

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



دليل وصف البرنامج الأكاديمي والمقرر الدراسي

2024

نموذج وصف البرنامج الأكاديمي

اسم الجامعة: جامعة : كلية الصفوة الجامعة

الكلية/ المعهد: كلية : كلية الصفوة الجامعة

القسم العلمي: قسم هندسة تقنيات الأجهزة الطبية

اسم البرنامج الأكاديمي او المهني: بكالوريوس هندسة تقنيات الأجهزة الطبية

اسم الشهادة النهائية: بكالوريوس في هندسة تقنيات الأجهزة الطبية

النظام الدراسي: سنوي

تاريخ اعداد الوصف: 1/10/2024

تاريخ ملء الملف: 1/10/2024

التوقيع :
أسم المعاون العلمي: أ.د. حيدر جليل كامل
التاريخ : ١٠/١٠/٢٠٢٤

التوقيع :
أسم رئيس القسم : أ.م.د. باسم رحيم صادق
التاريخ : ١٠/١٠/٢٠٢٤

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: أ.د. معز حسن محمد

التاريخ : ١٠/١٠/٢٠٢٤

التوقيع



مصادقة السيد العميد

١. د. فاضل البيراي

نموذج وصف البرنامج الأكاديمي

اسم الجامعة: كلية الصفوة الجامعة

الكلية/ المعهد: كلية الصفوة الجامعة

القسم العلمي: قسم هندسة تقنيات الحاسوب

اسم البرنامج الأكاديمي أو المهني: بكالوريوس هندسة تقنيات الأجهزة الطبية

اسم الشهادة النهائية: بكالوريوس هندسة تقنيات الأجهزة الطبية

النظام الدراسي: سنوي – بولونيا

تاريخ اعداد الوصف: 01-10-2024

تاريخ ملئ الملف: 01-10-2014

التوقيع:

اسم رئيس القسم: أ.م.د. باسم رحيم صادق

التاريخ:

التوقيع:

اسم المعاون العلمي: أ.د. حيدر جليل كامل

التاريخ:

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي: أ.د. معز حسن محمد

التاريخ:

التوقيع:

مصادقة السيد العميد

1. رؤية البرنامج

تأهيل الكفاءات المتميزة والمبتكرة علميا و مهاريا وسلوكيا في مجال تكنولوجيا المعدات الطبية ومواكبة الاقسام المناظرة له في الجامعات العالمية الرصينة من خلال توفير الخدمات المجتمعية بتقديم احدث البرامج الدراسية لخلق بيئة اكاديمية متقدمة

2. رسالة البرنامج

الرسالة : أن يتعلم الطالب في كل مرحلة دراسية مختلفة أهم المناهج والمهارات ذات العلاقة مع مختلف القطاعات العلمية والعملية والتي تبين أهمية هذا التخصص

3. اهداف البرنامج

- 1- تخريج كادر هندسي يمتلك مهارات علمية وعملية في تشخيص وتصليح الاعطال الناتجة في الاجهزة الطبية.
- 2 - تهيئة مهندسين اكفاء لهم القدرة على مواكبة التطور السريع في مجال الاجهزة الطبية واكسابهم المهارات اللازمة لتطوير وتحديث الاجهزة الطبية.
- 3- اكساب الطالب مهارة علمية وتطبيقية تمكنه من تشخيص الاعطال الناتجة في الاجهزة الطبية - تخريج طلبة لهم القدرة على الالمام بأجزاء الاجهزة الطبية المختلفة ومواكبة التطور الذي يحصل في تقنياتها.
- 4- اكساب الخريج القابلية على معرفة مفصلة عن كافة التقنيات الحديثة في مجال هندسة الاجهزة الطبية.
- 5- اكساب الطلبة المهارة الكافية على اجراء التحديثات اللازمة فيما يخص الاجهزة الطبية.
- 6- التوسع عموديا باتجاه استحداث برنامج للدراسات العليا للحصول على شهادتي الماجستير والدكتوراه. - ان القسم يسعى الى تحقيق معايير الجودة حسب الامكانيات المتاحة.

4. الاعتماد البرامجي

لا يوجد

5. المؤثرات الخارجية الأخرى

نظري _ عملي _ شفوي _ تدريب (مختبرات _ مستشفيات _ صيفي) بحوث تخرج

6. هيكلية البرنامج

هيكل البرنامج	عدد المقررات	وحدة دراسية	النسبة المئوية	ملاحظات *
متطلبات المؤسسة				
متطلبات الكلية				
متطلبات القسم				
التدريب الصيفي				
اخرى				

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

7. وصف البرنامج

الساعات المعتمدة	اسم المقرر أو المساق	رمز المقرر أو المساق	السنة / المستوى
نظري	عملي		
		اساسيات الهندسة الكهربائية	MIET1101
		تطبيقات الحاسوب (IC3)	MIET1102
		الرياضيات التفاضلية	MIET1103
		الرسم الهندسي	MIET1104
		حقوق الانسان والديمقراطية	MIET1105
		اللغة الإنكليزية	MIET1106
		الفيزياء الطبية	MIET1201
		الكيمياء الطبية	MIET1202
		الميكانيك	MIET1203
		الرياضيات التكاملية	MIET1204
		ورش عمل هندسية	MIET1205
		اللغة العربية	MIET1206
		الأجهزة الطبية المختبرية 1	MIET2101
		الدوائر الالكترونية 1	MIET2102
		الآلات الكهربائية	MIET2103
		الرياضيات الهندسية	MIET2104
		علم التشريح وعلم وظائف الأعضاء	MIET2105
		برمجة الحاسوب وتطبيقاته	MIET2106
		الدوائر الالكترونية 2	MIET2201
		الأجهزة الطبية المختبرية 2	

			MIET2202	
		الالكترونيات الرقمية	MIET2203	
		الأجهزة الكيميائية السريرية	MIET2204	
		المحولات والمستشعرات الطبية الحيوية	MIET2205	
		اللغة الانكليزية	MIET2206	
2	2	نظم الكترونية طبية		
2	2	معالجة اشارة رقمية		2023-2024 / الثالثة
2	2	نظم اتصالات طبية		
3	2	اجهزة طبيه		
2	2	معالج وحاسبه دقيقه		
2	2	الالكترونيات القدرة		
2	2	تكنولوجيا الكهرباء		
2	1	تطبيقات الحاسبة		
—	1	اللغة الانكليزية		
—	—	التدريب المنهجي		

8. مخرجات التعلم المتوقعة للبرنامج

المعرفة

يهدف القسم الى تخريج طلبة قادرين على محاكات سوق العمل بمعلومات ومهارة أولية، تصميم وتنفيذ خرائط تثبيت وتشغيل الأجهزة الحديثة، تثبيت وتشغيل الأجهزة والمكائن بأسس صحيحة مطابق لرؤية الشركات المصممة والمصنعة، المساهمة والإشراف على صيانة الأجهزة والوحدات المختلفة، البحث والتطوير والعثور على الأجزاء البديلة للوحدات التي قد تعاني من عطل، العمل وفق منهجية الصيانة الوقائية واليات تفعيلها بشكل ممنهج مدروس.

المهارات

1. مهارات الحاسبة والأنترنت
2. مهارات الاتصال كاللغة الإنكليزية والعرض
3. مهارات القيادة وتحمل المسؤولية
4. مهارات التعليم الذاتي والتعلم مدى الحياة
5. مهارات العمل الجماعي

9. استراتيجيات التعليم والتعلم

- التدريب الصيفي والمهني، المختبرات، افلام علمية وفيديوهات (الكثروني وحضوري) التعليم المدمج ومشاريع التخرج

10. طرائق التقييم

اجراء الاختبارات اليومية والنصف الفصلية والنهائية , تقديم التقارير الأسبوعية والواجبات الصفية والبيتية

