define the third type of line integrals we'll be looking at : line integrals of vector fields. We will also see that this particular kind of line integral is related to special cases of the line integrals with respect to x, y and z. [20 hrs] ❖ Part D: Multiple Integrals - In this chapter will be looking at double integrals, i.e. integrating functions of two variables in which the independent variables are from two dimensional regions, and triple integrals, i.e. integrating functions of three variables in which the independent variables are from three dimensional regions. Included will be double integrals in polar coordinates and triple integrals in cylindrical and spherical coordinates and more generally change in variables in double and triple integrals.[20 hrs] ❖ Revision problem classes [6 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in the delivery of this unit is to encourage students to participate in exercises, while improving and expanding their mathematical reasoning skills.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	5	10% (10)	4,6 ,8,10,11	LO #1, 2, and 4
	Assignments	12	10% (10)	Continuous	All
	Projects / Lab.	0	0		
	Report	0	0		
Summative assessment	**Midterm Exam**	2 hr	20% (20)	8	LO # 1-6
	Final Exam	3 hr	60% (60)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered

Week 1	**Equation of the straight line, Trigonometric functions and their sketches. Domain, Range, Inverse of functions, Absolute value, limits, Limits applications, Polar coordinates, Conic sections**
Week 2	**Differential calculus:** **Methods of differentiation, Some applications of differentiation**
Week 3	**Derivatives of trigonometric functions, inverse trigonometric**
Week 4	**Partial differentiation, Total differential, rates of change and small changes Maxima, minima and saddle points for functions of two variables**
Week 5	**Theory of matrices and determinants. Properties of matrix operations, matrix transpose, matrix inverse, Applications to linear equations, Cramer's Rule. Eigen values and eigenvectors**
Week 6	**Derivatives of Logarithmic and exponential functions**
Week 7	**Hyperbolic functions, Relation between the hyperbolic functions and exponential functions**
Week 8	**Derivative of hyperbolic functions**
Week 9	**Sigma Notation, Areas and Distances, The Definite Integral. The Fundamental Theorem of Calculus, Indefinite Integrals and the Net Change Theorem, The Substitution Rule**
Week 10	**Trigonometric Integrals, Trigonometric Substitution, Partial Fractions and Improper Integrals**
Week 11,12	**Integration using Tables and Computer Algebra Systems CAS, Numerical Integration (Trapezoidal Approximation, Midpoint Approximation, Simpson's Approximation, and Error Bounds)**
Week 12	**Areas between Curves, Volume, Volumes by Cylindrical Shells Average Value of a Function (Mean Value Theorem), Arc Length**
Week 13	**Applications to Physics and Engineering and Probability**
Week 14	**Final exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**Advance Engineering Mathematics, Alan Jeffrey, 2002**	Yes
Recommended Texts	**Calculus II &Calculus III, Paul Dawkins, 2007**	No
Websites	https://tutorial.math.lamar.edu/Classes/CalcIII/CalcIII.aspx https://tutorial.math.lamar.edu/Classes/CalcII/CalcII.aspx	

:

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul

Department of Electrical Engineering Techniques

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Engineering Mechanics**	**Module Delivery**

Module Type	**Core**		☒ **Theory** ☒ **Lecture** ☐ **Lab** **Tutorial** ☐ **Practical** ☒ **Seminar**
Module Code	**EET104**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		

Module Level	1	**Semester of Delivery**	2
Administering Department	Electrical Engineering Techniques	**College**	Engineering Technical College
Module Leader	**Shehab.Fatin M**	**e-mail**	fatin.m.alobaid@ntu.edu.iq
Module Leader's Acad. Title	**Lecturer**	**Module Leader's Qualification**	MASTER
Module Tutor	**Shehab.Fatin M**	**e-mail**	E-mail
Peer Reviewer Name	None	**e-mail**	None
Scientific Committee Approval Date	June /01/2023	**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	Module Objectives for Engineering Mechanics/Statics: 1. Understand the fundamental concepts and principles of Statics, including motion, forces, and acceleration. 2. Apply kinematic equations to analyze the motion of particles and rigid bodies in various scenarios. 3. Determine the relationship between forces, mass, and acceleration using Newton's laws of motion. 4. Apply the principles of work and energy to analyze and solve dynamic problems. 5. Analyze and calculate linear and angular momentum, and apply the principle of impulse and momentum to dynamic systems. 6. Understand and apply the principles of vibrations and oscillations in mechanical systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Apply fundamental concepts of engineering mechanics/statics to analyze and solve problems related to the equilibrium of rigid bodies. 2. Demonstrate a deep understanding of vector mathematics and its application in statics, including vector addition, subtraction, dot product, and cross

	product. 3. Apply the principles of static equilibrium to solve problems involving forces and moments acting on rigid bodies in two and three dimensions. 4. Analyze and calculate the internal forces, such as axial forces, shear forces, and bending moments, in statically determinate structures using methods such as the method of sections and the method of joints. 5. Utilize free-body diagrams to model and analyze the forces acting on a structure or a rigid body, and determine the resultant forces and moments at specific points. 6. Analyze and calculate the centroid and moment of inertia of various two-dimensional shapes, including rectangles, triangles, and circles, and apply these concepts to determine the stability and strength of structures. 7. Apply the concepts of friction and its effects on the equilibrium of bodies in statics, including calculating static and kinetic friction forces and determining the angle of friction. 8. Analyze and calculate the forces in trusses and frames, including the method of joints and the method of sections, and determine the stability and structural integrity of these systems. 9. Apply the principles of equilibrium to solve real-world engineering problems, such as determining the stability of structures, calculating the forces on supports and connections, and analyzing the behavior of mechanical systems. 10. Communicate effectively, both orally and in writing, to present and explain the analysis, results, and solutions of engineering mechanics/statics problems. By achieving these module learning outcomes, students will develop a strong foundation in engineering mechanics/statics and be equipped with the necessary knowledge and skills to analyze and solve a wide range of engineering problems involving static equilibrium and structural stability.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Introduction to Statics • Definition and scope of statics • Fundamental concepts and principles • Importance of statics in engineering 2. Vectors and Vector Analysis • Vector representation and operations • Vector components and coordinate systems • Vector addition, subtraction, and scalar multiplication 3. Forces and Moments • Forces and their characteristics • Resultant and equilibrium of forces • Moment of a force and its properties • Couples and their effects 4. Equilibrium of Rigid Bodies

	• Free body diagrams and force analysis • Equations of equilibrium in two and three dimensions • Solving equilibrium problems using scalar and vector approaches • Applications to simple systems and structures 5. Truss Structures • Introduction to truss analysis • Method of joints and method of sections • Determination of member forces and support reactions 6. Friction • Laws of friction and frictional forces • Types of friction and their characteristics • Calculation of frictional forces and moments • Applications to inclined planes, wedges, and screws 7. Center of Gravity and Centroids • Definitions and properties of center of gravity and centroids • Determination of center of gravity and centroids of simple shapes • Composite bodies and distributed loads 8. Moments of Inertia • Moment of inertia and its physical significance • Calculating moments of inertia for simple shapes • Parallel-axis and perpendicular-axis theorems • Application of moments of inertia in engineering analysis

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	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	102	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
1	• Static science – Def
2	• Forces ,Curers (
3	•Force com
4,5	•Com •Resolution o
6,7	•Moment of
8	•C
9	Equilibrium of plana
10	•Free-body diagram
11,12	•Centroid & center of gravity (for area & bodies)
13	•Moment of inertia
14	•Direct stress & direct strain and their •Shearing forces and bending moment ،s diagrams.
15	• Final Examination

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Engineering Mechanics/ Statics, Fourteen Edition, R.C. Hibbeler Engineering Mechanics Volume 1 Statics Seventh Edition J. L. Meriam L. G. Kraige Virginia Polytechnic Institute and State Universit	yes

	Engineering Mechanics, Lectures, Notes and Solutions, University of AL Qadisiyah Roads & Transport Department by Alaa J. Alnsrawy	
Recommended Texts	1- Engineering Mechanics , Ferdinand L. Singer 2- Engineering Mechanics, Meriam 3- Engineering Mechanics/ Statics, Arthur P. Boresi & Richard J. Schmidt	No
Websites		

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	**ENGINEERING WORKSHOPS**	**Module Delivery**	
Module Type	**Basic**	**Theory** **Lecture** ✓ **Lab** ☐ **Tutorial** **Practical** ✓ **Seminar**	
Module Code	**EET105**		
ECTS Credits	**6**		
SWL (hr/sem)	***150***		
Module Level	UGx11 1	**Semester of Delivery**	2
Administering Department	DEPARTMENT OF ELECTRICAL ENGINEERING TECHNIQUES	**College**	**Northern Technical University** **Engineering Technical College/Mosul**
Module Leader	Sawsan Najeeb Abdullah	**e-mail**	sawsannajeenabdullah@ntu.edu.iq

Module Leader's Acad. Title	Assistant Lecturer	**Module Leader's Qualification**	Master
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	1/06/2023	**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. Students will learn occupational safety in workshops and how to acts in the event of an electric shock. 2. Student will learn types of electrical conductors and methods of electrical installation. 3. Student will learn how use the contactor in some practical application. 4. Studying types of capacitors, inductances, semicondctors.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Principles of industrial security and occupational safety within the electricity workshops. 2. Dimensional measuring devices (MICROMETER). 3. characteristics of good installations, Types of electrical installations. 4. Practical electrical installation. 5. What is the electric coils, The different types of capacitor 6. Examine the types of semiconductors. 7. Instruct the student on how to design electronic circuits.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A – Occupational Safety Learn about safety principles in electrical shops and how to act when a shock occurs.[6hr] Part B – Tools

	Learn about tools used in workshops and how to use a micrometer to measure the diameter of conductors.[6hr] Part-C- Electrical installations[18hr] Methods of electrical installations and how to connect the contactors Part-D-Electronics:[15hr] Types of capacitors , semiconductors (Diodes, transistors), Electronic circuits.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1- Understanding: Occupational safety, methods of installations. 2-Practical experience: Installation, micrometers, electronic circuits.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	102	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	10% (10)	5 and 10	LO #1, #2 and7
	Assignments	4	10% (10)	2,5,8 and 12	LO #3, #4 and #6
	Seminars	2	10% (10)	Continuous	All
	Report	6	10% (10)	2 - 12	LO #3, #4 and #6, #7
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #7
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Lab 1:Principles of industrial security and occupational safety within the electricity workshops, general safety rules and protection against electric shock.
Week 2	Lab 2: Learn about the tools used in electrical work shops.
Week 3	Lab 3: Dimensional measuring devices (MICROMETER
Week 4	Lab 4: Electrical installations, Systems conductors insulated, How to equip the house with electric power.
Week 5	Lab 5: characteristics of good installations, Types of electrical installations, Bus-Bar
Week 6	Lab 6: Practical electrical installation(one way switch control lamp, one way switch control two lamps series, one way switch control two lamps parallel).
Week 7	Lab 7:Practical electrical installation (two ways switch control parallel lamps, two lamps parallel with reciprocating control with two way switch, Staircase lamp)
Week 8	Lab 8: : Means of controlling motors (Contactor) The idea of its work and its construction.
Week 9	Lab 9 : Using contactor to operate a three phase motor.
Week 10	Lab 10: Types of fuses used in electrical circuits, the current that each types bears..
Week 11	Lab 11: What is the electric coil, how does it work and what are its types according to the type of cores.
Week 12	Lab 12: The different types of capacitor in terms of the type of insulator used between the plates of the capacitor, the voltage that the capacitor bears, reading capacitor values using different methods.
Week 13	Lab 13: Examine the types of semiconductors (diode, transistor, etc) and knowing the unemployed ones.
Week 14	Lab 14: Instruct the student on how to design electronic circuits on printed board and install electronic components on it (simple circuit)
Week 15	Lab 15: Review.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		Yes
Recommended Texts		No
Websites	https://uotechnology.edu.iq/training/units/kahrabaa/kahrabaminhaj/minhaj1.html http	

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**PHYSICS**	**Module Delivery**	
Module Type	**Basic**	✓ **Theory** ✓ **Lecture**	
Module Code	**EET107**	✓ **Lab** **Tutorial** **Practical** ✓ **Seminar**	
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGx11 1	**Semester of Delivery**	2
Administering Department	**Department of Electrical Engineering Techniques**	**College**	**Northern Technical University** ENGINEERING TECHNICAL COLLEGE/MOSUL
Module Leader	**Dr. Laith Akram**	**e-mail**	**laith.akram@ntu.edu.iq**
Module Leader's Acad. Title	**Assist. Professor**	**Module Leader's Qualification**	**Ph.D**
Module Tutor	**Dhuha Abdulmunem Mohammed**	**e-mail**	**dhuha.abdulmunem@ntu.edu.iq**
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	13/08/2023	**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- Preparing the student to study electrical and electronic physics and the properties of electrical materials and semi-conductors. 2- Understanding the basic principles and physical laws related to the work and functions