11. الهيئة التدريسية

أعضاء هيئة التدريس

اسم التدريسي		الرتبة العلمية	التخصص		المتطلبات/المهارات الخاصة (ان وجدت)	اعداد الهيئة التدريسية	
			عام	خاص		ملاك	محاضر
باسم رحيم صادق		أستاذ مساعد دكتور	هندسة ميكانيك	تطبيقي		ملاك	
عادل ياسين طه		مدرس دكتور	علوم حاسوب	علم البيانات		ملاك	
مرتجى باسم رحيم		مدرس دكتور	طب وجراحة عامة	بورط طب مجتمع		ملاك	
ليث حاكم مالك		مدرس دكتور	هندسة تحليل نظم وسيطرة	هندسة تحليل نظم وسيطرة			محاضر
مرتضى محمد علي هادي		مدرس دكتور	هندسة كهرباء وحاسبات	اتصالات الحاسبات			محاضر
علي فاضل حسن		مدرس دكتور	هندسة تقنيات الحرارية	هندسة تقنيات الحرارية		ملاك	
مصطفى عبد الرسول علي		مدرس دكتور	تكنولوجيا المعلومات / برمجيات	فلسفة تكنولوجيا المعلومات / برمجيات			محاضر
ايفان مالك شاكر		مدرس دكتور	علوم الكيمياء	فلسفة علوم الكيمياء		ملاك	
سراج عبد الأمير مصطفى		مدرس مساعد	هندسة ميكانيكية / ايروديناميك	هندسة ميكانيكية / ايروديناميك		ملاك	
غني كاظم عزيز		مدرس مساعد	اللغة الإنكليزية / ادب	اللغة الإنكليزية / ادب		ملاك	
محمد عبد الرضا حسين		مدرس مساعد	اللغة العربية وآدابها	اللغة العربية وآدابها		ملاك	
شيماء محمد حكمت		مدرس مساعد	القانون	القانون الجنائي		ملاك	
سارة عبد الكاظم عبودي		مدرس مساعد	القانون	القانون العام		ملاك	
هدى واثق عبد الزهرة		مدرس مساعد	تقنيات التحليلات المرضية	تقنيات التحليلات المرضية		ملاك	
نداء علي شباط		مدرس مساعد	الهندسة المدنية	الهندسة المدنية		ملاك	
دعاء علي عبد جعفر		مدرس مساعد	علوم الحاسوب	البرمجيات		ملاك	
اية فليح حسن		مدرس مساعد	هندسة كهرباء	هندسة كهرباء			محاضر
حسين عبد الزهرة رمضان		مدرس مساعد	هندسة طاقة	هندسة طاقة			محاضر
ياسر طه عباس		مدرس مساعد	علوم حاسوب	ذكاء اصطناعي		ملاك	
عبد العظيم خلف جاسم		مدرس مساعد	اللغة الانكليزية	ادب		ملاك	

فانز عبد الحمزة عاشور	مدرس مساعد	علوم الكيمياء	كيمياء تحليلية	ملاك	
علياء ميثم عباس	مدرس مساعد	الهندسة المدنية	بنى تحتية	ملاك	
تقى علي احمد	مدرس مساعد	هندسة اتصالات	هندسة اتصالات	ملاك	
غدير علاء نصر الله	مدرس مساعد	هندسة الكترولنيك واتصالات	هندسة الكترولنيك واتصالات	ملاك	
ميسم عبد الوهاب	مدرس مساعد	الهندسة المدنية	بنى تحتية	ملاك	
ايناس علاوي حسين	مدرس مساعد	علوم كيمياء	علوم الكيمياء	ملاك	
نوره احمد ساير	مدرس مساعد	هندسة كهرباء	هندسة حاسبات وسيطرة	ملاك	
حنين حيان عبد الرسول	مدرس مساعد	علوم حياة	علوم حياة	ملاك	
كرار علي كزار	مدرس مساعد	هندسة كهرباء	هندسة كهرباء		

التطوير المهني
توجيه أعضاء هيئة التدريس الجدد
التطوير المهني لأعضاء هيئة التدريس

12. معيار القبول
المعدل العام للقبول المركزي والذي يكون ضمن الحدود المعمول بها وحسب توجيهات وزارة التعليم العالي والبحث العلمي. المقابلة الشخصية مع الطلبة المتقدمين للقبول وملاحظة العيوب النطقية أو السلوكية أو الشخصية والتي تمنع انضمامهم للقسم.

13. أهم مصادر المعلومات عن البرنامج
1- المكتبة المركزية في الكلية. 2- شبكة المعلومات الانترنت. 3- تجارب الجامعات العربية والعالمية. 4- المناهج الدراسية الحالية .

14. خطة تطوير البرنامج
• دورات تدريبية داخل المؤسسة . • دورات تدريبية خارج المؤسسة . • البحوث العلمية • الحلقات الدراسية والندوات العلمية • التعليم الذاتي

مخطط مهارات البرنامج															
مخرجات التعلم المطلوبة من البرنامج															
القيم				المهارات				المعرفة				اساسي أم اختياري	اسم المقرر	رمز المقرر	السنة / المستوى
ج4	ج3	ج2	ج1	ب4	ب3	ب2	ب1	أ4	أ3	أ2	أ1				

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Fundamental of Electrical Engineering (DC)		Module Delivery
Module Type	core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MIET 1101		
ECTS Credits	7		
SWL (hr/sem)	210		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept.code	College	Al-Safwa University College
Module Leader	Tuqa Ali Ahmed		e-mail toqaaa1998@gmail.com
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	MSC
Module Tutor			e-mail
e-mail			
Scientific Committee Approval Date	12/06/2023	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

اهداف المادة الدراسية

1. To develop problem solving skills and understanding of circuit theory through the application of techniques.
2. To understand voltage, current and power from a given circuit.
3. This course deals with the basic concept of electrical circuits.
4. This is the basic subject for all electrical and electronic circuits.
5. To understand Kirchhoff's current and voltage Laws problems.
6. To perform mesh and Nodal analysis.
7. To perform Loop current method, Super position

Module Learning Outcomes

مخرجات التعلم للمادة الدراسية

1. Recognize how electricity works in electrical circuits.
2. List the various terms associated with electrical circuits.
3. Summarize what is meant by a basic electric circuit.
4. Discuss the reaction and involvement of atoms in electric circuits.
5. Describe electrical power, charge, and current.
6. Define Ohm's law.
7. Identify the basic circuit elements and their applications.
8. Discuss the operations of sinusoids and phasors in an electric circuit.
9. Discuss the various properties of resistors, capacitors, and inductors.
10. Explain the two Kirchhoff's laws used in circuit analysis.
11. Identify the capacitor and inductor phasor relationship with respect to voltage and current.
12. Discuss the 3-Phase system, Wye connection and Delta connection.
13. Identify the power in balance phase circuit.
14. Describe the Magnetism and Magnetic Circuits

Indicative Contents محتويات ارشادية	Indicative content includes the following. Part A-DC Circuit Theory I DC circuits Current and voltage definitions, Passive sign convention, and circuit elements, Combining resistive elements in series and parallel. Kirchhoff's laws and Ohm's law. Conversion of delta. connected resistance into an equivalent Wye connection & Vic versa, Network reduction, Introduction to mesh and nodal analysis. [20 hrs]
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Learning and Teaching Strategies	
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)			
Structured SWL (h/sem)	102	Structured SWL (h/w)	7.2
Unstructured SWL (h/sem)	108	Unstructured SWL (h/w)	7.7
Total SWL (h/sem)	210		

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

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Symbols and abbreviations, Units, Electric circuits, and its elements.
Week 2	The direct-current network (Kirchhoff's law & their use in network).
Week 3	Conversion of delta-connected resistance into an equivalent Wye connection & Vic versa
Week 4	Power sources are connected in parallel,
Week 5	Circuit analysis methods: 1- Node voltage method.2-Loop current method.
Week 6	Circuit analysis Theorems: (Superposition and Thevinens Theorems)
Week 7	Circuit analysis Theorems: (Norton and Maximum power Theorems)
Week 8	Generation of alternating current, Sinusoidal current
Week 9	The mean values of current and voltage.
Week 10	The effective values of current and voltage.

Week 11	The vector diagram.
Week 12	The instantaneous power and mean power of A.C, relative and apparent power.
Week 13	RL transient circuit.
Week 14	RC transient circuit.
Week 15	3-Phase system, The rotating magnetic field.

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Introduction to electrical elements, sources, and measuring devices related to electrical circuits.
Week 2	Verification of Ohm's Law.
Week 3	Verification of KVL and KCL
Week 4	Verification of Thevenin's and Norton's theorems
Week 5	Verification of the superposition theorem.
Week 6	Verification of the maximum power transfer theorem
Week 7	Verification of the Nodal Voltage Theorem
Week 8	Verification of the Mesh Theorem
Week 9	Generating AC Voltages and Measurement Frequency, Period, Amplitude, and Peak Value.
Week 10	Calculations and Verification of the Impedance and Current of RL
Week 11	Calculations and Verification of Impedance and Current RC
Week 12	Calculations and verification of the impedance and current of RLC series circuits
Week 13	Calculations of Power in AC Circuits
Week 14	Calculations and verification of the impedance and current of RL, RC, and RLC parallel circuits

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	No
Recommended Texts	Electric Circuits Seventh Edition Schaum's Outline Series	
Websites	BASIC ELECTRICAL ENGINEERING FOURTH EDITION	

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Computer Applications (IC3)		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MIET1102			
ECTS Credits	3			
SWL (hr/sem)	75			
Module Level	UGI	Semester of Delivery		1
Administering Department	MITE -MIET	College	Al-Safwa University College	
Module Leader	Adil Yaseen Taha		e-mail	adil.yaseen@alsafwa.edu.iq
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	M.Sc.	
Module Tutor	Name (if available)	e-mail	E-mail	
Peer Reviewer Name	Yaser Taha Abass	e-mail		
Scientific Committee ApprovalDate	8/11/2023	Version Number	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. To understand operating system, be familiar with its types. 2. To be familiar with the desktop. 3. To be familiar and manage files and folders. 4. To be familiar with the basic concepts of hardware components of the computer. 5. To be able to use the basic functions in control panel. 6. To recognize software types. 7. To be able to understand the basic similarities and differences among (MS Office) applications. 8. To be able to use MS Word program. 9. To be able to use MS Excel program. 10. To be able to use MS PowerPoint program. 11. To be able to use MS Outlook. 12. To be familiar with search engines and the World Wide Web. 13. To be able to use Google apps. 14. To be introduced to AI tools.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate understanding of operating systems, including their types. 2. Navigate and utilize the desktop effectively. 3. Manage files and folders proficiently. 4. Identify hardware components of a computer system. 5. Utilize the control panel efficiently. 6. Differentiate software types and their applications. 7. Effectively utilize essential applications such as MS Office. 8. Demonstrate proficiency in using the MS Word program. 9. Demonstrate proficiency in using the MS Excel program. 10. Demonstrate proficiency in using the MS PowerPoint program. 11. Utilize MS Outlook for email and scheduling purposes. 12. Navigate search engines and utilize the World Wide Web effectively. 13. Utilize Google apps for various tasks. 14. Basic Use of AI tools.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction to Operating Systems: Definition, functions, and capabilities of an operating system. Types of operating systems (e.g., Windows, macOS, Linux) with examples. Differences between operating systems and software applications. Power options: computer power on/off and power settings. (3 hrs) Exploring the Desktop: Navigating the desktop environment. Using the start button and working with applications. Understanding the relationship between software and hardware, their differences, importance, and influence on each other. Introduction to software updates. Exploring the taskbar. (6 hrs) Files and Folders: Understanding the typical window and file management. Introduction to the Recycle Bin. Understanding file names and common extensions.

	(6 hrs) Computer Hardware: Identifying various computer types . Exploring components inside a computer, such as the microprocessor, system memory, and storage systems. Recognizing input/output devices and their interaction. (6 hrs) Familiarity with the control panel and its categories and usage. (6 hrs) Software Overview: Understanding software requirements and their implications for hardware. Introduction to different types of application software + Dealing with viruses and malwares (2 hrs) Main Screen Features: Common features found in word processing, spreadsheet, and presentation software. Understanding the ribbon, tabs, and status bar, and their specific functions in each application. (3 hrs) MS Office Basics: Definitions and key concepts in MS Office applications and Usage. (9 hrs) Google apps and Gmail (3hrs) Digital Citizenship: Identifying ethical issues in the digital realm, including intellectual property, copyright, and licensing. Protecting data and computers from software threats and understanding viruses. Ensuring online privacy and security. And basic understanding and usage for AI tools (3 hrs)
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Incorporate a mix of theoretical study, hands-on practice, experimentation, and real-world applications to reinforce understanding and proficiency in each of the desired learning outcomes. Seek feedback, engage in discussions, and actively participate in exercises to enhance learning and address any gaps in knowledge.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب ل 14 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	26	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to operating system and its types, the differences between operating systems and software applications; Common operating system features.
Week 2	Looking and navigation of the desktop; start button components ; Understanding Taskbar ,Software and hardware relationship.
Week 3	Software updates+, Files and folders looking at typical window.+ Understanding files and folders+ Libraries
Week 4	understanding Recycle bin; understanding file name and common extensions. View options + Computer hardware identifying computers
Week 5	Looking inside a computer (microprocessor, system memory, storage systems)+ recognizing input/output devices + understanding how it works together.
Week 6	Understanding control panel categories + Understanding Ease of access + Understanding User account rights
Week 7	What is software , application software + Avoiding and dealing Viruses and malwares
Week 8	Mid Term
Week 9	MS office common features and differences
Week 10	Basic concepts and Usage of MS Word + Basic concepts and Usage of MS Power Point
Week 11	Basic concepts and Usage of MS Excell + Basic concepts and Usage of MS Outlook
Week 12	Introduction to Google apps

Week 13	Digital citizenship identifying ethical issues; protecting your data or computer
Week 14	Basic understanding and usage for AI tools
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Getting to know computer hardware + turn on and shut down options +looking at the desktop + using mouse (Menu, pointing, selecting, dragging, scrolling and execution)+ using start button
Week 2	Lab 2: Create a folder (and file) , Rename, Copy, Cut, find, shortcut +Recycle bin ; using task bar
Week 3	Lab 3: looking at a typical window +control buttons + move, resize a window+ view options+ select files + file options +using taskbar.
Week 4	Lab 4: Install, open, close, and(control panel- Programs) uninstall applications(internet and other sources); Control Panel (power options), Control Panel (add a device or printer), Control Panel (Project)
Week 5	Lab 5: Personalization (background and color) +(User Account (create a standard account, change password , picture and name) Control Panel- Clock and region (change date, time , and region) + Ease of Access (Narrator,Magnifier, on screen keyboard)).
Week 6	Lab 6: MS Office (word, Excel, Power point, outlook) Starting each program and identify the mainscreen in details as title bar, main ribbons, etc.
Week 7	Lab 7: MS Word (Home Tab, Insert Tab, Layout Tab, View Tab + Watermark, Page boarder and Page color).
Week 8	Lab 8: Mid Term
Week 9	Lab 9: MS Excel (Home Tab, Insert, Page layout, Formula, Data).
Week 10	Lab 10: MS Power Point (Home Tab, Insert, Design, Transition, Animation).
Week 11	Lab 11: MS outlook (Home Tab, send and receive) + Calendar
Week 12	Lab 12: Google apps Vs MS office.
Week 13	Lab 13: Creating Gmail+ basic e-mail functions+ using google class.Using internet (Google scholar +fining courses and materials, Khan academy and finding resources).
Week 14	Lab 14: Using AI tools

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Internet and Computing Core Certification	No
Recommended Texts		
Websites	https://alison.com/tag/microsoft Share and Discover Knowledge on SlideShare https://support.microsoft.com/en-us/training https://support.google.com/a/users https://edu.gcfglobal.org/en/topics/googleapps/# https://edu.gcfglobal.org/en/subjects/office/# https://chat.openai.com	

Grading Scheme

مخطط الدرجات

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	Differential Mathematics		Module Delivery	
Module Type	Support		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	MIET1103			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	UGI	Semester of Delivery		
Administering Department	MIET	College	Al-Safwa University	
Module Leader	Aliyaa Maetham Abbas		e-mail	alia.maitham@alsafwa.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Msc	
Module Tutor			e-mail	
Peer Reviewer Name			e-mail	
Scientific Committee Approval Date	8/11/2023	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 develop problem solving skills and understanding of Differential calculus through a broad range of Differentiation techniques. To understand limits and theory of derivative and apply it on various types of functions. This is the basic subject for all engineering fields. Demonstrate basic knowledge and understanding of a core of plane analytical geometry, algebra and applied mathematics. Introduce students to Derivatives of trigonometric functions and their inverses.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recall basic concepts of calculus: functions, variables, limits, and continuity. 2. Use the limit laws to evaluate the limit of a function. 3. Discuss continuity at a point and continuity over an interval. 4. Understand transcendental functions and how a function and its inverse are related. 5. Define Plane analytical geometry and identify how conic sections are formed in addition to define both in words and in algebraic formulae, a circle and its center and radius, and an ellipse and its foci. 6. Learn how to convert rectangular coordinates to polar coordinates and vice versa, as well as plot points using polar coordinates. 7. Differentiate algebraic and transcendental functions Midterm 8. Discuss Chain rules and applications of the derivatives. 9. Define determinants and understand their relation to matrices · Also explain the methodology for finding a determinant. 10. Learn how to solve Linear equations by Cramer's rule.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Limits and Continuity, Trigonometric functions, and their inverses. Hyperbolic and inverse hyperbolic functions, Exponential function and logarithmic function. Plane analytical geometry, parabola & ellipse, hyperbola. [25 hrs] 2. Polar coordinates, Theory and rules of derivatives, Implicit Differentiation and Chain rules, Derivatives of trigonometric functions and their inverses. Derivatives of Transcendental functions and their inverses. [33 hrs] 3. Properties of determinants, Solution of Linear equations by Cramer's rule. [10 hrs] 4. Revision problem classes [5 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The major approach used to offer this module will be to promote student engagement in the exercises while also enhancing and broadening their critical thinking abilities. Classes and interactive lessons will be used to achieve this.

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
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	6 and 10	LO #2, #7, #9, and #10
	Online assignments	2	10% (10)	4 and 12	LO #1 - #5 and #6 - #10
	Report	1	10% (10)	14	LO #1 - #8
	OnSite assignments	2	10% (10)	2 and 5	LO #1 - #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	LO #1 - #10
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Limits and Continuity
Week 2	Transcendental functions- trigonometric functions, and their inverses.
Week 3	Transcendental functions-Hyperbolic and inverse hyperbolic functions
Week 4	Transcendental functions-Exponential function and logarithmic function.
Week 5	Plane analytical geometry, parabola & ellipse, hyperbola.
Week 6	Polar coordinates.
Week 7	Mid-term Exam
Week 8	Theory and rules of derivatives
Week 9	Implicit Differentiation and Chain rules.