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Enable students to understand the basic principles of physics. 2- Solve physics problems using qualitative and quantitative reasoning including sophisticated mathematical techniques. 3- Understanding the scientific and theoretical basis for building circuits and various electronic devices, regardless of their level of development. 4- Identify the atomic and crystal structure of matter. 5- The course aims to prepare students in the next stage to easily accept lessons related to electronics. 6- Enable students to distinguish the properties of different materials such as metals, semiconductors and insulators. 7- The study material includes solved examples and exercises to apply mathematical and computational techniques. 8- Know the basic properties of x-rays. 9- reviewing the basic physics behind x-ray emission techniques. 10- know the characteristics of diodes and transistors. 11- Ability to describe the behavior of special purpose diodes. 12- Ability to analyze PN junctions in semiconductor devices under various conditions.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • Part 1:The atomic and crystal structure of matter. This part deals with the electrons in the atom, how the electron moves in the orbit, and the energy of the electron in the orbit. It also explains the crystalline structure and energy bundle structure and classifies materials into insulators, conductors and semiconductors. • Part 2: Electrical conductivity in semiconductors. Explain electrical conductivity in a pure semiconductor and the mobility of electrons and holes in a semiconductor. • Part 3: P-N junction The positive-negative junction is in thermal equilibrium and the effect of this junction is under forward and reverse bias. • Part 4: characteristics of diodes and transistors. This part deals with the current-voltage relationship of a diode. This chapter includes an explanation of the structure and operation of the transistor. • Part5: X-rays and the basic principle of their generation .reviews the basic physics behind x-ray emission techniques

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1-Hands-on Experiments: Engage students in practical experiments to deepen their understanding of physics principle. 2-Problem-solving Exercises: Include various problem to apply mathmatical techniques in physics. 3-Group Projects: Assign collaborative projects for student. 4-Real-world Applications: Discuss the development in modern different devices and systems. 5-Interactive Discussions: Encourage student participation and critical thinking through open-ended questions. 6-Assessment Variety: Use diverse assessment methods to gauge student understanding. 7-Office Hours and Support: Offer individualized assistance through office hours or online support.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem)	78	**Structured SWL (h/w)**	6.12

الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	10% (10)	3,5, 10	LO #3-5-10
	Assignments	4	10% (10)	2,4,6, 12	LO # 2-4
	seminer	2	10% (10)	7,10	LO#5-12
	Report	8	10% (10)	continouis	LO # All
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-3
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
1	Atomic structure, Electrons in an atom, Electron energy in orbit
2	Electron transfer between orbitals, secondary orbitals
3	Crystal structure, Energy orders in matter, Beam structure of energy
4	Conductive, Semiconducting and Insulating materials
5	Electrical conductivity in conductors, Movement of free electrons in metals, Mobility
6	Semiconductors, Charge carriers, Mechanics of electrical conduction
7	Pure and Impure Semiconductors, Types of Semiconductors, Majority and Minority Carriers
8	Electrical conductivity of a semiconductor, kinetics of electrons and holes in a semiconductor
9	P-n junction in thermal equilibrium, the junction is under the influence of forward and reverse bias
10	X-ray, GENERAL FEATURES, X-ray interaction with matter
11	X-ray spectrometer, The working principle of the x-ray tube
12	Characteristics diode, current-voltage relationship of a diode, diode application
13	Transistor components and function, Current gain of the common base
14	Dielectric material, capacitance, polarity
15	Final Examination.

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
1	Forced on charged bodies

2	**Separation of charges on objects**
3	**Testing the electrical conductivity**
4	**Testing the Electrical Conductivity Of Water**
5	**Examination of conductive and insulating materials**
6	**Testing the Effect Chemical in the Current**
7	**Testing current in electrical circuit**
8	**Testing induction current**
9	**Mid exam**
10	**X-ray experience**
11	**Characteristics diode**
12	**Forward and reverse biasing of the diode**
13	**Characteristics transistor**
14	**review**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**1-**Ben Streetman, Sanjay Banerjee - Solid State Electronic Devices-Prentice Hall (2006). **2-**فيزياء الالكترونات, د.وكاع فرمان محمد, د.مظفر انور النعمة, كلية الهندسة جامعة الموصل,2001.	Yes
Recommended Texts	**1-**P. Brouwer, *Theory of XRF*, Third Edit. Netherlands: PANalytical B.V., 2010.	No
Websites	https://www.academia.edu/36248062/B_Sc_Physics_Electronics_1_ELECTRONICS_Energy_Bands_Theory_in_Solids_Energy_levels	

APPENDIX:

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electric Techniques Engineering

Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Human Rights and Democracy**	**Module Delivery**	
Module Type	**Suplement**	✓ **Theory** **Lecture** **Lab** **Tutorial** **Practical** ✓ **Seminar**	
Module Code	**NTU100**		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level	UGx11 1	**Semester of Delivery**	1
Administering Department	**Department of Electri Techniques Engineering**	**College**	**Northern Technical University Engineering Technical College/Mosul**
Module Leader	**Dr. Bashar N Ahmed**	**e-mail**	.basharnadeem@ntu.edu.iq
Module Leader's Acad. Title	Prof.	**Module Leader's Qualification**	PHD
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	14/06/2023	**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	تهدف الديمقراطية وحقوق الانسان للحفاظ على كرامة الفرد وحقوقه الأساسية وتعزيزها كما تحقيق العدالة الاجتماعية وتشجيع التنمية الاقتصادية والاجتماعية للمجتمع وتماسكه فضلا عن توطيد الأمان الوطني وإرساء مناخ مؤات للسلام الدولي وذلك لان حقوق الانسان والديمقراطية مرجعاً أساسياً للجميع لحماية حقوق الإنسان؛ وهي توفر بيئة لحماية حقوق الإنسان وإعمالها إعمالاً فعلياً. واليوم، بعد مضي قترة على تحقيق الديمقراطية

	في مختلف أنحاء العالم، يبدو أن العديد من النظم الديمقراطية تتراجع. ويظهر أن بعض الحكومات تتعمد إضعاف إجراء عمليات تحقق مستقلة بشأن سلطاتها، والقضاء على أي نقد، وتفكيك الرقابة الديمقراطية وضمان حكمها لمدة طويلة، مع أثر سلبي على حقوق الشعب.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1 - فهم ومعرفة وأدراك حقوقه التي اقرها الله له وللبشر جميعاً وبالتالي فهي هبه وليس مكسب من أحد ولا يحق لأي شخص انتزاعها. 2- يعبر الطالب بأسلوبه الخاص عن هذه الحقوق ويدافع عنها. 3- تعليل الظواهر واعطاء التفسيرات لما يحدث امامه من انتهاك لحقوق الانسان وحرياته من خلال تحديد اوجه النقص او الثغرات الموجودة في ضوء المعلومات المتوفرة لديه 4- فهم اهم النظم السياسية والتي تعد ضمانه لحقوق الانسان وحرياته السياسية ومحاولة تطبيقه على ارض الواقع الا وهو النظام الديمقراطي.
Indicative Contents المحتويات الإرشادية	❖ حقوق الانسان في التاريخ المعاصر والحديث: الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الامم المتحدة (4 ساعات) ❖ حقوق الانسان، تعريفها، اهدافها وحقوق الانسان في الحضارات القديمة وخصوصا حضارة وادي الرافدين (6 ساعات) ضمانات واحترام وحماية حقوق الانسان على الصعيد الدولي: - دور الأمم المتحدة ووكالاتها المتخصصة في توفير الضمانات - دور المنظمات الاقليمية (الجامعة العربية، الاتحاد الأوربي، الاتحاد الافريقي، منظمة الدول الأمريكية، منظمة آسيان) ❖ دور المنظمات الدولية الاقليمية غير الحكومية والرأي العام في احترام وحماية حقوق الانسان (12 ساعة) ❖ المشاكل والمعوقات ونقاشات الطلبة (6 ساعات)

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	-استراتيجية التفكير حسب قدرة الطالب 2-استراتيجية مهارة التفكير العالية 3-استراتيجية التفكير الناقد في التعلم 4-العصف الذهني

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 أسبوعيا	2.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	6	10% (10)	5, 10	LO #1, 2, and 3
	Assignments	6	10% (10)	Continuous	All
	Projects / Lab.	0	0		
	Report	7	10% (10)	5, 10	LO #1, 2, and 4
	Midterm Exam	2 hr	20% (20)	7	LO # 1-3

Summative assessment	**Final Exam**	3 hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	حقوق الانسان، تعريفها، اهدافها **حقوق الانسان في الحضارات القديمة وخصوصا حضارة وادي الرافدين**
Week 2	**حقوق الانسان في الشرائع السماوية مع التركيز على حقوق الانسان في الإسلام**
Week 3	**حقوق الانسان في التاريخ المعاصر والحديث : الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الامم المتحدة**
Week 4	**الاعتراف الاقليمي بحقوق الانسان : الاتفاقية الاوربية لحقوق الانسان 1950 ، الاتفاقية الامريكية لحقوق الانسان 1969 ، الميثاق الافريقي لحقوق الانسان 1981 ، الميثاق العربي لحقوق الانسان 1994**
Week 5	**حقوق الانسان في التاريخ المعاصر والحديث : الاعتراف الدولي بحقوق الانسان منذ الحرب العالمية الأولى وعصبة الامم المتحدة**
Week 6	**حقوق الانسان في الدساتير العراقية بين النظرية والواقع**
Week 7	**حقوق الانسان الاقتصادية والاجتماعية والثقافية و حقوق الانسان المدنية والسياسية**
Week 8	**حقوق الانسان الحديثة : الحقائق في التنمية ، الحق في البيئة النظيفة ، الحق في التضامن ، الحق في الدين**
Week 9	ضمانات احترام وحماية حقوق الانسان على الصعيد الوطني ، الضمانات في الدستور والقوانين **الضمانات في الرقابة الدستورية ، الضمانات في حرية الصحافة والرأي العام ، دور المنظمات غير الحكومية في احترام وحماية حقوق الانسان**
Week 10	ضمانات واحترام وحماية حقوق الانسان على الصعيد الدولي : - دور الأمم المتحدة ووكالاتها المتخصصة في توفير الضمانات - دور المنظمات الاقليمية (الجامعة العربية ، الاتحاد الأوربي ، الاتحاد الافريقي ، منظمة الدول الأمريكية ، منظمة آسيان) **دور المنظمات الدولية الاقليمية غير الحكومية والرأي العام في احترام وحماية حقوق الانسان**
Week 11	**مصطلح الديمقراطية ، نشأته، دلالته، تاريخ الديمقراطية.**
Week 12	**الاسلام والديمقراطية ومساوئ الحكم الاستبدادي .**
Week 13	**الانتقادات الموجهة للديمقراطية، ومحاسن النظام الديمقراطي.**
Week 14	**الأنظمة الديمقراطية في العالم/الديمقراطية في العالم الثالث/ المشاكل التي تواجه البلدان العربية في التحول الديمقراطي**
Week 15	**الامتحان النهائي**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	حقوق الانسان والديمقراطية – المفاهيم والمرتكزات للدكتور سماح مهدي العلياوي والدكتور سلمان كاظم البهادلي	Yes
Recommended Texts	الديمقراطية وحقوق الانسان في الاسلام للدكتور راشد الغنوشي	No
Websites	https://www.neelwafurat.com https://studies.aljazeera.ne	

APPENDIX:

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**English Language**	**Module Delivery**	
Module Type	**Suplement**	✓ **Theory** ✓ **Lecture** **Lab** **Tutorial** **Practical** **Seminar**	
Module Code	**NTU101**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Module Level	UGx11 1	**Semester of Delivery**	1
Administering Department	**Department of Electrical Engineering Techniques**	**College**	**Northern Technical University Engineering Technical College/Mosul**
Module Leader	Dr. Ahmed Abdul-Jalil Abdullah	**e-mail**	ahmedalkarakchi@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	14/06/2023	**Version Number**	1.0