Week 10	Derivatives of trigonometric functions Derivatives of inverse trigonometric functions.
Week 11	Derivatives of the exponential and natural logarithms functions.
Week 12	Derivatives of Hyperbolic and inverse hyperbolic functions.
Week 13	Applications of the derivatives.
Week 14	Determinants and properties of determinants.
Week 15	Solution of Linear equations by Cramer's rule. + Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Engineering Mathematics I (pdf)	No
Recommended Texts	Thomas ' Calculus (pdf) Fouteenth edition Based on the original work by GEORGE B. THOMAS, JR.	No
Websites	https://elearningatria.files.wordpress.com/2013/10/differential-calculus-1-23.pdf http://dl.konkur.in/post/Book/Paye/Thomas-Calculus-14th-Edition-%5Bkonkur.in%5D.pdf	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	Integral Mathematics		Module Delivery		
Module Type	Support		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar		
Module Code	MIET1204				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	UGI	Semester of Delivery		2	
Administering Department	MITE	College	Al-Safwa University		
Module Leader	Aliyaa Maetham Abbas		e-mail	alia.maitham@alsafwa.edu.iq	
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Msc		
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date	15/11/2023	Version Number	2.0		

Relation with other Modules				
مع المواد الدراسية الأخرى				
Prerequisite module	Differential Mathematics		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	To develop problem solving skills and understanding of Integral calculus through a broad range of Integration techniques. To understand theory and methods of integrations and apply it on various types of functions. This is the basic subject for all engineering fields Demonstrate basic knowledge and understanding of a core of linear algebra and applied mathematics. Introduce student to integration of trigonometric functions and their inverses.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Identify the integration. Interpret definite and indefinite integrals. Integrate functions resulting in inverse trigonometric functions. Integrate functions involving exponential and logarithmic functions. Learn approximation techniques for integration. Calculate the areas of curved regions by using integration methods. Find the volume of a solid of revolution using various integration methods. Learn how to find the length of a plane curve for a given function. 9. Teaching students how to calculate the inverses of matrices and how to identify them. 10. Teaching students how to find the solution of a homogeneous system of linear equations. 11. Teaching students how to find the eigenvalues of a matrix and the corresponding eigenvectors of a matrix. 12. Determine the diagonalizability of a given matrix.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction to integration. Methods of integration and Basics of Definite and indefinite Integration, Integration of trigonometric and inverse functions. Integration of the exponential functions, Integration of logarithmic functions. Integration of Hyperbolic and inverse hyperbolic functions, numerical integration and applications of the definite integrals. [30 hrs] Area of surface, Volume of revolution, Length of plane curve, Matrices and Inverse of matrix, Matrix Diagonalization Solution of homogeneous systems, Eigenvalues, and Eigenvectors [40 hrs] Revision problem classes [3 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies

The major approach used to offer this module will be to promote student engagement in the exercises while also enhancing and broadening their critical thinking abilities. Classes and interactive lessons will be used to achieve this.

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

Unstructured SWL (h/sem)

الحمل الدراسي المنتظم للطالب خلال الفصل

47

Unstructured SWL (h/w)

الحمل الدراسي غرت المنتظم للطالب أسبوعيا

3

Total SWL (h/sem)

الحمل الدراسي الكلي للطالب خلال الفصل

125

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 12	LO #1- #4 and #6 - #12
	Online assignments	2	10% (10)	3 and 13	LO #1- #4 and #6 - #12
	Report	1	10% (10)	14	LO #1- #6 and #8 - #11
	OnSite assignment	1	10% (10)	4 and 11	LO #1- #9
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #5
	Final Exam	3hr	50% (50)	16	LO #1- #12
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوع النظري

	Material Covered
Week 1	Introduction to integration.
Week 2	Methods of integration and Basics of Definite and indefinite Integration.
Week 3	Integration of trigonometric and inverse functions.

Week 4	Integration of the exponential functions.
Week 5	Integration of logarithmic functions.
Week 6	Integration of Hyperbolic and inverse hyperbolic functions.
Week 7	Mid-term Exam + numerical integration and applications of the definite integrals.
Week 8	Area of surface.
Week 9	Volume of revolution.
Week 10	Length of plane curve.
Week 11	Matrices and Inverse of matrix.
Week 12	Matrix Diagonalization
Week 13	Solution of homogeneous systems
Week 14	Eigenvalues and Eigenvectors
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Notes on Calculus II Integral Calculus Miguel A. Lerma	No
Recommended Texts	Thomas ' Calculus (pdf) Fouteenth edition Based on the original work by GEORGE B. THOMAS, JR.	No
Websites	https://sites.math.northwestern.edu/~mlerma/courses/math214-2-02f/notes/c2-all.pdf http://dl.konkur.in/post/Book/Paye/Thomas-Calculus-14th-Edition-%5Bkonkur.in%5D.pdf	

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Laboratory Medical Instrumentation I		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	MIET2101		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGII	Semester of Delivery	3
Administering Department	MIET	College	AL Safwa university
Module Leader	Dr. Basim Sadiq	e-mail	Basimalbarajei20@gmail.com
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Dr
Module Tutor	Huda Wathek	e-mail	huda.wathew@alsafwa.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	8/11/2023	Version Number	1.0

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. The graduate get scientific and applied skills to diagnose the medical instruments faults. 2. The graduated students will gain the ability of knowledge of different parts of medical instruments. 3. Development and training the engineering technical staff on medical device maintenance. 4. Preparation of the research and studies to improve and develop the action of medical devices. 5. Prepare application engineers in technical and electronic engineering. 6. Put the proposals and alternatives for the medical devices.
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Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1. Define the Medical instrumentation and recognize what is the laboratory security system and determine the quality control results in the medical laboratory. 2. Classify the medical instrumentation. 3. Describe the hospital design. 4. Design and Describe the operating room. 5. Understand patient safety laws and rules. 6. Define and understand the medical Laboratory Instruments and Tools. 7. Calibration of Medical Laboratory Instruments. 8. Define, explain, and describe Balances and understand the electrical and electronic parts. 9. Explain the types of balances and their medical application. 10. Define, explain, and describe water bath and understand the electrical and electronic parts. 11. Define, explain, and describe wax bath and understand the electrical and electronic parts.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Medical instrumentation classification, analysis lists, work security rules, and best laboratory use guidelines [14 hr]. Calibration of instruments criteria, types, components, advantages and disadvantages, physical and medical applications. [14hr] Medical instrumentation faults and maintenance, analysis lists, work security rules, and best laboratory use guidelines [14hr]. Patient safety and hospital design rules [15h]. Classification of different types of medical laboratories like medical, biological histological and chemical [13hr].

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 design, while at the same time refining and expanding their medical instrumentations 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			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10 (1 %)	103,	LO # 1,2,3.....14 ,
	Assignments	2	(10) %	4,8	LO # 6,13
	Projects / Lab.	1	%(10)	6	LO #3
	Report	2	(10) %	5,9	LO # 7,12
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3 hr	50% (50)	14	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Definition to medical instruments.
Week 2	Introduction to medical instruments.
Week 3	Classification of medical instrumentation.
Week 4	Design of hospitals.
Week 5	Design of operating room.
Week 6	Patient Safety.
Week 7	Mid-term exam
Week 8	Medical Laboratory Instruments and Tools-1
Week 9	Medical Laboratory Instruments and Tools- 2
Week 10	Classification of different medical laboratories
Week 11	Calibration of Medical Laboratory Instruments.
Week 12	Introduction to Balance.
Week 13	Balance and their types.
Week 14	Wax bath.
	Water bath.
Week 15	The preparatory week before the final exam.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Introduction to medical instruments.
Week 2	Classification of medical instrumentation.
Week 3	Medical Laboratory Instruments and Tools.
Week 4	Patient Safety.
Week 5	Calibration of Medical Laboratory Instruments.
Week 6	Classification of different medical lab.
Week 7	Introduction to Balance.
Week 8	Balance and their types.
Week 9	Wax bath.
Week 10	Water bath.
Week 11	Exam.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Biomedical device technology ,by ANTHONY Y. K. CHAN, MSc, MEng, PEng, CCE	
Recommended Texts	Ananthi ,2005,"A text book of medical instruments	
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electronic Circuits I		Module Delivery
Module Type	core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MIET2102		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGII	Semester of Delivery	
Administering Department	MIET	College	AL-safwa University
Module Leader	Murtadha Mohamed Ali	e-mail	Mortada.Muhammad@alsafwa.edu.iq
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee ApprovalDate	16-9-2024	Version Number	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives اهداف المادة الدراسية	1. The graduate gets scientific and applied skills of electronic circuits. 2. The graduated students will gain the ability of knowledge of different parts of electronic circuits. 3. Development and training the engineering technical staffs on the electronic circuits. 4. Preparation the research and studies to improve and develop the action of electronic circuits. 5. Prepare application engineers in technical and electronic engineering. 6. Put the proposals and alternatives for the electronic devices.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Become aware of the general characteristics of electronic devices. 2. Be able to describe the difference types of electronic categories. 3. Develop a clear understanding of the basic operation and characteristics of electronic devices. 4. Become familiar with the use of equivalent circuits to analyze series, parallel, and series-parallel electronic networks. 5. Be able to predict the output response of an electronic networks. 6. Become familiar with the analysis of and the range of applications for electronic devices. 7. Become familiar with the basic construction and operation of the various types of electronic categories. 8. Be able to test a various type of electronic terminals. 9. Be able to determine the dc levels for the variety of important electronic circuits. 10. Understand how to measure the important voltage levels of electronic circuits. 11. Begin to understand the troubleshooting process as applied to electronic configurations. 12. Develop a sense for the stability factors of an electronic circuits. 13. Learn to use the equivalent model to find the important ac parameters for an amplifier. 14. Develop some skill in troubleshooting ac amplifier networks.