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	**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	Unit one: Introduce yourself and others using am/are/is and my/your. Practice saying hello and goodbye in different situations. Unit two: Talk about your hobbies, interests and activities using he/she/they and his/her. Practice asking and answering questions. Unit three: Describe yourself and others using adjectives and nouns. Practice giving personal information. Unit four: Talk about your family and friends using possessive adjectives, possessive 's and has/have. Practice describing relationships and appearance. Unit five: Talk about your daily routine and habits using present simple with I/you/we/they, a and an. Practice telling the time and date. Unit six: Talk about your work or school life using present simple with he/she, questions, negatives and adverbs of frequency. Practice expressing likes and dislikes. Unit seven: Talk about your favorite things using question words, pronouns and this/that. Practice making comparisons and preferences. Unit eight: Talk about your home and neighborhood using there is/are and prepositions of place. Practice describing location and giving directions. Unit nine: Talk about your past experiences using was/were born and past simple with irregular verbs. Practice telling stories and biographies. Unit ten: Talk about your recent holidays or events using past simple with regular and irregular verbs, questions, negatives and ago. Practice narrating events in chronological order. Unit eleven: Talk about your abilities and skills using can/can't and adverbs. Practice making requests and offers. Unit twelve: Talk about your shopping habits and needs using some/any, like/would like and thank you. Practice ordering food and buying things.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Unit one: Student will be able to introduce himself and others in a polite and friendly way using basic grammar and vocabulary. Unit two: Student will be able to talk about his hobbies, interests and activities in simple sentences using subject pronouns and possessive adjectives. Unit three: Student will be able to describe himself and others using adjectives and nouns in positive and negative sentences. Unit four: Student will be able to talk about his family and friends using possessive adjectives, possessive 's and has/have in statements and questions. Unit five: Student will be able to talk about his daily routine and habits using present simple with I/you/we/they, a and an in affirmative and negative sentences. Unit six: Student will be able to talk about his work or university life using present simple with he/she, questions, negatives and adverbs of frequency in different contexts. Unit seven: Students will be able to talk about their favorite things using question words, pronouns and this/that in short answers and comparisons. Unit eight: Students will be able to talk about their home and neighborhood using there is/are and prepositions of place in descriptions and directions. Unit nine: Student will be able to talk about his past experiences using was/were born and past simple with irregular verbs in statements and questions. Unit ten: Student will be able to talk about his recent holidays or events using past simple with regular and irregular verbs, questions, negatives and ago in narratives and sequences. Unit eleven: Student will be able to talk about his abilities and skills using can/can't and adverbs in statements and questions. Student will also be able to make requests and offers using can/can't. Unit twelve: Students will be able to talk about their shopping habits and needs using some/any, like/would like and thank you in statements and questions. Student will also be able to order food and buy things using polite language.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • Part A – General meeting and introduction. This section provides an overview of Hello, Am/Are/Is, My/Your, This is with Practice in Work, Your World, He/She/They, His/Her, Questions. [6 hrs] • Part B Every day. Vocabulary related to different topics. Possessive adjectives, Possessive's, Has/have, Adjective+ noun. Present simple I/you/we/they, A and an [10 hrs] • Part C Time and event. Present simple, Questions and negatives, Adverbs of frequency. Question words, Pronouns, This and that. There is/are…, Prepositions [8 hrs] • Revision problem classes [4 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	**Building relationships and appreciating their culture:** Teachers should take the time to learn about their students' cultures and backgrounds. **Using actions and gestures to show what to do:** Teachers can use nonverbal cues such as pointing, gesturing, and facial expressions to help students understand what they are trying to communicate. **Planning lessons and using language objectives:** Teachers should plan lessons that are appropriate for their students' language proficiency levels. **Provide opportunities for students to work in pairs or small groups:** Working in pairs or small groups can help students who are learning English as a new language practice their speaking skills in a less intimidating environment. **Use visuals such as pictures, diagrams, and graphic organizers:** Visuals can help students who are learning English as a new language understand complex concepts more easily. **Provide opportunities for students to use technology:** Technology can be used to support English-language learners by providing access to online resources such as videos, podcasts, and interactive activities. **Encourage students to read widely:** Reading widely can help students who are learning English as a new language improve their vocabulary and comprehension skills 2.

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 أسبوعيا	2.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.46
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**	4	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	8	10% (10)	2, 12	LO # 3-12
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-8
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
1	Unit one: hello, Am/are/is, my/your, This is with practice in work.
2	Unit two: your world, He/she /they, his/her, Questions.
3	Unit three: all about.
4	Unit four: family and friends, Possessive adjectives, Possessive's, Has/have, Adjective+ noun.
5	Unit Five: the way I live, Present simple I/you /we /they, A and an.
6	Unit six: every day, Present simple he/she, Questions and negatives, Adverbs of frequency.
7	Unit seven: my favorites, Question words, Pronouns, This and that
8	Unit eight: where I live, There is /are..., Prepositions
9	Unit nine: times past, Was /were born, Past simple -irregular verbs.
10	Unit ten: we had a great time!, Past simple regular & irregular, Question, Negatives and Ago.
11	Unit eleven: Can /can't, Adverbs, Requests, I can do that.
12	Unit twelve: please I'd like..., Some and any, Like and would like and thank you.
13	Unit thirteen: here and now, Present continuous, Present simple & present continuous.

14	Unit fourteen: it's time to go!, Future plans, Revision writing email and informant letter.
15	Final Examination

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	New Headway Beginner Fourth Edition	Yes
Recommended Texts	New Headway Beginner Workbook	Online
Websites	https://elt.oup.com/student/headway/beg/?cc=global&selLanguage=en	

APPENDIX:

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Computer Principle**	**Module Delivery**	
Module Type	**Basic**	✓ **Theory**	
Module Code	**NTU102**	**Lecture** ✓ **Lab**	
ECTS Credits	**3**	**Tutorial** ✓ **Practical**	
SWL (hr/sem)	**75**	✓ **Seminar**	
Module Level	UGx11 1	**Semester of Delivery**	2
Administering Department	**Department of Electrical Engineering Techniques**	**College**	**Northern Technical University Engineering Technical College/Mosul**
Module Leader	Hiba-Alla Tariq	**e-mail**	hibatallahtariq@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	MSC
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	14/06/2023	**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-Understanding the Fundamentals: The primary objective of a computer principal course is to provide students with a solid foundation in the fundamental principles of computer work. This includes concepts such as Hardware, Software and new technologies in computer area. 2-Analyzing the work of Components: Students will learn how does computer parts work and the parts of each of them. They will understand their behavior in normal condtion and be able to calculate their effects on the overall performance of work. 3-Computer Specifications: Students will become familiar with important properties of each computer components and be able to install the proper hardware/software for their computer. 4-Laboratory Skills: The course includes hands-on laboratory experiments to provide students with practical experience of using Microsoft Office progmars suck as Word, PowerPoint, Excel and Access.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-Fundamental Knowledge: Students will acquire a solid understanding of the fundamental concepts and principles of computer hardware components, including CPU, RAM, Storage Devices, Input and output devices. 2-Copmputer performance Skills: Students will be able to buy their own PC/Laptop in a manner that allow to use the full capability of the computer with less price. 3-Computer Software Skill: Students will be able to install computer drivers and the essential programs. 4-Through hands-on laboratory experiments, students will be able to write reports, homework and posters by using Word program, on the other hand they will be able to prepare presentations using PowerPoints program. Also, they will be able to use Excel and Access programs to solve equations and draw curves.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • Part A – Introduction to Computer. Constituent the field of using computer, types of computers and their differences, The advantages and disadvantages of computers [8 hrs] • Part B Computer Components. CPU, RAM, Storage Devices, Input and Output devices [14 hrs] • Part C Office programs . Microsoft Word, Microsoft PowerPoint, Microsoft Excel and Microsoft Access. [32 hrs] • Revision problem classes [6 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1-**Hands-on Experiments:** Engage students in practical experiments to deepen their understanding of circuits. 2-**Videos:** seeing videos for best understanding of components work. 3-**Group Reports:** Assign collaborative reports for new computer technology. 4-**Interactive Discussions:** Encourage student participation and critical thinking through open-ended questions. 5-**Assessment Variety:** Use diverse assessment methods to gauge student understanding. 6-**Office Hours and Support:** Offer individualized assistance through office hours or online support.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.1
Total SWL (h/sem)	125		

الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	10% (10)	3,7, 10	LO #1, 2, 4
	Assignments	4	10% (10)	3, 5,9,12	LO # 3, 4
	Projects / Lab.	1	10% (10)	7	Lo#2,3,4
	Report	6	10% (10)	2, 5,7,10,11,12	CONTINOUIS
Summative assessment	Midterm Exam	2 hr	10% (10)	10	LO # 1-3
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
1	Introduction to computer
2	Hardware and Software
3	Central Processing Unit
4	Memory
5	Storage Devices
6	Motherboard
7	Operating System
8	Windows Desktop
9	Installing and removing programs
10	Utility programs
11	Internet
12	Cloud services
13	Artificial Intelligence Websites and Programs
11	Artificial Intelligence Websites and Programs (Contd.)
12	Virtual Reality
13	Augmented Reality
14	Smart Websites
15	Final Examination

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
1	**Lab 1: Introduction to Microsoft Office Program**
2	**Lab 2: File and Home tabs in Microsoft Word**
3	**Lab 3: Insert tab in Microsoft Word**
4	**Lab 4: Desing and Layout tabs in Microsoft Word**
5	**Lab 5: Home and Insert tab in Microsoft PowerPoint**
6	**Lab 6: Transitions tab in Microsoft PowerPoint**
7	**Lab 7: Animations tab in Microsoft PowerPoint**
8	**Lab 8: Home tab in Microsoft Excel**
9	**Lab 9: Insert tab in Microsoft Excel**

10	**Lab 10: Writing formulas in Microsoft Excel**
11	**Lab 11: Creating tables in Microsoft Access**
12	**Lab 12: Creating forms in Microsoft Access**
13	**Lab 13: Creating reports in Microsoft Access**
14	**Lab 14: Review**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Computer Work	Yes
Recommended Texts	Fundamentals of Computer Work	No
Websites	Youtube	

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electric Techniques Engineering

Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Arabic Language**	**Module Delivery**	
Module Type	**Suplement**	✓ **Theory** **Lecture** **Lab** **Tutorial** **Practical** ✓ **Seminar**	
Module Code	**NTU103**		
ECTS Credits	**2**		
SWL (hr/sem)	**50**		
Module Level	UGx11 1	**Semester of Delivery**	2
Administering Department	**Department of Computer Techniques Engineering**	**College**	**Northern Technical University Engineering Technical College/Mosul**
Module Leader	**Dr. Bashar N. Ahmed**	**e-mail**	basharnadeem@ntu.edu.iq
Module Leader's Acad. Title	Prof.	**Module Leader's Qualification**	PHD
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	14/06/2023	**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	ينشأ الطالب على حب اللّغة العربيّة لغة القرآن الكريم. التعرّف على مواطن الجمال في اللّغة العربيّة وآدابها، وأن يكتسب الطالب القدرة على دراسة فروع اللّغة العربيّة. تعريف الطالب بألفاظ اللّغة العربيّة الصحيحة وتراكيبها وأساليبها السليمة بطريقة مشوقة وجذابة. أن يستغل الطالب وقت فراغه بالقراءة والاطلاع والرجوع إلى المكتبة . تمكين الطالب من القراءة الصحيحة، وأن يكتسب القدرة على استعمال اللغة استعمالاً صحيحاً في الاتّصال مع الآخرين؛ كالسرعة وجودة الإلقاء وحسن التعبير، وتعويده حسن الاستماع لما يسمع مما ييسّر له أموره ويعينه على قضاء حوائجه. تنمية الذوق الأدبي لدى الطالب حتى يدرك النواحي الجمالية في أساليب الكلام ومعانيه وصوره. تعويد الطالب التعبيرات السليمة الواضحة عن أفكاره وما يقع تحت حواسه نطقاً وكتابة وحسن استخدام علامات الترقيم. تنمية قدرة ومهارة الطالب الإملائية والخطية بحيث يستطيع الكتابة الصحيحة من جميع النواحي. إيقاظ وعي الطالب لإدراك شرف الكلمة وتوجيهه؛ للمحافظة على طهارتها ونقائها حتى لا تستعمل إلا في الخير. مساعدة الطالب على فهم التراكيب المعقدة والأساليب الغامضة .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1.معرفة القواعد النحوية والصرفية. 2- التعريف بأبرز المصنفات اللغوية والأدبية. 3- تحديد المشكلات اللغوية والأدبية لدى الدارسين. 4- القراءة المعاصرة للنصوص اللغوية والأدبية. 5- قراءة النصوص الأدبية وكتابتها وفق المعايير النحوية والصرفية 6- تعزيز الثقة بالنفس والجرأة والفصاحة 7- المنافسة والتميز في سوق العمل.
Indicative Contents المحتويات الإرشادية	❖ مقدمة عن الأخطاء اللغوية التاء المربوطة والتاء المفتوحة (4 ساعات) ❖ تطبيقات الأخطاء اللغوية الشائعة واقسام الكلام (6 ساعات) ❖ همزة الوصل والقطع والهمزة المتوسطة والمتطرفة قواعد كتابة الالف الممدودة والمقصورة الحروف الشمسية والقمرية والضاد والظاء (12 ساعة) ❖ المشاكل والمعوقات ونقاشات (6 ساعات)

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	-1.تبسيط المعلومات وتنظيمها -2.تسهيل عملية استرجاع المعلومات -3 ربط المفاهيم الجديدة بالمكتسبات السابقة -4.إيجاد العلاقة بين المفاهيم 5 - تسهيل تذكر المعارف والمعلومات

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 أسبوعيا	2.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Continuous		All			
	Quizzes	3	10% (10)	5, 10	LO #1, 4 and 7

Formative assessment	**Assignments**	3	10% (10)	Continuous	All
	Projects / Lab.	2	10% (10)	Continuous	All
	seminar	2	10% (10)	3,8	LO,#1,2 ,#4and #5
Summative assessment	**Midterm Exam**	1 hr	10% (20)	7	LO # 1-7
	Final Exam	3 hr	50% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	**مقدمة عن الأخطاء اللغوية**
Week 2	**التاء المربوطة والتاء المفتوحة**
Week 3	**همزة الوصل والقطع**
Week 4	**الهمزة المتوسطة والمتطرفة**
Week 5	**قواعد كتابة الالف الممدودة والمقصورة**
Week 6	**الحروف الشمسية والقمرية**
Week 7	**الضاد والظاء**
Week 8	**العـــدد**
Week 9	**المفاعيل**
Week 10	**أقسام الكلام**
Week 11	**معاني حروف الجر**
Week 12	**تطبيقات الأخطاء اللغوية الشائعة**
Week 13	**النون والتنوين**
Week 14	**مقدمة عن الأخطاء اللغوية**
Week 15	**الامتحان النهائي**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	الكامل في اللغة والادب لابي عباس المبرد	Yes
Recommended Texts	أخطاء لغوية شائعة لخالد بن هلال بن ناصر العبري	No
Websites	https://www.eshamel.ne https://www.ektebsa7.com	

APPENDIX:

Ministry of Higher Education and
Scientific Research – Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية					
Module Title	**DC Generators**			**Module Delivery**	
Module Type	**Core**			☒ **Theory**	
Module Code	**EET200**			✓ ☐ **lecture**	
ECTS Credits	**5**			✓ ☒ **Lab**	
SWL (hr/sem)	**125**			✓ ☐ **Tutorial** ✓ ☒ **Practical** ✓ ☒ **Seminar**	
Module Level	UGx11 2		**Semester of Delivery**	1	
Administering Department	Electrical Engineering Techniques		**College**	Northern Technical University Engineering Technical College/Mosul	
Module Leader	Mohammed Ahmed Ibrahim		**e-mail**	Mohammed.a.ibrahim1981@ntu.edu.iq	
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	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 objectives of DC generators include: 1. To convert mechanical energy into electrical energy: DC generators are designed to convert mechanical energy, such as that produced by a turbine or an engine, into electrical energy. 2. To maintain a constant voltage output: DC generators are designed to maintain a constant voltage output, regardless of changes in the load or speed of the generator. 3. To provide a reliable source of power: DC generators are designed to provide a reliable source of power for a variety of applications, including industrial, commercial, and residential use. 4. To be efficient: DC generators are designed to be efficient, converting as much of the mechanical energy into electrical energy as possible.

	5. To be durable and long-lasting: DC generators are designed to be durable and long-lasting, with a lifespan of several decades or more. 6. To be easy to maintain: DC generators are designed to be easy to maintain, with simple maintenance procedures and readily available replacement parts. 7. To meet safety standards: DC generators are designed to meet safety standards for electrical equipment, including grounding and insulation requirements.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of this module, learners should be able to: 1. Explain the basic operating principles of DC generators, including the role of the commutator and brushes. 2. Describe the different types of DC generators, including shunt, series, and compound generators. 3. Calculate the output voltage and current of a DC generator, based on its design parameters and load characteristics. 4. Analyze the performance characteristics of a DC generator, including its efficiency, voltage regulation, and speed control. 5. Identify common maintenance procedures for DC generators, including cleaning, lubrication, and inspection of electrical components. 6. Evaluate the safety risks associated with working with DC generators, and implement appropriate safety measures to prevent accidents or injuries. 7. Apply knowledge of DC generators to solve practical problems in industrial, commercial, or residential settings.
Indicative Contents المحتويات الإرشادية	1. Introduction to DC generators: basic principles, construction, and working. 2. Types of DC generators: shunt, series, and compound generators. 3. Voltage and current output calculations of DC generators. 4. Performance characteristics of DC generators: efficiency, voltage regulation, and speed control. 5. Maintenance procedures for DC generators: cleaning, lubrication, and inspection of electrical components. 6. Safety measures for working with DC generators: risk assessment, protective gear, and emergency procedures. 7. Applications of DC generators in various industries: power generation, transportation, and telecommunications.

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	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.13

Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	5 and 10	LO #1, #2 and 7
	Assignments	7	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	8	10% (10)	Continuous	All
	Report	7	10% (10)	13	LO #5, #5
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)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Basic construction of electrical machines
Week 2	Construction of D.C. generator
Week 3	General features of D.C. armature windings
Week 4, 5, 6	Types of D.C. armature windings
Week 7	Function of commutator and brushes, e.m.f equation of D.C. generator
Week 8	Armature reaction and commutation
Week 9, 10	Types of D.C. generators
Week 11, 12	Losses in D.C. machines
Week 13	D.C. generator characteristics
Week 14	Parallel operation of D.C. generators
Week 15	Final Examination
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Prime Mover
Week 2	Separately Excited DC Generator
Week 3	Series DC Generator
Week 4	Shunt DC Generator
Week 5	Compound DC Generator

Week 6	**Separately Excited DC Generator of Open Circuit Characteristics (O.C.C Test)**
Week 7	**Shunt Excited DC Generator of Open Circuit Characteristic**
Week 8	**Prime Mover**
Week 9	**Separately Excited DC Generator**
Week 10	**Series DC Generator**
Week 11	**Shunt DC Generator**
Week 12	**Compound DC Generator**
Week 13	**Separately Excited DC Generator of Open Circuit Characteristics (O.C.C Test)**
Week 14	**Shunt Excited DC Generator of Open Circuit Characteristic**
Week 15	**Prime Mover**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	ELECTRICAL TECHNOLOGY B.L. THERAJA A.K. THERAJA	Yes
Recommended Texts	Electric Machinery and Transformers Bhag S. Guru	No
Websites	https://www.amazon.com/Electric-Machinery-Transformers-Electrical-Engineering/dp/0195138902	

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Electronic Essentials**	**Module Delivery**	
Module Type	**Core**	✓ **Theory**	
Module Code	**EET201**	**Lecture** ✓ **Lab**	
ECTS Credits	**5**	**Tutorial** ✓ **Practical**	
SWL (hr/sem)	**125**	✓ **Seminar**	
Module Level	UGx11 2	**Semester of Delivery**	1

Administering Department	**Department of Electrical Engineering Techniques**	**College**	**Northern Technical University Engineering Technical College/Mosul**
Module Leader	Ahmed Ghazi Abdullah	**e-mail**	ahmed.g.alhealy@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Master
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	14/06/2023	**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- Understanding the Basics: The primary objective of the Electronic Basic course is to provide students with a solid foundation in the basic principles of how electronic circuits work and how they are made from semiconductor materials. 2-Analyzing Circuit Components: Students will understand how the p-n junction is formed and how it is manufactured, as well as understanding and analyze the electronic circuits in which the diode is included, like as rectifier circuit , clipping circuit ,clamper circuit, and others. the student will also learn the principle of operation of BJT transistor 3-Circuit Laws and Theorems: Students will become familiar with important laws and theorems governing the diode and transistor applications circuits. They will gain proficiency in applying these principles to solve complex circuit problems. 4-Circuit Simulation and Design: The course may involve introducing students to circuit simulation software. They will learn how to use simulation tools to analyze and design electronic circuits, verify their calculations, and gain practical insights into circuit behavior. 5-Problem-Solving Skills: An important objective is to develop students' problem-solving skills in the context of electronic circuits. They will learn how to analyze circuit diagrams, formulate appropriate strategies, and apply their knowledge to solve a variety of circuit problems efficiently. 6-Laboratory Skills: The course includes hands-on laboratory experiments to provide students with practical experience in building, testing, and troubleshooting electronic circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-Fundamental Knowledge: Students will acquire a solid understanding of the fundamental concepts and principles of electronic circuits that's contain diode and transistor. 2-Circuit Analysis Skills: Students will develop the ability to analyze electronic circuits such as rectifier circuit , clipping circuit , clamper circuits, Zener circuits , and amplifier circuits 3-Circuit Design and Simulation: Students will be able to design and simulate electronic circuits, using appropriate components and considering design constraints. They will learn to use circuit simulation software to verify their designs, analyze circuit performance, and troubleshoot circuit issues. 4-Laboratory Skills: Through hands-on laboratory experiments, students will develop practical skills in building, testing, and troubleshooting electronic circuits. They will become proficient in using measuring instruments, interpreting experimental data, and ensuring safety precautions while working with electrical circuits. 5-Critical Thinking and Analysis: The course will promote critical thinking and analytical skills among students. They will learn to evaluate different circuit solutions, analyze circuit behavior, and make informed decisions based on their understanding of electronic circuits. By the end of the course, students will possess a comprehensive knowledge of electronic circuits, enabling them to analyze, design, and troubleshoot a wide range of electrical circuits. They will be prepared for further studies in electrical engineering or related fields and equipped with skills that can be applied in professional practice.
Indicative Contents	Indicative content includes the following:

المحتويات الإرشادية	• Part A – semiconductor device. The composition of the atoms and materials used in the manufacture of semiconductor materials and the specifications of each material. In addition to that, how to form the p-type semiconductor and the N-type semiconductor, and how to manufacture the diode .[12 hrs] • Part B - diode circuits. Rectifier circuits, clipping circuits, clamper circuits. Multiplier circuits. [16 hrs] • Part C - zener and transistor circuit zener regulator circuits, the LED circuit, the Photo diode circuit. And bjt circuits. [26 hrs] • Revision problem classes [6 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1-**Hands-on Experiments:** Engage students in practical experiments to deepen their understanding of circuits. 2-**Simulation Software:** Use circuit simulation software for virtual circuit design and analysis. 3-**Problem-solving Exercises:** Include various problem-solving exercises to apply circuit analysis techniques. 4-**Group Projects:** Assign collaborative projects for circuit design and construction. 5-**Real-world Applications:** Discuss practical applications of circuits in different devices and systems. 5-**Interactive Discussions:** Encourage student participation and critical thinking through open-ended questions. 6-**Conceptual Understanding:** Focus on intuitive understanding alongside mathematical analysis. 7-**Assessment Variety:** Use diverse assessment methods to gauge student understanding. 8-**Office Hours and Support:** Offer individualized assistance through office hours or online support.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	47	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	78	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	5, 10	LO #1, 2, 5
	Assignments	8	10% (10)	2, 12	LO # 3, 4
	Projects / Lab.	8	10% (10)	Continuous	All
	Report	7	10% (10)	2, 12	LO # 5
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-5
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
1	Semiconductors materials

2	PN junction, introduction and characteristics
3	Diode applications , clipping circuit
4,5	Clamper circuit , voltage doubler ,voltage tripler and voltage quadreplier
6,7	half wave rectifier and full wave bridge rectifier
8	Filter circuits for half wave and full wave
9	Center-tapped rectifier
10, 11	Special purpose diodes (Zener diode , photo diode, LED)
12	Introduction to Bipolar Junction Transistors (BJT)
13	BJT circuit analysis and characteristics
14	Field effect transistor FET (Introduction and characterstics)
15	Final Examination

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
1	Lab 1: Diode characteristics
2	Lab 2: Clipping circuits
3	Lab 3: Clamper circuits
4	Lab 4: Voltage doubler
5	Lab 5: Voltage tripler and quadrepier
6	Lab 6: Rectifier circuits , half wave rectifier , full wave bridge rectifier
7	Lab 7: Half wave rectifier and full wave bridge rectifier with filter
8	Lab 8: Center taped rectifier
9	Lab 9: Zener diode characteristics
10	Lab 10: Zener diode regulation and clipping
11	Lab 11: Bipolar Junction Transistors (BJT) characteristics
12	Lab 12: BJT small signal amplifier
13	Lab 13: Field effect transistor FET characteristics
14	Lab 14: Review

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas L. Floyd "Electronic Devices Conventional Current Version"	Yes
Recommended Texts	Robert L. Boylestad , Louis Nashelsky "Electronic Devices and Circuit Theory"	No
Websites		

APPENDIX:

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical engineering Techniques

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**electrical Circuits Analysis**	**Module Delivery**	
Module Type	**Core**	✓ **Theory**	
Module Code	**eet202**	**Lecture** ✓ **Lab**	
ECTS Credits	**5**	**Tutorial** ✓ **Practical**	
SWL (hr/sem)	**125**	✓ **Seminar**	
Module Level	UGx11 2	**Semester of Delivery**	1
Administering Department	**Department of electrical Engineering Techniques**	**College**	**Northern Technical University** ENGINEERING TECHNICAL COLLEGE/MOSUL
Module Leader	Sanabel muhson mohammed ali	**e-mail**	Sanabel.m.mohammed@ntu.edu.iq
Module Leader's Acad. Title	ASS. Prof	**Module Leader's Qualification**	master
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	13/06/2023	**Version Number**	1.0

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	**Advanced electrical Circuits analysis**	**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	**Students will learn the principle of** 1-transient AC and DC circuit 2- design the circuits which used to power electronics, motors, 3-and delay circuits applications. 4-Learn how to calculate and analyze voltage and current phasors in AC circuits, including their amplitudes, phases, and frequency relationships. 5-Explore the behavior and characteristics of AC circuit elements, such as resistors, capacitors, and inductors, and understand their roles in AC circuit analysis. 6-Investigate the concept of impedance in AC circuits and its relationship to resistance, reactance, and frequency. 7-Study the principles of AC power and power factor, including real power, reactive power, apparent power, and power factor correction.