Indicative Contents محتويات ارشادية	Indicative content includes the following. Part A Electronic Theory Semiconductor Materials: Ge, Si, and GaAs 2, Covalent Bonding and Intrinsic Materials, n -Type and p -Type Materials , Semiconductor Diode , Transistor Construction ,Transistor Operation , Construction and Characteristics of JFETs ,Transfer Characteristics, Important Relationships ,Depletion-Type MOSFET Enhancement-Type MOSFET [10 hrs] Diode Applications -Load-Line Analysis, Series Diode Configurations, Parallel and Series–Parallel Configurations, Sinusoidal Inputs; Half-Wave Rectification Full-Wave Rectification , Clippers , Clampers Networks with a dc and ac Source, Zener Diodes , Voltage-Multiplier Circuits [12 hrs] Revision problem classes [6 hrs] Part B - DC Electronic Circuits BJT Transistor - Operating Point, dc bias configurations of a BJT transistor, Miscellaneous Bias Configurations of a BJT transistor 4.11 Design Operations of a BJT transistor, Multiple BJT Networks, Current Mirrors. [13 hrs] FET Transistor - biasing arrangements for the n and p channel JFET, 7.7 Depletion-Type MOSFETs, Enhancement-Type MOSFETs, Combination Networks, Universal JFET Bias, Practical Applications. [10 hrs] Part C - AC Electronic Circuits BJT Transistor - Amplification in the AC Domain, BJT Transistor Modeling, the re Transistor Model, Effect of RL and Rs, Determining the Current Gain, Cascaded Systems, Darlington Connection, Feedback Pair, The Hybrid Equivalent Model. [17 hrs]
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Learning and Teaching Strategies	
Strategies	The main strategy will be encourage active participation and engagement of students through activities such as group discussions, hands-on experiments, problem-solving tasks, and case studies. This approach promotes critical thinking, collaboration, and knowledge application and encourages students to explore and discover knowledge through inquiry and investigation. Pose open-ended questions or problem scenarios that require learners to research, analyze, and draw conclusions independently.

Student Workload (SWL)			
Structured SWL (h/sem)	79	Structured SWL (h/w)	5
Unstructured SWL (h/sem)	46	Unstructured SWL (h/w)	3
Total SWL (h/sem)	125		

Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes				LO #1,2,10 and 11
	Assignments				LO # 3,4 ,6,7 and 14
	Projects / Lab.				
	Report				LO # 5,8 and 10
Summative assessment	Midterm Exam				LO # 1,2,5,9,10 and 13
	Final Exam				All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction
Week 2	Semiconductors materials
Week 3	Diode Configurations
Week 4	Diode Networks with a dc and ac Source
Week 5	Zener Diodes
Week 6	Bipolar junctions transistor
Week 7	Mid-Exam
Week 8	DC biasing BJTS
Week 9	Multiple BJT Networks
Week 10	Field effect transistor and MOSFET
Week 11	Depletion-Type MOSFET
Week 12	Enhancement type MOSFET
Week 13	BJT AC Analysis
Week 14	BJT Transistor Modeling
Week 15	Effect of RL and Rs

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Lab 1: Diode characteristics
Week 2	Lab 2: Half-wave Rectifier
Week 3	Lab 3: full wave Rectifier
Week 4	Lab 4: Filter for Halve-wave and full wave Rectifiers
Week 5	Lab 5: Voltage Doubler
Week 6	Lab 6: Voltage Tripler
Week 7	Lab 7: Positive Series Clipper
Week 8	Lab 8: Negative Series Clipper
Week 9	Lab 9: positive parallel Clipper
Week 10	Lab 10: Negative parallel Clipperneering
Week 11	Lab 11: Clamper
Week 12	Lab12: Zener Diode
Week 13	Lab13: Fixed V_i , Variable RL Zener Diode
Week 14	Lab14: Fixed RL, Variable V_i Zener Diode

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Electronic devices and circuit theory 11th edition, Robert L. Boylestad , Louis Nashelsky	Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme

مخطط الدرجات

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electrical Machines	Module Delivery	
Module Type	Core	☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MIET2103		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UGII		
Administering Department	MIET	College	Al Safwa University College
Module Leader	Aya Flyah Hassan	e-mail	ayaflyah.1998@gmail.com
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Aya Flyah Hassan	e-mail	ayaflyah.1998@gmail.com
Scientific Committee Approval Date	9/11/2024	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Fundamentals of Electrical Engineering (AC)	Semester	UGI-S2
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims

أهداف المادة الدراسية

- 1- Study engineering concepts and their applications for electrical machines and transformers.
- 2- How electrical transformers work, how to connect them, and solve mathematical problems related to them and their types.
- 3- What are electrical machines and what are their classifications.
- 4- Knowledge and understanding of the basics of laws related to electrical technology materials.
- 5- Solve issues and issues and apply the rules of application related to electrical engineering.
- 6- Giving students confidence and ability to use mathematical foundations in applications on generators, electric motors.
- 7- Building interactive skills that help classify information and make engineering decisions.
- 8- Develop proposals and alternatives for electrical parts for medical devices

Module Learning Outcomes

مخرجات التعلم للمادة الدراسية

1. Learn how transformers work in electrical circuits.
2. List the various terms associated with electrical circuits and machines.
3. Summarize what is meant by electrical transformers and basic electrical machines of all kinds.
4. Discuss the interaction and participation of the number of windings, wire diameter and size of electrical transformers.
5. Description of electrical transformers, motors and generators with direct current and alternating current.
6. Determine the laws related to electrical transformers and their derivations.
7. Identify the equivalent circuits of electrical transformers and methods of calculating their efficiency.
8. Discuss the processes that lead to losses in transformers and electrical machines, and ways to reduce them and increase their efficiency.
9. Discuss the different characteristics of engines and generators, their main components, and the functioning of each.
10. Explain the two laws of machines and determine their efficiency, capacity and torque, and the laws of their formation.
11. Identify the relationship of transformers and electrical machines to medical devices.
12. Discuss the systems of connecting machines, ways of wrapping coils inside them, and the benefits of each.
13. Determining how to increase the efficiency of motors used in medical devices and methods of maintaining and repairing them.
14. Describe the types of motors included in the formation of medical devices and

	their classification
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Single-phase electrical transformers Types of electrical transformers, their parts and components, their equivalent circuit, types of losses, how to calculate them, and how to calculate transformer efficiency through mathematical operations and efficiency laws. [10 hours] Part B - Three-phase electrical transformers Types of three-phase electrical transformers, calculating their cost, types of connections in their files, calculating their equivalent circuits, and deriving special laws for each connection [13 hours] Part C- Electromagnetic and electromechanical induction and the relationship between them and linear motion using those concepts and applications on linear motion and how to generate it. [10 hours] Part D- The electromotive force of single-phase machines, methods of generating them, their laws, and their calculation through mathematical issues and calculating currents, voltages, losses, and capacity. [10 hours] Part E- The electromotive force of the three-phase machines, methods of generating them, their laws, and their calculation through mathematical problems, types of coil connections, testing those machines, and calculating currents, voltages, losses, and real and apparent power. [15 hours] Instantaneous power and average power of alternating current, relative and apparent power. Types of electric motors and how they work [5 hours] Review problem categories [6 hours]

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 the exercises, while improving and expanding their critical thinking skills at the same time. This will be achieved through classes and interactive tutorials and by looking at the types of simple experiments that include some of the electrical wiring activities in the laboratory curriculum that develop students' skills.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	% (10)	5,12	1-3 , 4-10
	Assignments	4	% (10)	4,6,8,12	2-3, 4-5, 6-7, 8-11
	Projects / Lab.	1	% (15)	14	1-12
	Report	5	% (5)	3,5,7,9,11	1-2, 3-4, 5-6, 7-8, 9-10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	1-5
	Final Exam	4 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج السبوعي النظري

	Material Covered
Week 1	Transformers : single phase transformer and construction
Week 2	Transformers : single phase transformer and construction
Week 3	Theory of operation, no load and short circuit test.
Week 4	Equivalent circuit, auto-transformers, instrument transformers
Week 5	Equivalent circuit, auto-transformers, instrument transformers
Week 6	Three phase transformers, constructions methods of connection.
Week 7	Mid exam + Three phase transformers, constructions methods of connection.
Week 8	Electromechanical energy conversion principles relay operation.
Week 9	Electromechanical energy conversion principles relay operation.
Week 10	Motor characteristics, testing, calculation of losses and efficiency.
Week 11	Induction machines: equivalent circuit, basic equation, simple analysis testing.
Week 12	Single phase induction motor, methods of starting, split phase, capacitor start, capacitor run and shaded pole motors.
Week 13	Single phase induction motor, methods of starting, split phase, capacitor start, capacitor run and shaded pole motors.
Week 14	Synchronous machines, generators and motors, equivalent circuit, basic equation.
	Special machines: Reluctance motor , hysteresis motor , linear motor , stepper motor , brushless motor , etc
Week 15	Preparatory week before final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج السبوعي للمختبر