	8- Gain a comprehensive understanding of three-phase AC systems, including the generation, transmission, and distribution of power in three-phase circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. 1-Knowledge Acquisition: Students will acquire a comprehensive understanding of the fundamental concepts and principles of Comparison of AC and DC transient circuit 2-Circuit Design and Analysis: Students will gain the ability to design and analyze Resonance A.c and Dc circuit heir knowledge of impedance, power factor, and component characteristics. They will learn to calculate voltage and current magnitudes, phase differences, and power relationships in AC circuits. 3- Quality Factor, Bandwidth and Half-Power Frequency in resonance circuits Students will be able to construct and interpret band width to visualize and analyze the behavior of voltages and currents in resonance circuits. 4-Three-Phase Systems: Students will acquire understanding of three-phase AC systems, including balanced and unbalanced configurations. Laboratory Skills: Students will develop practical skills in using circuit simulation software and laboratory equipment to design, analyze, and verify the performance of TRANSIENT AC and DC circuits.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • Part A – Definitions, units, and transient applications **General concept of UNITS and some application of transient system** [3 hrs] • Part B – Unit step forcing function **General concept of applying UNIT step function for the electrical circuit** [4 hrs] • Part C Transient analysis in DC circuit. Source free and step response RL and RC circuits in DC system. Comoplet response of a series and a parallel RLC circuits in DC system. [10 hrs] • Part D Single - phase of AC Circuits. AC in resistive circuits, current and voltage in inductive circuits, current and voltage in capacitive circuits. Concept of complex impedance and admittance, AC series and parallel circuits. RL, RC and RLC circuit analysis and phasor representation. [14 hrs] • Part E resonance of AC Circuits Resonance in A.c Series and parallel RLC Circuit ,Quality Factor (Q), Bandwidth and Half-Power Frequency in resonance circuits,Tank circuit and dynamic impedance in RLC circuit [14 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1-Conceptual Understanding: Explain transient AC and DC circuits, introduce the concept of complete response of RL ,RC circuit, and highlight the significance of RLC series and parallel circuit and phases in AC circuits. 2-Mathematical Foundations: Provide a solid mathematical foundation for transient DC and AC circuits. Teach students the use of phasor notation to analyze AC circuits. 3-Problem-Solving Skills: Dedicate adequate time to problem-solving exercises and examples. 4-Laboratory Experiments: Incorporate laboratory experiments to reinforce theoretical concepts. Allow students to build and analyze AC circuits using oscilloscopes, function generators, and AC power sources. 5-Simulation Tools: Introduce simulation MATLAB software tools that allow students to simulate circuits and observe their behavior.

	6-Review and Assessment: Regularly review key concepts and provide formative assessments to gauge students' understanding. Offer constructive feedback on their performance to help them identify areas for improvement.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.133
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	3-10	LO #3, 2,4 ,5,7 and 10
	Assignments	6	10% (10)	2-12	LO # 3, 4, 6 and 8
	Projects / Lab.	2	10% (10)	3,7	LO # 3-7
	Report	16	10% (10)	continuous	LO # 5, 8 and 11
Summative assessment	**Midterm Exam**	1 hr	10% (10)	8	LO # 1-8
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	**Definitions, units, and transient applications**
Week 2	**Unit step forcing function.**
Week 3,4	**Source free series and parallel RLC circuits in DC system.**
Week 5	**Comoplet response of a series and a parallel RLC circuits in DC system.**
Week 6	Resonance in A.c Series and parallel RLC Circuit
Week 7	**Quality Factor (Q), Bandwidth and Half-Power Frequency in resonance circuits**
Week 8	**Tank circuit and** dynamic impedance **in RLC circuit**
Week 9,10	**Sinusoids, phasors diagram for circuit elements.**

Week 11	Balanced three-phase circuits: (wye –wye, delta-delta, connections).
Week 12	Balanced three-phase circuits: (wye-delta, delta-wye connections).
Week 13,14	**Unbalanced three phase system**
Week 15	**Final Examination**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Lab 1: Introduction to Matlab Model Power circuit design
Week 2	Lab 2: unit step forcing function
Week 3	Lab 3: Simulation of free source series RLC (over ,critical, under damped)
Week 4	Lab 4: Simulation of free source parallel RLC (over ,critical, under damped)
Week 5	Lab 5: Simulation of complete response of series and parallel RLC (over, critical, under damped)
Week 6	Lab 6: simulation of the Resonance in series RLC Circuit
Week 7	Lab 7: simulation of the Resonance in parallel RLC Circuit
Week 8	Lab 8: simulation of the sinusoidal steady state system
Week 9	Lab 9: simulation The sinusoidal transient analysis
Week 10	Lab 10:simulation of three phase wye to wye connection
Week 11	Lab 11:simulation of three phase delta to delta connection
Week 12	Lab 12:simulation of three phase wye to delta connection
Week 13	Lab 13:simulation of three phase unbalanced wye to wye connection
Week 14	Lab 14: Review

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Charles K. Alexander, Matthew N.O. Sdiku Fundamentals of Electrical Engineering, 4th Edition, 2009	Yes
Recommended Texts	Tony R. Kuphaldt، Lessons In Electric Circuits, Volume II - AC 5th edition, 2002	No
Websites	AC circuits https://byjus.com/physics/ac-circuit/	

APPENDIX:

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Engineering Technical College/Mosul
Department of Electrical engineering Techniques

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Sensors**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ✓ **Lecture** ✓ ☒ **Lab** ✓ ☐ **Tutorial** ✓ ☒ **Practical** ✓ ☐ **Seminar**	
Module Code	**EET203**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Module Level	UGx12	**Semester of Delivery**	1
Administering Department	Department Of Electrical Engineering Techniques	**College**	Northern Technical University Engineering Technical College / Mosul
Module Leader	Ahmed Saad Yahya	**e-mail**	ahmed.saad.yahya@ntu.edu.iq
Module Leader's Acad. Title	Assist Lecturer	**Module Leader's Qualification**	M.Sc.
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Scientific Committee Approval Date	14/06/2023	**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	4. To realize the operation principle of several sensors and recognize the key issues in selecting the right instrument. 5. To be acquainted with several types of actuators.

	6. To understand modern signal transmission techniques and relevant standards. 7. To become aware of the sampling theorem, ADC and DAC.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	9. Knowledge of sensors, including types and operation principle. 10. Get to know the principle of Position sensors, their types and uses. 11. Get to know the principle of Temperature Sensors, their types and uses. 12. Apply acquired knowledge to the Acceleration & vibration sensors. 13. Get to know the principle of pressure Sensors. their types and uses. 14. Apply acquired knowledge to the speed sensors. 15. Specify and select appropriate sensors for a wide range of systems and applications. 16. Knowledge of actuators, including types and operation principle. 17. Apply acquired knowledge to the Transmitters. 18. Knowledge of ADC & DAC.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Sensors [16 hrs.] Position measurement • Limit switch o Proximity sensors o Potentiometer o LVDT o Encoders o Stress & strain measurement • Strain gauge o Temperature measurement • Metal strip o RTD o Thermistor o Thermocouple o Acceleration & vibration measurements • Pressure measurement • Speed measurement • Actuators [4 hrs.] Dc motor • Servo motor • Stepper motor • Solenoid • Transmitters [4 hrs.] Current transmitter 0-20 / 4-20 • Voltage transmitter 0-10 • Analog & Digital interfaces [4 hrs.] Sampling theorem • ADC • DAC •

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is interactive learning through the visualization via flow charts, graphic and pictures that helps students to receive the information in a simpler, clear and systematic way. Also, depending on group work by dividing student into small groups of mixed abilities. By doing so, those who have more knowledge of the

	subject can share their knowledge and help their peers understand the topic better. Adapt Inquiry-Based learning to Encouraging learners to ask a lot of questions that does not only motivate students to think more practically but also helps them to become independent learners.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.46
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**	4	10% (10)	2,5,9,12	LO # 1,3, 4, 6 and 7
	Assignments	9	10% (10)	1-12	LO # 1,3, 4, 6 and 10
	Projects / Lab.	10	10% (10)	Continuous	All
	Report	8	10% (10)	2-10	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #8
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction to the sensors (general principles of sensors).
Week 2	Sensors: Limit switch, Proximity sensors.
Week 3	Sensors: Potentiometer, LVDT.
Week 4	Sensors: Encoders, Strain gauge.
Week 5	Sensors: Metal strip, RTD.
Week 6	Sensors: Thermistor, Thermocouple.
Week 7	Sensors: Acceleration sensors.
Week 8	Sensors: vibration sensors.
Week 9	Sensors: Pressure sensors, Speed sensors.
Week 10	Actuators: Dc motor, Servo motor.

Week 11	Actuators: Stepper motor, Solenoid.
Week 12	Transmitters: Current transmitter 4-20 mA & Voltage transmitter 0-10 v
Week 13	Analog & Digital interfaces (Sampling theorem).
Week 14	ADC (Analogue to Digital Converter).
Week 15	DAC (Digital to Analogue Converter).
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Lab 1: Limit switch, Proximity sensors.
Week 2	Lab 2: Potentiometer.
Week 3	Lab 3: Encoders
Week 4	Lab 4: RTD (Resistance Temperature Detector)
Week 5	Lab 5: Thermocouple.
Week 6	Lab 6: Pressure sensor
Week 7	Lab 7: Tachometer
Week 8	Lab 8: Servo motor
Week 9	Lab 9: Stepper motor
Week 10	Lab 10: Solenoid
Week 11	Lab 11: Current transmitter & Voltage transmitter.
Week 12	Lab 12: ADC (Analogue to Digital Converter).
Week 13	Lab 13: DAC (Digital to Analogue Converter).
Week 14	Lab 14: Review

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Introduction to Instrumentation and Measurements, Third Edition, Robert B. Northrop.	No
Recommended Texts	Measurement, Instrumentation and Sensors Handbook.	No
Websites	https://www.udemy.com/course/sensors-sensor-fundamentals/	

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Applied Mathematics	**Module Delivery**	
Module Type	**Basic**	☒ **Theory** ✓ **Lecture** ✓ ☐ **Lab** ✓ ☒ **Tutorial** ✓ ☐ **Practical** ✓ ☐ **Seminar**	
Module Code	**EET204**		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	2	**Semester of Delivery**	1
Administering Department	Electrical Engineering Techniques	**College**	Technical Engineering/Mosul
Module Leader	**Rasha Abd Alnafaa Mohammed**	**e-mail**	Rashana8479@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	MSC
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	14/06/2023	**Version Number**	1

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 applied mathematics curriculum aims to teach the student the principle of mathematics, lows , solve the equations and the electrical circuit.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 19. Definition of differential equation, degree and order 20. Solve five type of ordinary differential equations 21. Laplace transform lows, properities 22. Inverse laplace transform 23. Second order differential equation, Homogenous, Non Homogenous 24. Operations on the vector 25. Types of coordinatees
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Fundamentals of applied mathematics Introduction to basic concepts, functions, ends, vectors, trigonometric and inverse functions, derivatives, applications of derivatives, integration, methods of integration, matrices Part B – Solve equations Fundamental definitions,Solve five type of ordinary differential equations ,Laplace transform lows, properities,Inverse laplace transform,Second order differential equation, Homogenous, Non Homogenous, vectors, coordinatees.

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 .

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	6	10% (10)	5 and 11	LO #1, #2 and #7
	Assignments	12	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report				
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Vectors type ,Addition ,subtraction ,scaller multiplication ,length of vector, Distance formla , compute angle between vectors and convert coordinates
Week 2	Introduction about the ordinary of differential equations ,Types, The order and degree of differential equations ,Separable of ordinary of differential equations
Week 3	Homogenous and Non Homogenous of ordinary of differential equations
Week 4,5	Exact and not exact of ordinary of differential equations
Week 6	Linear ordinary of differential equations
Week 7	Bernoullis Equations
Week 8	Solve equation about differential equation
Week 8	Second order differential equation, Homogenous, Non Homogenous
Week 9,10	Introduction to laplace transform,Lows, Properties of laplace transform
Week 11	Examples about Properties of laplace transform
Week 12	Inverse laplace transform,Lows ,examples
Week 13	Solve equation of inverse laplace using Simple real poles, Repeated real poles, Un repeated complex poles
Week 14	Final Examination

Learning and Teaching Resources

مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	CALCULAS thomas	Yes
Recommended Texts	كتاب التفاضل والتكامل د.رمضان محمد, د.احمدعبدالعالي	No
Websites		

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical engineering Techniques

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Computer application	**Module Delivery**	
Module Type	**Suplement**	☒ **Theory** ✓ **Lecture** ✓ ☒ **Lab** ✓ ☐ **Tutorial** ✓ ☒ **Practical** ✓ ☒ **Seminar**	
Module Code	**EET205**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Module Level	2	**Semester of Delivery**	1
Administering Department	Electrical Engineering Techniques	**College**	Technical engineering /Mosul
Module Leader	Rasha Abd Alnafaa Mohammed	**e-mail**	Rashana8479@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	MSC
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	14/06/2023	**Version Number**	1

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	Students will learn the principle use of computer program, solve the function and equation using command of matlab program.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 26. Operations solution on matrices 27. Operations solution on vectors 28. Solve Linear equation by direct method 29. Solve Linear equation by least square 30. Solve Non linear equation 31. Solve 2nd order Linear Differential equation 32. Mathematical process (integral, differential and limits) for functions 33. To learn draw 2D,3D 34. Properities and increase accuracy of draw 35. Find the roots by Newton Raphson method 36. Solve equation by Laplace with MATLAB 37. Solve equation by Laplace inverse with MATLAB
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Fundamentals of the computer hardware and software Definition of computerand its parts, method of operation, types of memories, type of system and programs used (word, excel, powerpoint). Part B – Solve function and equation by matlab program Introduction for MATLAB Program,Mathematical process on matrices ,Mathematical process on vectors,Linear equation by direct method,Linear equation by least square Non linear equation,2nd order Linear Differential equation ,Mathematical process (integral, differential and limits) for functions Draw 2D,3D,Properities and increase accuracy of draw,Newton Raphson method for roots,Invisible instructions ,Laplace with MATLAB,Laplace inverse with MATLAB.

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 .

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	6	10% (10)	2 and 12	LO #3, #4 #6, #7 and #10, #11
	Projects / Lab.	10	10% (10)	Continuous	All
	Report	8	10% (10)	2 and 10	LO #2 - #10
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO #1 - #8
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction for MATLAB Program
Week 2	Mathematical process on matrices
Week 3	Mathematical process on vectors
Week 4	Linear equation by direct method
Week 5	Linear equation by least square
Week 6	Non linear equation
Week 7	2nd order Linear Differential equation
Week 8	Mathematical process (integral, differential and limits) for functions
Week 9	Draw 2D,3D
Week 10	Properities and increase accuracy of draw
Week 11	Newton Raphson method for roots
Week 12	Invisible instructions
Week 13	Laplace with MATLAB
Week 14	Laplace inverse with MATLAB
Week 15	**Final exam**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Introduction for MATLAB Program
Week 2	Mathematical process on matrices
Week 3	Mathematical process on vectors
Week 4	Linear equation by direct method
Week 5	Linear equation by least square
Week 6	Non linear equation
Week 7	2nd order Linear Differential equation
Week 8	Mathematical process (integral, differential and limits) for functions
Week 9	Draw 2D,3D, Properities and increase accuracy of draw
Week 10	Newton Raphson method for roots
Week 11	Invisible instructions
Week 12	Laplace with MATLAB
Week 13	Laplace inverse with MATLAB
Week 14	Review
Week 15	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	كتاب الماتلاب للمهندسين عدنان شاهين	No
Recommended Texts	كتاب الماتلاب عصام سرحان	No
Websites		

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	ENGLISH LANGUAGE (INTERMEDIATE)	**Module Delivery**	
Module Type	**Suplement**	✓ **Theory** ✓ **Lecture** **Lab** **Tutorial** **Practical** **Seminar**	
Module Code	**EET211**		
ECTS Credits	2		
SWL (hr/sem)	50		

Module Level	UGx11 2	**Semester of Delivery**	1
Administering Department	Department of Electrical Engineering Techniques	**College**	Northern Technical University Engineering Technical College/Mosul
Module Leader	Mohammed Yahya	**e-mail**	mohammed.yahya@ntu.edu.iq
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	PhD
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	14/06/2023	**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 aim of the module on English Language is to develop students' proficiency and confidence in using the English language for effective communication. The module aims to enhance students' language skills, including reading, writing, listening, and speaking, as well as their understanding of English grammar, vocabulary, and usage. The module also aims to foster intercultural competence and awareness of sociolinguistic variations in English. Learning Outcomes: 1- Demonstrate proficiency in English language skills, including reading, writing, listening, and speaking. 2- Apply appropriate grammar, vocabulary, and usage in English language communication. 3- Analyze and comprehend a variety of written and spoken texts in English. 4- Produce coherent and well-structured written texts in English, demonstrating effective writing skills.

	5- Engage in meaningful oral communication in English, demonstrating fluency, clarity, and effective presentation skills. 6- Develop intercultural competence and an understanding of sociolinguistic variations in English language use. Indicative Contents: English Language Skills Development: Development of reading skills, including comprehension and analysis of various text types. Enhancement of writing skills, including grammar, vocabulary, and coherent text production. Improvement of listening skills, including understanding spoken English in different contexts. Development of speaking skills, including fluency, pronunciation, and presentation techniques. English Grammar and Vocabulary: Review and application of grammatical structures and rules in written and spoken English. Expansion of vocabulary through the study of word formation, collocations, and idiomatic expressions. Reading Comprehension and Analysis: Practice in reading and understanding different types of texts, such as articles, essays, and literature. Analysis of texts for main ideas, supporting details, and implicit meanings. Writing Skills: Instruction and practice in various writing genres, such as essays, reports, letters, and creative writing. Emphasis on coherent paragraph and essay organization, thesis development, and effective sentence structures. Oral Communication and Speaking Skills: Practice in engaging in conversations, discussions, and presentations in English. Development of fluency, clarity, and effective communication strategies in spoken English. Intercultural Competence and Sociolinguistic Variations: Exploration of cultural aspects and intercultural communication in English-speaking contexts. Awareness of sociolinguistic variations, such as regional accents, dialects, and pragmatic conventions
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Demonstrate proficiency in reading, writing, listening, and speaking skills in English. 2- Apply accurate grammar, vocabulary, and language conventions in written and spoken English. 3- Comprehend and analyze a variety of written and spoken texts in English, including different genres and registers. 4- Produce well-structured and coherent written texts in English, demonstrating effective writing skills. 5- Engage in effective oral communication in English, demonstrating fluency, clarity, and appropriate presentation skills. 6- Exhibit intercultural competence and an understanding of sociolinguistic variations in English language use. 7- These learning outcomes are designed to enhance students' overall English language proficiency and enable them to effectively communicate in various contexts. They cover key language skills, including reading, writing, listening, and speaking, as well as the ability to apply grammar and vocabulary accurately. Students will also develop critical reading and analytical skills to comprehend and interpret different types of texts. Additionally, the learning outcomes emphasize the production of well-structured written texts and effective oral

	communication, while fostering intercultural competence and an appreciation of sociolinguistic variations in English language use.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • Unit one : Introduction to the English language. • Unit two : Getting to know you • Unit three: The way we live • Unit four: It all went wrong • Unit Five : Let's go shopping. • Unit six : What do you want to do? • Unit seven : Tell me What's it like? • Unit eight : Famous couples • Unit nine : Do's and don'ts • Unit ten : Going places • Unit eleven : Scared to death • Unit twelve : Things that changed the world • Unit thirteen : Dreams and reality

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1-**Hands-on Experiments:** Engage students in practical experiments to deepen their understanding of circuits. 2-**Simulation Software:** Use circuit simulation software for virtual circuit design and analysis. 3-**Problem-solving Exercises:** Include various problem-solving exercises to apply circuit analysis techniques. 4-**Group Projects:** Assign collaborative projects for circuit design and construction. 5-**Real-world Applications:** Discuss practical applications of circuits in different devices and systems. 5-**Interactive Discussions:** Encourage student participation and critical thinking through open-ended questions. 6-**Conceptual Understanding:** Focus on intuitive understanding alongside mathematical analysis. 7-**Assessment Variety:** Use diverse assessment methods to gauge student understanding. 8-**Office Hours and Support:** Offer individualized assistance through office hours or online support.

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 أسبوعيا	2.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	5, 10	LO #1, 2, 5 and 6
	Assignments	8	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	-	10% (10)		
	Report	-	10% (10)		

Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-7
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
1	Unit one : Introduction to the English language.
2	Unit two : Getting to know you
3	Unit three: The way we live
4	Unit four: It all went wrong
5	Unit Five : Let's go shopping.
6	Unit six : What do you want to do?
7	Unit seven : Tell me What's it like?
8	Unit eight : Famous couples
9	Unit nine : Do's and don'ts
10	Unit ten : Going places
11	Unit eleven : Scared to death
12	Unit twelve : Things that changed the world
13	Unit thirteen : Dreams and reality
14	Unit fourteen : Earning a living
15	Final Examination.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**English learning new headway English course**	Yes
Recommended Texts	**English learning new headway English course**	No
Websites	**English learning new headway English course**	

APPENDIX:

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**DC Motors**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ✓ **Lecture** ✓ ☒ **Lab** ✓ **Tutorial** ✓ ☒ **Practical** ✓ ☒ **Seminar**	
Module Code	**EET207**		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		
Module Level	UGx11 2	**Semester of Delivery**	2
Administering Department	Electrical Engineering Techniques	**College**	Northern Technical University Engineering Technical College/Mosul
Module Leader	Mohammed Ahmed Ibrahim	**e-mail**	Mohammed.a.ibrahim1981@ntu.edu.iq
Module Leader's Acad. Title	Assist Professor	**Module Leader's Qualification**	MASTER
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. Understand the basic principles, construction, and working of DC motors. 2. Identify the different types of DC motors, including brushed and brushless motors, and their applications. 3. Calculate the torque and speed of DC motors using various equations and formulas. 4. Analyze the performance characteristics of DC motors, including efficiency, power factor, and speed control. 5. Develop an understanding of maintenance procedures for DC motors, including cleaning, lubrication, and inspection of electrical components. 6. Implement safety measures for working with DC motors, including risk assessment, protective gear, and emergency procedures. 7. Explore the various applications of DC motors in different industries, such as industrial automation, robotics, and electric vehicles.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the basic principles, construction, and working of DC motors. 2. Identify the different types of DC motors, including brushed and brushless motors, and their applications. 3. Calculate the torque and speed of DC motors using various equations and formulas. 4. Analyze the performance characteristics of DC motors, including efficiency, power factor, and speed control. 5. Develop an understanding of maintenance procedures for DC motors, including cleaning, lubrication, and inspection of electrical components. 6. Implement safety measures for working with DC motors, including risk assessment, protective gear, and emergency procedures. 7. Explore the various applications of DC motors in different industries, such as industrial automation, robotics, and electric vehicles.
Indicative Contents المحتويات الإرشادية	1. Introduction to DC motors and their basic principles 2. Construction of DC motors, including stator, rotor, commutator, and brushes 3. Working of DC motors, including the Lorentz force and electromagnetic induction 4. Types of DC motors, including brushed and brushless motors, and their applications 5. Torque and speed calculations for DC motors using various equations and formulas 6. Performance characteristics of DC motors, including efficiency, power factor, and speed control 7. Maintenance procedures for DC motors, including cleaning, lubrication, and inspection of electrical components 8. Safety measures for working with DC motors, including risk assessment, protective gear, and emergency procedures 9. Applications of DC motors in different industries, such as industrial automation, robotics, and electric vehicles 10. Future developments in DC motor technology and their potential impact on various industries.

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	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	5 and 10	LO #1, #2 and #7
	Assignments	10	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	7	10% (10)	Continuous	All
	Report	8	10% (10)	2,4,5,6,9,10,11	LO #5, #7
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)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	**DC motor, principle of dc motors torque develops in motor**
Week 2	**reverse direction of rotation – back e.m.f. equivalent**
Week 3, 4	**Circuit – calculation of torque – torque characteristics – speed characteristics**
Week 5, 6, 7	**Type of dc motor and their characteristics.**
Week 8,9	**Speed control of D.C. motor**
Week 10	**Losses in dc motor and generators swine brush test.**

Week 11	**Electric braking of D.C. motor**
Week 12	**Necessity of D.C. motor starter**
Week 13	**Testing of D.C. machines**
Week 14	**Losses in dc motor and generators swine brush test.**
Week 14	**Final Examination**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	**Shunt Motor No Load Test**
Week 2	**Shunt Motor Characteristic**
Week 3	**Shunt Motor No Load Test**
Week 4	**Speed control of D.C shunt motor using Flux and Rheostatic control**
Week 5	**Speed Control of DC Shunt Motor Using Variable Supply Voltage**
Week 6	**Speed Control of DC series Motor Using Variable Supply Voltage**
Week 7	**DC Shunt Motor Load test**
Week 8	**DC Motor Load test**
Week 9	**Speed control for D.C motor, (Uncontrolled)**
Week 10	**Speed Control of DC Motor (Controlled Rectifiers)**
Week 11	**Load test of DC series motor and find the curves**
Week 12, 13	**Load test on DC cumulatively compounded motor**
Week 14	**Review**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	ELECTRICAL TECHNOLOGY B.L. THERAJA A.K. THERAJA	Yes
Recommended Texts	Electric Machinery and Transformers Bhag S. Guru	No
Websites		

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Electronic CIRCUITS**	**Module Delivery**	
Module Type	**Core**	✓ **Theory**	
Module Code	**EET208**	**Lecture**	
ECTS Credits	**5**	✓ **Lab**	
SWL (hr/sem)	**125**	**Tutorial**	
		✓ **Practical**	
		✓ **Seminar**	

Module Level	UGx11 2	**Semester of Delivery**	2
Administering Department	**Department of Electrical Engineering Techniques**	**College**	**Northern Technical University Engineering Technical College/Mosul**
Module Leader	Ahmed Ghazi Abdullah	**e-mail**	ahmed.g.alhealy@ntu.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Master
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	14/06/2023	**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- Understanding the Basics: The primary objective of the Electronic Basic course is to provide students with a solid foundation in the basic principles BJT , FET transistor and thyristor 2-Analyzing Circuit Components: Students will understand how transistors, and thyristors are formed, as well as understanding and analyzing the electronic circuits in which the transistors and thyrestors are included, like as biasing circuit, comparator circuits , amplifier circuits. 3-Circuit Laws and Theorems: Students will become familiar with important laws and theorems governing the transistor applications circuits. They will gain proficiency in applying these principles to solve complex circuit problems. 4-Circuit Simulation and Design: The course may involve introducing students to circuit simulation software. They will learn how to use simulation tools to analyze and design the electronic circuits, verify their calculations, and gain practical insights into circuit behavior. 5-Problem-Solving Skills: An important objective is to develop students' problem-solving skills in the context of electronic circuits. They will learn how to analyze circuit diagrams, formulate appropriate strategies, and apply their knowledge to solve a variety of circuit problems efficiently. 6-Laboratory Skills: The course includes hands-on laboratory experiments to provide students with practical experience in building, testing, and troubleshooting electronic circuits.
Module Learning Outcomes	1-Fundamental Knowledge: Students will acquire a solid understanding of the fundamental concepts and principles of electronic circuits that's contain thyristor and transistor.