	Material Covered
Week 1	Introduction to measuring devices and identifying wattmeter
Week 2	Characteristics of single-phase electric transformers
Week 3	Open circuit test of transformers
Week 4	Load circuit for single phase transformers
Week 5	Three phase transfer theorem delta- delta
Week 6	Three phase transfer theorem delta- star
Week 7	Three phase transfer theorem star- delta
Week 8	Three phase transfer theorem star- star
Week 9	Characteristics of DC machine
Week 10	load test of three phases (I.M)
Week 11	open circuit test of three phases (I.M)
Week 12	short circuit test of three phases (I.M)
Week 13	Speed control of DC motor + load test of DC generator
Week 14	Series & Shunt DC machine connection. Compound connection of DC machine.
Week 15	Preparatory week before final exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Electrical Machines and Drives Fundamentals and Advanced Modelling by Jan A. Melkebeek	Yes
Recommended Texts	Electrical Machines Drives and Power Systems 5th Edition By Theodore Wildi	No
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Mathematics		Module Delivery
Module Type	Port		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar
Module Code	MIET2104		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGII	Semester of Delivery	
Administering Department	Medical Instrumentation Techniques Engineering	College	Alsafwa university college
Module Leader	Nidaa Ali Shabat	e-mail	nidaa.ali@alsafwa.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	MSc
Module Tutor	Nidaa Ali Shabat	e-mail	/
Peer Reviewer Name	No one	e-mail	/
Scientific Committee Approval Date	8/11/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Integral Mathematics-MIET1204	Semester	UGI-S2
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. The goal of this module is to give students the necessary mathematical skills and tools to solve a range of design engineering issues. 2. Demonstrate basic knowledge and understanding of a core of vector analysis, linear algebra and applied mathematics. 3. Introduce student to Infinite and power series. 4. Understand how to solve Differential equations of the 1 st and nth order. 5. Introduce student to Integral Transforms : Fourier series and Laplace transform and their applications in signal and systems.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define a vector, represent a vector by a directed straight line, add vectors, write a vector in terms of component vectors, write a vector in terms of component unit vectors, set up a coordinate system for representing vectors, and obtain the direction of a vector. 2. Explain the concept of a vector field and make sketches of simple vector fields in the plane 3. Memorize algebraic definitions and explain geometric meanings of dot and cross products 4. Compute dot and cross products given either algebraic or geometric information. 5. Apply dot or cross product to determine angles between vectors, scalar and vector projections, and volumes of parallelepipeds. 6. Memorize change of coordinate formulae between rectangular and cylindrical coordinate systems. 7. Memorize change of coordinate formulae between rectangular and spherical coordinate systems. 8. Identify coordinate surfaces in cylindrical and spherical coordinate systems as well as Converting equations between rectangular, cylindrical and spherical coordinate systems. 9. know what is meant by infinite series & its convergence, 10. Learn formation of Differential Equations - solutions of first order Differential Equations: Homogeneous-Non-homogeneous - Exact – Non-exact and solutions of nth order Differential Equations as well. 11. Definition of Laplace and Fourier transforms, Condition for existence, Laplace transform of standard functions, Properties of Laplace transform, 12. Application of Laplace and Fourier transforms to ordinary differential equations.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Vector analysis, Vector fields, Orthogonal vectors and Dot Product, Parallel vectors and Cross Product, in addition to Partial Derivatives: Formulas for Del operation. [25 hrs] Polar Coordinates, Cylindrical Coordinates Systems, Spherical Coordinates Systems, and Infinite series. Power series. [23 hrs] Convergence and divergence series, Differential equation of the first order, Differential equation of nth order. Integral Transforms: Fourier series and Laplace transform. [25 hrs]

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The major approach used to offer this module will be to promote student engagement in the exercises while also enhancing and broadening their critical thinking abilities. Classes and interactive lessons will be used to achieve this.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	37	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	5% (10)	4 and 10	LO #1- #4 and #5 - #9
	Online assignments	2	5% (10)	3 and 6	LO #1- #4 and #5 - #8
	Report	1	10% (10)	14	LO #1- #6 and #7 - #12
	OnSite assignment	2	5% (10)	5 and 14	LO #1- #5 and #6- #12
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #8
	Final Exam	3hr	50% (50)	16	LO #1- #12
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المناهج الاسبوعي النظري

Week	Material Covered
Week 1	Vector analysis.
Week 2	Vector fields.
Week 3	Orthogonal vectors and Dot Product.
Week 4	Parallel vectors and Cross Product.
Week 5	Partial Derivatives: Formulas for Del operation.
Week 6	Polar Coordinates.
Week 7	Mid-term Exam + Cylindrical Coordinates Systems.
Week 8	Spherical Coordinates Systems.
Week 9	Infinite series.
Week 10	Power series.
Week 11	Convergence and divergence series.
Week 12	Differential equations.

Week 13	Differential equation of the first order.
Week 14	Differential equation of n th order.
Week 15	Integral Transforms: Fourier series and Laplace transform.
Week 16	Preparatory week before the final Exam.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	https://dokumen.tips/download/link/engineering-mathematics-5th-ed-by-k-a-stroud.html (pdf)	No
Recommended Texts	https://www.bau.edu.jo/UserPortal/UserProfile/PostsAttach/59003_3812_1.pdf	No
Websites	https://dokumen.tips/download/link/engineering-mathematics-5th-ed-by-k-a-stroud.html	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	Anatomy & Physiology		Module Delivery		
Module Type	Support or related learning activities		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar		
Module Code	MIET2105				
ECTS Credits	4				
SWL (hr/sem)					
Module Level	UGII	Semester of Delivery			3
Administering Department	MIET	College	SFUC		
Module Leader	Dr. Murtaja Basim Raheem		e-mail	murtaja.bassem@alsafwa.edu.iq	
Module Leader's Acad. Title	Asst. Professor		Module Leader's Qualification	PhD.	
Module Tutor	Haneen Hayan		e-mail	haneen.hayan@alsafwa.edu.iq	
Peer Reviewer Name			e-mail		
Scientific Committee Approval Date	8/11/2023		Version Number	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	None
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1-Anatomy and Physiology are important medical discipline to understand structures and functions of human body cells, tissues, organs, organ systems, and as a whole system, how it works and the relationships between body parts. 2- This mode unit consists of main elements of anatomy and physiology, the terminology used, and how our body control itself. 3- Students will be able to understand how medical device work with the human body and what the benefit from it. 4- To understand the level of organization of the human organism and the homeostatic system. 5- To understand the chemical structure, chemical reactions and their control with acid-base balance in human body.
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Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate correct usage of the terminology used to describe anatomical structures. 2. Describe the organization of cells and tissues. 3. Describe the principles relating to the structure of connective tissues, skeletal muscle, bones, and joints. 4. Describe the principles of excitable tissues. 5. Describe the structure and function of the human eye and ear and the mechanisms of vision and hearing. 6. Describe the principles of sensorimotor control. 7. Describe cardiac mechanics and cardiac biophysics. 8. Develop quantitative descriptions of physiological properties and systems. 9. Describe the application of technologies and techniques for investigating the structure and function of the body. 10. Demonstrate communication skills (oral and written) to describe the structure and function of the human body. 11. Describe basic structural and functional features of the major organ systems within the human body. 12. Define basic biological processes essential for maintenance of homeostasis. 13. Correlate specific structural features of human cells, tissues, organs and systems of the human body with their normal functions, and identify the changes that occur during human development, ageing and disease.
Indicative Contents المحتويات الإرشادية	Topics include: • Anatomical terminology (5 hrs). • The structure and appearance of cells and tissues (6 hrs). • The appearance of bone and cartilage, the organization of dense connective tissues (6 hrs). • Skeletal muscle structure and function. Principles of excitable tissues. [15 hr] • The structure and function of sensory systems, including the eye and vision and the ear and hearing. • Principles of sensory motor control. Cardiac mechanics and cardiac biophysics.[10 hr] • Multiscale modelling of physiological systems (6 hrs). • Technologies, quantitative measurements and experimental techniques used to investigate the structure and function of different tissues, organs and organ systems. [15 hr]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The learning and teaching strategies employed in this module can vary depending on the specific course. However, here are some common strategies that may be used with this course:

Teaching methods include:

- lectures
- seminars
- tutorials
- lab experiments
- design assignments.
- industrial visits
- professional training
- a variety of projects

Assessment : methods of assessment include a combination of:

- coursework
- group project reports
- lab reports
- written exams.

Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20%	2,4,6, 8, 10, 12	LO : 1,2,3.....14
	Assignments	2	5%	7, 10	LO : 6, 13
	Projects / Lab.	2	5%	5, 9	LO : 1-5, 6-9
	Report	1	10%	11	LO : 1,2,312
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO : 1-7
	Final Exam	4 hr	50 % (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction to Anatomy and Physiology.

Week 2	The Chemical level of Organization.
Week 3	The Cell level of Organization
Week 4	The Tissue level of organization
Week 5	The Integumentary system
Week 6	The Muscular system
Week 7	Mid Exam
Week 8	The Skeletal System
Week 9	The Central Nervous System
Week 10	The Peripheral Nervous System and Autonomic Nervous System.
Week 11	The Sense and Sensory System.
Week 12	The Endocrine System.
Week 13	The Cardiovascular System: The Heart, Blood Vessels And Blood.
Week 14	The Respiratory System. The Urinary System.
Week 15	Preparatory week before final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Lab 1 measurement of body temperature
Week 2	Lab 2 Coagulation
Week 3	Lab 3 The blood
Week 4	Lab 4 Membrane transport
Week 5	Lab 5 Complete blood count
Week 6	Lab 6 Hemoglobin (Hb) Determination
Week 7	Lab 7 Erythrocyte Sedimentation Rate ESR
Week 8	Lab 8 Total leucocyte count
Week 9	Lab 9 Total Red Blood Cell R B C count
Week 10	Lab 10 Platelets count
Week 11	Lab 11 Blood film
Week 12	Lab 12 Blood group
Week 13	Lab 13 Blood sugar
Week 14	Lab 14 Blood urea & Blood pressure

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Frederic H Martini, Edwin F Bartholomew, William C. Ober, Claire W. Garrison, Kathleen Welch, & Ralf T Hutchings (2007), <i>Essentials of Anatomy and Physiology</i> , 14 th edn, Pearson Education, San Francisco, USA.	No

Recommended Texts	1- Human Physiology Study Guide 2- Human Anatomy & Physiology: Help and Review	
Websites	Interactive physiology, Copyright © 2005 Pearson Education, Inc. publishing as Benjamin	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية						
Module Title	Laboratory Medical Instrumentation II		Module Delivery			
Module Type			☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☒ Seminar			
Module Code	MIET2201					
ECTS Credits	7					
SWL (hr/sem)	175					
Module Level	UGII	Semester of Delivery	4			
Administering Department	MIET	College	AL Safwa university			
Module Leader	Dr. Basim Sadiq		e-mail	Basimalbarajei20@gmail.com		
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	Dr		
Module Tutor	Huda Wathek		e-mail	huda.wathew@alsafwa.edu.iq		
Peer Reviewer Name			e-mail			
Scientific Committee Approval Date	8/11/2023		Version Number	1.0		

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Laboratory Medical Instrumentation I	Semester	UGH-S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. The graduate get scientific and applied skills to diagnosis the medical instruments faults. 2. The graduated students will gain the ability of knowledge of different parts of medical instruments. 3. Development and training the engineering technical staffs on the medical device maintenance. 4. Preparation of the research and studies to improve and develop the action of medical devices. 5. Put the proposals and alternatives for the medical devices. 6. To describe the types of laboratory medical instruments. 7. To explain the principal work of the laboratory medical devices techniques. 8. To understand the maintenance of laboratory medical devices and their electrical and mechanical faults.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1. Introduction about the laboratory Design, Rules and limitations. 2. Define, explain, and describe the centrifuge and understand the electrical and electronic parts. 3. Define, explain, and describe Microscope and understand the electrical and electronic parts. 4. List and recognize the types of microscopes. 5. Define, explain, and describe Polymerase chain reaction (PCR). and understand the electrical and electronic parts. 6. Definition of Laboratory incubators and explain their applications. 7. List and understand the types of Laboratory Incubators. 8. Define and explain Oven and its medical application. 9. Define and explain Autoclave and its medical application. 10. Describe and understand water distillation and its application with the medical field. 11. Definition and understanding of the CBC System. 12. Define the principle of CBC Medical system. 13. Faults and maintenance of medical instrumentations
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Medical instrumentation definition, analysis lists, work security rules, and best laboratory use guidelines [14hr]. Laboratory instruments criteria, types, components, advantages and disadvantages, physical and medical application. [12hr].

	Medical instrumentation faults and maintenance, analysis lists, work security rules, and best laboratory use guidelines [14 hr]. Explain Polymerase chain reaction (pcr)and definition of Laboratory incubators[14 hr]. Types of Laboratory Incubators and oven and its medical application[14hr]. Autoclave medical application and water distillation[14hr].
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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 design, while at the same time refining and expanding their medical instrumentations 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			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10 (1 %)	103,	LO # 1,2,3.....14 ,
	Assignments	2	(10) %	4,8	LO # 6,13
	Projects / Lab.	1	%(10)	6	LO #3
	Report	2	(10) %	5,9	LO # 7,12
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	14	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	Introduction about the laboratory Design.
Week2	Definition of Centrifuge

Week 3	Applications of Centrifuge
Week 4	Definition of Microscopes.
Week 5	Types of Microscopes.
Week 6	Water distillation
Week7	Mid Term exam
Week 8	Oven and its medical application.
Week 9	Autoclave and its medical application.
Week 10	Definition of Laboratory incubators.
Week 11	Types of Laboratory Incubators.
Week 12	Polymerase chain reaction (PCR).
Week 13	Applications of (PCR)
Week 14	Definition of Complete Blood Counter (CBC) Principle of (CBC)
Week 15	A preparatory week before final exam.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Introduction about the laboratory Design
Week 2	Centrifuge
Week 3	Microscopes.
Week 4	Types of Microscopes.
Week 5	Water distillation
Week6	Oven and its medical application.
Week7	Autoclave and its medical application.
Week 8	Laboratory Incubators.
Week 9	Polymerase chain reaction (PCR).
Week10	Complete Blood Counter (CBC)
Week11	Faults and maintenance of medical lab. instruments

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Biomedical device technology ,by ANTHONY Y. K. CHAN, MSc, MEng, PEng, CCE	
Recommended Texts	Ananthi ,2005,"A text book of medical instruments	
Websites		

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	Electronic Circuits II		Module Delivery		
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar		
Module Code	MIET2202				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level		UG11	Semester of Delivery		4
Administering Department		MIE T	College	AL-safwa University	
Module Leader	Murtadha Mohamed Ali		e-mail	Mortada.Muhammad@alsafwa.edu.iq	
Module Leader's Acad. Title		Lecturer	Module Leader's Qualification		
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		
Scientific Committee ApprovalDate			Version Number		

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electronics Circuits I- MIET2102	Semester	UGII-S3
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. The graduate get scientific and applied skills of electronic circuits 2. The graduated students will gain the ability of knowledge of different parts of electronic circuits. 3. Development and training the engineering technical staffs on the electronic circuits. 4. Preparation the research and studies to improve and develop the action of electronic circuits. 5. Prepare application engineers in technical and electronic engineers. 6. Put the proposals and alternatives for the electronic devices.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Become aware of the general characteristics of electronic devices. 2. Be able to describe the difference types of electronic categories. 3. Develop a clear understanding of the basic operation and characteristics of electronic devices. 4. Become familiar with the use of equivalent circuits to analyze series, parallel, and series-parallel electronic networks. 5. Be able to predict the output response of an electronic networks. 6. Become familiar with the analysis of and the range of applications for electronic devices. 7. Become familiar with the basic construction and operation of the various types of electronic categories! 8. Be able to test a various type of electronic terminals. 9. Be able to determine the dc levels for the variety of important electronic circuits. 10. Understand how to measure the important voltage levels of electronic circuits. 11. Begin to understand the troubleshooting process as applied to electronic configurations. 12. Develop a sense for the stability factors of an electronic circuits. 13. Learn to use the equivalent model to find the important ac parameters for an amplifier. 14. Develop some skill in troubleshooting ac amplifier networks.

Indicative Contents محتويات ارشادية	Indicative content includes the following. Part A Electronic Theory JFETs: n -channel, p -channel, TRANSFER CHARACTERISTICS, Shockley's Equation , Shorthand Method [10 hrs] FET Biasing -Fixed-bias configuration, self-bias configuration, voltage-divider bias arrangement; common gate configuration , depletion-type MOSFETs , enhancement-type MOSFET [10 hrs] Revision problem classes [6 hrs] Part B – Frequency response Decibels- General Frequency Considerations, Low-Frequency Analysis—Bode Plot, Low-Frequency Response—BJT Amplifier with RL, Low-Frequency Response—FET Amplifier, High-Frequency Response—BJT Amplifier, High-Frequency Response—FET Amplifier [12 hrs] Operational Amplifiers - Differential Amplifier Circuit, BiFET, BiMOS, and CMOS Differential Amplifier Circuits, Op-Amp Basics, Practical Op-Amp Circuits, Op-Amp Specifications—DC Offset Parameters. [12 hrs] Part C - Power Amplifiers Series-Fed Class A Amplifier- Transformer-Coupled Class A Amplifier, Class B Amplifier Operation, Class B Amplifier Circuits, Amplifier Distortion.[10 hrs] Power Supplies (Voltage Regulators) [12 hrs]
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Learning and Teaching Strategies	
Strategies	The main strategy that will be encourage active participation and engagement of students through activities such as group discussions, hands-on experiments, problem-solving tasks, and case studies. This approach promotes critical thinking, collaboration, and knowledge application and encourage students to explore and discover knowledge through inquiry and investigation. Pose open-ended questions or problem scenarios that require learners to research, analyze, and draw conclusions independently.