مخرجات التعلم للمادة الدراسية	2-Circuit Analysis Skills: Students will develop the ability to analyze electronic circuits such as biasing circuits , comparator circuits , amplifier circuits 3-Circuit Design and Simulation: Students will be able to design and simulate electronic circuits, using appropriate components and considering design constraints. They will learn to use circuit simulation software to verify their designs, analyze circuit performance, and troubleshoot circuit issues. 4-Laboratory Skills: Through hands-on laboratory experiments, students will develop practical skills in building, testing, and troubleshooting electronic circuits. They will become proficient in using measuring instruments, interpreting experimental data, and ensuring safety precautions while working with electrical circuits. 5-Critical Thinking and Analysis: The course will promote critical thinking and analytical skills among students. They will learn to evaluate different circuit solutions, analyze circuit behavior, and make informed decisions based on their understanding of electronic circuits. By the end of the course, students will possess a comprehensive knowledge of electronic circuits, enabling them to analyze, design, and troubleshoot a wide range of electrical circuits. They will be prepared for further studies in electrical engineering or related fields and equipped with skills that can be applied in professional practice.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • Part A – transistor biasing. DC biasing of BJT transistor and Q-point, Voltage-devider Bias , Emitter Bias, Base Bias, Emitter-Feedback Bias, Collector-Feedback Bias. [16 hrs] • Part B - amplifier circuits. Transistor as an amplifier, The Common-Emitter Amplifier, The Common-Collector Amplifier The Common-Base Amplifier Power Amplifier. [18 hrs] • Part C - Thyristor and Other semiconductor devices (Diac, Triac , SCR) Thyritor characteristic, the SCR circuit, the Triac circuit. And Diac circuit. [20 hrs] • Revision problem classes [6 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1-**Hands-on Experiments:** Engage students in practical experiments to deepen their understanding of circuits. 2-**Simulation Software:** Use circuit simulation software for virtual circuit design and analysis. 3-**Problem-solving Exercises:** Include various problem-solving exercises to apply circuit analysis techniques. 4-**Group Projects:** Assign collaborative projects for circuit design and construction. 5-**Real-world Applications:** Discuss practical applications of circuits in different devices and systems. 5-**Interactive Discussions:** Encourage student participation and critical thinking through open-ended questions. 6-**Conceptual Understanding:** Focus on intuitive understanding alongside mathematical analysis. 7-**Assessment Variety:** Use diverse assessment methods to gauge student understanding. 8-**Office Hours and Support:** Offer individualized assistance through office hours or online support.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	6	10% (10)	3- 10	LO #1, 2, 5
	Assignments	8	10% (10)	2-12	LO # 3, 4
	Projects / Lab.	8	10% (10)	Continuous	All
	Report	7	10% (10)	2, 12	LO # 5
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-5
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
1	DC biasing of BJT transistor and Q-point
2	Voltage-devider Bias , Emitter Bias
3	Base Bias
4	Emitter-Feedback Bias
5	Collector-Feedback Bias
6	Transistor as an amplifier , Operation Amplifier
7	The Common-Emitter Amplifier
8	The Common-Collector Amplifier
9	The Common-Base Amplifier
10	Power Amplifier
11	Thyristor
12,13	Other semiconductor devices (Diac, Triac , SCR)
14	SCR applications
15	Final examination

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
1	Lab 1: FET characteristcs
2	Lab 2: Small signal Amplifier
3	Lab 3: Transistor Voltage-devider Biasing
4	Lab 4: Transistor Emitter Biasing
5	Lab 5: Transistor Base Biasing
6	Lab 6: Transistor Emitter-Feedback Biasing
7	Lab 7: Transistor Collector-Feedback Biasing
8	Lab 8: The Common Emitter Amplifier
9	Lab 9: The Common-Collector Amplifier
10	Lab 10: The Common-Base Amplifier
11	Lab 11: Thyristor and SCR characteristics
12, 13	Lab 12,13: Applying Multisim program to use it in electronic experiments
14	Lab 14: Review

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas L. Floyd "Electronic Devices Conventional Current Version"	Yes
Recommended Texts	Robert L. Boylestad , Louis Nashelsky "Electronic Devices and Circuit Theory"	No
Websites		

APPENDIX:

Ministry of Higher Education and Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Advanced electrical Circuits Analysis**	**Module Delivery**	
Module Type	**Core**	✓ **Theory** **Lecture**	
Module Code	**eet209**	✓ **Lab** **Tutorial**	
ECTS Credits	**6**	✓ **Practical**	
SWL (hr/sem)	**150**	✓ **Seminar**	
Module Level	UGx11 2	**Semester of Delivery**	2
Administering Department	**Department of electrical Engineering Techniques**	**College**	**Northern Technical University** ENGINEERING TECHNICAL COLLEGE/MOSUL
Module Leader	Sanabel muhson mohammed ali	**e-mail**	Sanabel.m.mohammed@ntu.edu.iq
Module Leader's Acad. Title	ASS. Prof	**Module Leader's Qualification**	master
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	13/06/2023	**Version Number**	1.0

Relation With Other Modules
العلاقة مع المواد الدراسية الأخرى

Prerequisite module	**electrical Circuits analysis**	**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	**Students will learn the principle of ;** **1. Write circuit first order and second order equations for coupled system** **2. Analyze circuits containing ideal transformers** **3. Derive two port parameter descriptions for circuits.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-Knowledge Acquisition: Students will acquire a comprehensive understanding of the fundamental concepts and principles of **Write circuit first order and second order equations** circuit 2-Circuit Design and Analysis: Students will gain the ability to design and analyze Resonance A.c and Dc circuit heir knowledge of impedance, power factor, and component characteristics. They will learn to calculate voltage and current magnitudes, phase differences, and power relationships in AC circuits. 3-Analyze circuits containing ideal transformers(Laplas transformation and Fourier transformation) 4-Hybird Systems: Students will acquire understanding of hybrid tow port net work systems, including balanced and unbalanced configurations. Laboratory Skills: Students will develop practical skills in using circuit simulation software and laboratory equipment to design, analyze, and verify the performance of different circuits.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: ● Part A – Application of laplace transform to circuit analysis. **Solve the second order differential equation using laplas transformation and** Application of Laplace transform to circuit analysis. [6 hrs] ● Part B – Frequency selective circuits **Design the passive and active filter select the correct frequency for design** [4 hrs] ● Part C Transient analysis in DC circuit. Source free and step response RL and RC circuits in DC system. Comoplet response of a series and a parallel RLC circuits in DC system. [10 hrs] ● Part D Sinusoidal frequency analysis. AC in resistive circuits, current and voltage in inductive circuits, current and voltage in capacitive circuits. Concept of complex impedance and admittance, AC series and parallel circuits. RL, RC and RLC circuit analysis and phasor representation. [14 hrs] ● Part E Two-port networks and Hybrid parameter Two-port networks: (impedance, admittance, transmissions parameters, relationships between parameters, interconnection between networks). [14 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1-Conceptual Understanding: Explain transient AC and DC circuits, introduce the concept of complete response of RLC circuit, and highlight the significance of RLC series and parallel circuit and phases in AC circuits. 2-Mathematical Foundations: Provide a solid mathematical foundation for transient DC and AC circuits. Teach students the use of LAPLAS Transformation to analyze circuits. 3-Problem-Solving Skills: Dedicate adequate time to problem-solving exercises and examples. 5-Simulation Tools: Introduce simulation MATLAB software tools that allow students to simulate circuits and observe their behavior. 6-Review and Assessment: Regularly review key concepts and provide formative assessments to gauge students' understanding. Offer constructive feedback on their performance to help them identify areas for improvement.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	3-10	LO #3, 2and 4
	Assignments	6	10% (10)	2-12	LO # 3, 4
	Projects / Lab.	2	10% (10)	3,7	LO # 2,3
	Report	16	10% (10)	continous	LO # 1,4
Summative assessment	**Midterm Exam**	1 hr	10% (10)	8	LO # 1-4
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Sinusoidal steady- state analysis (Kirchhoff's laws, Mesh analysis, Nodal analysis, Superposition's theorem, Thevenin's theorem, Norton's theorem, source transformations).
Week 2	Balanced three-phase circuits: (wye –wye, delta-delta, connections).
Week 3,4	Balanced three-phase circuits: (wye-delta, delta-wye connections).
Week 5	Unbalanced three phase system
Week 6,7	Frequency selective circuits: • Passive filters • Active filters
Week 8	Advanced circuit analysis using Laplace transform.
Week 9,10	Application of Laplace transform to circuit analysis.
Week 11,12	Two-port networks: (impedance, admittance, transmissions parameters, relationships between parameters, interconnection between networks).

Week 11	Hybrid parameter of two port(H-parameters), Inverse hybrid parameters
Week 12	Final Examination

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Lab 1: simulation of the sinusoidal steady state system
Week 2	Lab 2: simulation The sinusoidal transient analysis
Week 3	Lab 3:simulation of three phase star to star connection
Week 4	Lab 4: simulation of three phase delta to delta connection
Week 5	Lab 5: simulation of three phase star to delta connection
Week 6	Lab 6: simulation of three phase delta to star connection
Week 7	Lab 7: simulation of Unbalanced three phase system in different phase voltage
Week 8	Lab 8: simulation of Unbalanced three phase system in different phase frequency
Week 9	Lab 9: design passive filter in MATLAB program
Week 10	Lab 10: design active filter in MATLAB program
Week 11,12	Lab 11: design Two-port networks impedance in MATLAB program
Week 13	Lab 12: design hybrid of Two-port networks in MATLAB program
Week 14	Lab 14: Review

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Charles K. Alexander, Matthew N.O. Sdiku Fundamentals of Electrical Engineering, 4th Edition, 2009	Yes
Recommended Texts	Tony R. Kuphaldt, Lessons In Electric Circuits, Volume II - AC 5th edition, 2002	No
Websites	AC circuits https://byjus.com/physics/ac-circuit/	

APPENDIX:

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical engineering Techniques

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Instruments and Measurements**	**Module Delivery**	
Module Type	**Core**	☒ **Theory** ✓ **Lecture** ✓ ☒ **Lab** ✓ ☐ **Tutorial** ✓ ☒ **Practical** ✓ ☒ **Seminar**	
Module Code	**EET210**		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	2	**Semester of Delivery**	2
Administering Department	Electrical Engineering Techniques	**College**	Technical Engineering college /Mosul
Module Leader	Waseem Khalid Ibrahim	**e-mail**	Waseem_kh82@ntu.edu.iq
Module Leader's Acad. Title	Assistant lecturer	**Module Leader's Qualification**	MSC
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	10/06/2023	**Version Number**	1

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. This course deals with define Measurement. 2. Knowledge of measurement errors, their types, their effect on measurements, and how to reduce their effect on measurements. 3. Introduce the Units and standard SI system.

	4. Knowledge the Classification of Instruments. 5. Various Measurements, method for determining resistance, inductance and capacitance. 6. Know the system measurement. 7. High voltage measurements and testing.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 38. Develop the knowledge of theoretical and mathematical principles of electrical measuring instruments. 39. Have knowledge and critical understanding of the well-established principles underpinning measurement. 40. Have knowledge and critical understanding of the well-established principles of measurement and instrument design. 41. Have an understanding of measurement's errors. 42. Understand the role of various factors in calibration. 43. Choose the proper type and specification of measuring procedure and measuring instruments for different plication. 44. Have an understanding of Statistical analysis. 45. Understand the working of various potentiometers, instruments for measurement of R, L and C. 46. Understand the high voltage measurements principles and method of works.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Fundamentals of Electronic Measurements and Instrumentation D.C circuits, Current and voltage definitions, circuit elements, Combining resistive elements in series and parallel Ohm's law. Resistive networks, voltage and current sources, Thevenin equivalent circuits, current and voltage division, Capacitance and inductance RL, RC and RLC circuits Part B - Measurements Fundamental definitions, Measurements units, error of Measurements, Statistical analysis, D.c. measurement instrument. Ohmmeter as measurement instrument, Alternating - current indicating instruments, Electrodynamometer and application. Bridges, applications of D.c. Bridges, applications of A.c Bridges. Oscilloscope. High voltage measurement and its applications in electrical engineering techniques.
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	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.1

Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	4,10	LO #1#4, #5#9
	Assignments	8	10% (10)	3,12	LO #3, #8
	Projects / Lab.	7	10% (10)	Continuous	All
	Report	9	10% (10)	All	All
Summative assessment	**Midterm Exam**	1hr	20% (20)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Measurements and error.
Week 2	Statistical analysis.
Week 3	Units and standard SI system.
Week 4	Analogue instruments.
Week 5	D.c Ammeter. D.c Voltmeter.
Week 6	Series Type ohmmeter.
Week 7	Electrodynamic meters – wattmeters
Week 8	The cathode ray oscilloscope.
Week 9	D.C. Bridges & their applications.
Week 10	A.C. Bridges & their applications.
Week 11	Measurements of frequency, power angle, and power factor.
Week 12	D.C. High voltage measurements.
Week 13	A.C. High voltage measurements.
Weeks 14 , 15	Measurement's system.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	INTRODUCTION TO LAB EQUIPMENT.
Week 2	AMMETER DESIGN.
Week 3	VOLTMETER DESIGN.
Week 4	LOADING EFFECT ON VOLTMETER.
Week 5	OHMMETER DESIGN.
Week 6	MEASUREMENT OF RESISTANCE USING WHEATSTONE BRIDGE.
Week 7	INDUCTANCE COMPARISON BRIDGE.
Week 8	CAPACITANCE COMPARISON BRIDGE.
Week 9	MAXWEEL BRIDGE.
Week 10	HAY BRIDGE.
Week 11	SCHERING BRIDGE.
Week 12	WIEN BRIDGE.
Week 13	OSCILLOSCOPE AND MEASUREMENT OF FREQUENCY.
Week 14	OSCILLOSCOPE AND MEASUREMENT OF PHASE ANGLE.
Week 15	Review

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Electronic instrumentation and measurement techniques, William David Cooper,	Yes
Recommended Texts	Electronic Instrumentation and Measurements, Third Edition, David A. Bell	No
Websites	https://www.abebooks.co.uk/book-search/title/electronic-instrumentation-and-measurements/	

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	Engineering Analysis	**Module Delivery**	
Module Type	**Basic**	☒ **Theory** ✓ **Lecture** ✓ **Lab** ✓ ☒ **Tutorial** ✓ ☐ **Practical** ✓ ☒ **Seminar**	
Module Code	**EET211**		
ECTS Credits	**5**		
SWL (hr/sem)	**125**		
Module Level	2	**Semester of Delivery**	2
Administering Department	**ELECTRICAL ENGINEERING TECHNIQUES**	**College**	**NORTHERN TECHNICAL UNIVERSITY** **ENGINEERING TECHNICAL COLLEGE/MOSUL**
Module Leader	Laith Akram Mohammed	**e-mail**	laith.akram@ntu.edu.iq
Module Leader's Acad. Title	Assist. prof	**Module Leader's Qualification**	PhD
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	Name	**e-mail**	E-mail
Scientific Committee Approval Date	14/06/2023	**Version Number**	1

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	To help students to understand the engineering analysis transformations in complex frequencies domains, in order to solve complicated mathematical and electrical circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The specific learning outcomes of a module on Engineering Analysis may vary depending on the institution and the specific curriculum. However, here are some common learning outcomes that can be expected from such a module:

	1. Understanding of Mathematical Concepts: Develop a strong understanding of fundamental mathematical concepts and their applications in engineering analysis, including calculus, linear algebra, differential equations, and numerical methods. 2. Problem Solving Skills: Develop the ability to apply mathematical techniques and engineering principles to solve complex problems in various areas of engineering, such as mechanics, thermodynamics, fluid dynamics, electrical circuits, and structural analysis. 3. Analytical Thinking: Enhance analytical thinking skills to analyze engineering problems, break them down into manageable components, and apply appropriate mathematical and computational methods to find solutions. 4. Mathematical Modeling: Acquire skills in formulating engineering problems as mathematical models, identifying relevant variables and parameters, and selecting appropriate mathematical methods to solve these models. 5. Data Analysis: Gain proficiency in analyzing and interpreting data obtained from experiments or simulations, including statistical analysis, curve fitting, and error analysis.
Indicative Contents المحتويات الإرشادية	1.The indicative contents of an Engineering Analysis module can vary depending on the institution and the specific curriculum. However, here are some common topics and areas of study that are typically covered in an Engineering Analysis course: 2.Mathematical Foundations: 3. Calculus: Differentiation, integration, limits, and series expansions. 4.Linear Algebra: Vectors, matrices, systems of linear equations, eigenvalues, and eigenvectors. 5.Differential Equations: Ordinary differential equations, partial differential equations, and their solutions.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	When conducting engineering analysis, there are several strategies that can be employed to ensure accurate and effective results. Here are some common strategies used in engineering analysis: 1. Problem Definition: Clearly define the problem statement, including the objectives, constraints, and any specific requirements. This step helps ensure that the analysis is focused and targeted towards the desired outcome. 2. Simplification and Assumptions: Complex engineering problems can often be simplified by making reasonable assumptions. 3. Mathematical Modeling: Formulate the engineering problem as a mathematical model, incorporating relevant equations, boundary conditions, and input parameters. 4. Verification and Validation: Verify the accuracy and reliability of the analysis by comparing results with known solutions, experimental data, or established analytical models. 5. Sensitivity Analysis: Perform sensitivity analysis to assess how changes in input parameters or assumptions affect the analysis results. 6. Data Analysis and Interpretation: Analyze and interpret data obtained from experiments, simulations, or measurements. 7. Documentation and Reporting: Document the analysis methodology, assumptions, and procedures followed. Present the results and findings in a clear and concise manner, using appropriate visualizations, tables, and graphs. 8. Iterative Approach: Engineering analysis often involves an iterative approach, where initial results are analyzed, and the analysis is refined or modified based on the findings. 9. Continuous Learning and Improvement: Stay updated with the latest advancements in engineering analysis techniques, software tools, and best practices.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	4-10	LO#3 ,4,5
	Assignments	8	10% (10)	2-12	LO #1 - #4
	Projects / Lab.	0	0		
	Report	3	10% (10)		
Summative assessment	**Midterm Exam**	1hr	20% (20)	8	LO #1 - #5
	Final Exam	3hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	

Week 14	
Week 15	Final Examination.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	"Introduction to Engineering Analysis" 4th edition by Hagen by Kirk D. Hagen	No
Recommended Texts	"Analysis of Numerical Methods", by Eugene Isaacson, and Herbert Bishop Keller	Yes
Websites	https://www.youtube.com/watch?v=UF3ZyqKbjl4	

Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
Engineering Technical College/Mosul
Department of Electrical Engineering Techniques

Module Descriptor Form

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	ENGLISH LANGUAGE (INTERMEDIATE)	**Module Delivery**
Module Type	**Suplement**	✓ **Theory**

Module Code	**EET212**	✓ **Lecture** **Lab** **Tutorial** **Practical** **Seminar**	
ECTS Credits	3		
SWL (hr/sem)	75		

Module Level	UGx11 2	**Semester of Delivery**	2
Administering Department	Department of Electrical Engineering Techniques	**College**	Northern Technical University Engineering Technical College/Mosul
Module Leader	Mohammed Yahya	**e-mail**	mohammed.yahya@ntu.edu.iq
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	PhD
Module Tutor	None	**e-mail**	None
Peer Reviewer Name	None	**e-mail**	None
Review Committee Approval	14/06/2023	**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 aim of the module on English Language is to develop students' proficiency and confidence in using the English language for effective communication. The module aims to enhance students' language skills, including reading, writing, listening, and speaking, as well as their understanding of English grammar, vocabulary, and usage. The module also aims to foster intercultural competence and awareness of sociolinguistic variations in English.

Learning Outcomes:

7- Demonstrate proficiency in English language skills, including reading, writing, listening, and speaking.
8- Apply appropriate grammar, vocabulary, and usage in English language communication.
9- Analyze and comprehend a variety of written and spoken texts in English.
10- Produce coherent and well-structured written texts in English, demonstrating effective writing skills.
11- Engage in meaningful oral communication in English, demonstrating fluency, clarity, and effective presentation skills.
12- Develop intercultural competence and an understanding of sociolinguistic variations in English language use.

Indicative Contents:

English Language Skills Development:

Development of reading skills, including comprehension and analysis of various text types.
Enhancement of writing skills, including grammar, vocabulary, and coherent text production.
Improvement of listening skills, including understanding spoken English in different contexts.
Development of speaking skills, including fluency, pronunciation, and presentation techniques.
English Grammar and Vocabulary:

Review and application of grammatical structures and rules in written and spoken English.

	Expansion of vocabulary through the study of word formation, collocations, and idiomatic expressions. Reading Comprehension and Analysis: Practice in reading and understanding different types of texts, such as articles, essays, and literature. Analysis of texts for main ideas, supporting details, and implicit meanings. Writing Skills: Instruction and practice in various writing genres, such as essays, reports, letters, and creative writing. Emphasis on coherent paragraph and essay organization, thesis development, and effective sentence structures. Oral Communication and Speaking Skills: Practice in engaging in conversations, discussions, and presentations in English. Development of fluency, clarity, and effective communication strategies in spoken English. Intercultural Competence and Sociolinguistic Variations: Exploration of cultural aspects and intercultural communication in English-speaking contexts. Awareness of sociolinguistic variations, such as regional accents, dialects, and pragmatic conventions
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	8- Demonstrate proficiency in reading, writing, listening, and speaking skills in English. 9- Apply accurate grammar, vocabulary, and language conventions in written and spoken English. 10- Comprehend and analyze a variety of written and spoken texts in English, including different genres and registers. 11- Produce well-structured and coherent written texts in English, demonstrating effective writing skills. 12- Engage in effective oral communication in English, demonstrating fluency, clarity, and appropriate presentation skills. 13- Exhibit intercultural competence and an understanding of sociolinguistic variations in English language use. 14- These learning outcomes are designed to enhance students' overall English language proficiency and enable them to effectively communicate in various contexts. They cover key language skills, including reading, writing, listening, and speaking, as well as the ability to apply grammar and vocabulary accurately. Students will also develop critical reading and analytical skills to comprehend and interpret different types of texts. Additionally, the learning outcomes emphasize the production of well-structured written texts and effective oral communication, while fostering intercultural competence and an appreciation of sociolinguistic variations in English language use.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: • Unit one : Introduction to the English language. • Unit two : Getting to know you • Unit three: The way we live • Unit four: It all went wrong • Unit Five : Let's go shopping. • Unit six : What do you want to do? • Unit seven : Tell me What's it like? • Unit eight : Famous couples • Unit nine : Do's and don'ts • Unit ten : Going places • Unit eleven : Scared to death

	• Unit twelve : Things that changed the world • Unit thirteen : Dreams and reality

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1-**Hands-on Experiments:** Engage students in practical experiments to deepen their understanding of circuits. 2-**Simulation Software:** Use circuit simulation software for virtual circuit design and analysis. 3-**Problem-solving Exercises:** Include various problem-solving exercises to apply circuit analysis techniques. 4-**Group Projects:** Assign collaborative projects for circuit design and construction. 5-**Real-world Applications:** Discuss practical applications of circuits in different devices and systems. 5-**Interactive Discussions:** Encourage student participation and critical thinking through open-ended questions. 6-**Conceptual Understanding:** Focus on intuitive understanding alongside mathematical analysis. 7-**Assessment Variety:** Use diverse assessment methods to gauge student understanding. 8-**Office Hours and Support:** Offer individualized assistance through office hours or online support.

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 أسبوعيا	2.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation
تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	5, 10	LO #1, 2, 5 and 6
	Assignments	8	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	-	10% (10)		
	Report	-	10% (10)		
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-7
	Final Exam	3 hr	50% (50)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	Material Covered
1	Unit one : Introduction to the English language.
2	Unit two : Getting to know you
3	Unit three: The way we live
4	Unit four: It all went wrong
5	Unit Five : Let's go shopping.
6	Unit six : What do you want to do?
7	Unit seven : Tell me What's it like?
8	Unit eight : Famous couples
9	Unit nine : Do's and don'ts
10	Unit ten : Going places

11	Unit eleven : Scared to death
12	Unit twelve : Things that changed the world
13	Unit thirteen : Dreams and reality
14	Unit fourteen : Earning a living
15	Final Examination.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**English learning new headway English course**	Yes
Recommended Texts	**English learning new headway English course**	No
Websites	**English learning new headway English course**	