Student Workload (SWL)			
Structured SWL (h/sem)	79	Structured SWL (h/w)	5
Unstructured SWL (h/sem)	71	Unstructured SWL (h/w)	4

Total SWL (h/sem)	150
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Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	16% (16)	5,10	LO #1,2,10 and 11
	Assignments	2	8% (8)	2,12	LO # 3,4 ,6,7 and 14
	Projects / Lab.	1	8% (8)	continuous	
	Report	1	8% (8)	13	LO # 5,8 and 10
Summative assessment	Midterm Exam	2hr	10% (10)	8	LO # 1,2,5,9,10 and 13
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	FET Amplifiers.
Week 2	JFET Small-Signal Model
Week 3	General Frequency Considerations
Week 4	BJT frequency response
Week 5	JFET frequency response
Week 6	Power amplifier.
Week 7	Mid- Exam
Week 8	Series-Fed Class A Amplifier
Week 9	Class B,C and D amplifiers
Week 10	Feedback and Oscillator Circuits

Week 11	PNPN and Other Devices
Week 12	Operational amplifier
Week 13	Operational amplifier applications
Week 14	Power Supplies
Week 15	Voltage Regulators

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	Lab 1: Common emitter transistor characteristic
Week 2	Lab 2: Common collector transistor
Week 3	Lab 3: Common emitter amplifier
Week 4	Lab 4: Transistor biasing (part 1)
Week 5	Lab 5: Transistor biasing (part 2)
Week 6	Lab6:Power amplifier.
Week 7	Lab 7: Common base amplifier
Week 8	Lab 8: Collector feedback amplifier circuit
Week 9	Lab 9: Voltage divider biasing circuit
Week 10	Lab 10: Emitter follower
Week 11	Lab 11: JFET characteristics
Week 12	Lab12: JFET amplifier
Week 13	Lab13: operational amplifier (part1)
Week 14	Lab14: operational amplifier (part 2)

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	electronic devices and circuit theory 11th edition, Robert L. Boylestad , Louis Nashelsky	yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية		
Module Title	Digital Electronics	Module Delivery
Module Type	Core	☒ Theory ☒ Lecture ☒ Lab
Module Code	MIET2203	
ECTS Credits	5	

SWL (hr/sem)	125	☐ Tutorial ☐ Practical ☐ Seminar	
Module Level	2	Semester of Delivery	4
Administering Department	MIET	College	Al-Safwa University college
Module Leader	Yasser Taha Alzubaidi	e-mail	yasser.taha@alsafwa.edu.iq
Module Leader's Acad. Title	M.Sc.	Module Leader's Qualification	
Module Tutor	Adil Yaseen Taha	e-mail	Adil.yaseen@alsafwa.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	8/11/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electronics Circuits I (MIET2102)	Semester	S3
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To learn the basics of logical circuits which are used in computers. 2. To understand how the logical medical instrumentations to work 3. To program the logical medical instrumentations 4. To design the logical medical instrumentations 5. To learn how to use logical tables to perform the logical medical instrumentations 6. TO maintain the logical medical instrumentations 7. To suggest how to build modern the logical medical instrumentations.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At ending of course, student will: 1-know the numbers systems, and conversion between them. 2-know binary codes. 3-design binary gates, and use Boolean algebra. 4-design and simplify the arithmetic circuits. 5- define Karnaugh maps. 6- know how flip-flops works RS, JK. 7- design flip-flops D, T. 8-define the work principles of counters and its types. 9-know the shift registers and types. 10-principles of decoders. 11-identify the Multiplexers and De-Multiplexers. 12-conversion of analog to digital circuits.
Indicative Contents المحتويات الإرشادية	Numbers systems, Binary, Octal, Hexadecimal [4 H]. Codes numbers [4 H]. Arithmetic circuits [10 H]. De Margan's theorems [4 H]. Karnaugh map [8 H]. Flip – Flop: RS, RST, JK, D, FF [8 H]. Asynchronous counter and synchronous [10 H]. Shift registers [10 H]. Multiplexer, De multiplexer [4 H]. Decoder [8 H]. Analog conversion [4 H].

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

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem)	79	Structured SWL (h/w)	5
Unstructured SWL (h/sem)	46	Unstructured SWL (h/w)	3

Total SWL (h/sem)	125
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Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3, 9	LO #1, 2, 4,11 and 12
	Assignments	2	10% (10)	3, 13	LO # 4, 5, 7 and 8
	Projects / Lab.	1	10% (10)	Continuous	
	Report	13	10% (10)	13	LO # 6, 8 and11
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-8
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Number system: Binary numbers, Octal numbers, Hexadecimal numbers,
Week 2	Binary codes
Week 3	Logic gates, De Margan's theorems, Laws and theorem of Boolean algebra
Week 4	Arithmetic circuit, Simplifying logic circuits:
Week 5	fundamentals products, sum of products, algebraic simplification
Week 6	Truth table to Karnaugh map
Week 7	Flip – Flop: RS, RST, JK, D, FF
Week 8	Counters: Asynchronous counter
Week 9	Counters: synchronous counter
Week 10	Shift registers: Serial in -Serial out shift register Serial in -Parallel out shift register
Week 11	Shift registers: Bidirectional Shift Register
Week 12	Multiplexer and De multiplexer
Week 13	Decoder
Week 14	Digital to Analog converter
Week 15	Final Exam (Practical)
Week 16	Final Exam (Theoretical)

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي المختبر	
	Material Covered

Week 1	Lab 1: Logic Gates (NOT, AND)
Week 2	Lab 2: Logic Gates (OR, NAND, NOR)
Week 3	Lab 3: Logic Gates (XOR, XNOR)
Week 4	Lab 4: Exercises
Week 5	Lab 5: Universal Gates (NAND, NOR)
Week 6	Lab 6: Flip-Flop
Week 7	Lab 7: Adder (Half and Full Adder)
Week 8	Lab 8: Subtractor (Half and Full Subtractor)
Week 9	Lab 9: Comparator
Week 10	Lab 10: Asynchronous Binary Counter Up
Week 11	Lab 11: Asynchronous Binary Down Counter
Week 12	Lab 12: Asynchronous Binary Decade Counter
Week 13	Lab 13: Asynchronous MOD Counter
Week 14	Lab 14: Asynchronous Binary Counter (count from number to another)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	DIGITAL FUNDAMENTALS / FLOYD	YES
Recommended Texts	Digital Logic Design - 4th Edition	NO
Websites	https://www.udemy.com/course/digital-electronics-logic-design/?utm_source=adwords&utm_medium=udemyads&utm_campaign=DSA_Catchall_la.EN_cc.ROW&utm_content=deal4584&utm_term=._ag_88010211481_.ad_535397282061_.kw_.de_c_.dm_.pl_.ti_dsa-52949608673_.li_1007949_.pd._&matchtype=&gclid=CjwKCAjwp6CkBhB_EiwAlQVyxcuQ427tsVehXbetXE4NUFlekP4rqg-PrCWgQflucPuo7Mqz8SXRVoC5asQAvD_BwE	

Grading Scheme

مخطط الدرجات

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information

معلومات المادة الدراسية

Module Title	ical Chemistry instrumentation	Module Delivery		
Module Type		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar		
Module Code	T2204			
ECTS Credits				
SWL (hr/sem)				
Module Level	UGII			Semester of Delivery
Administering Department	MIET	College	Al-Safwa collage university	
Module Leader	Faez A. Hamza Ashour	e-mail	abdfas@yahoo.com	
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	M.Sc.	
Module Tutor		e-mail		
Peer Reviewer Name	Huda Watheq	e-mail	Huda.wathew@alsafwa.edu.iq	
Scientific Committee Approval Date	2/11/2024	Version Number	1.0	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1.To introduce the clinical chemistry and biochemical mechanism in the human body 2.To describe the types of laboratory medical instruments. 3. To describe the types of clinical chemistry analysis or (tests). 4. To explain the principal work of the laboratory medical devices techniques. 5. To describe the most important compositions in human body. 6. To understanding the maintenance of laboratory medical devices and its electrical and mechanical faults.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1.Define the clinical chemistry and recognize what is the laboratory security system and determine the quality control results in medical laboratory. 2. List the principal work of spectrophotometer instruments and derive Beer's-Lambert Law. 3.Describe the measurement instruments of ions and salts in human body. 4. Identify all the clinical chemistry analysis and their measurement techniques. 5. Discuss the importance of minerals in human body and their measurement. 6. Describe the principal work of Elisa technique and list their methods. 7. Explain the electrical conduction concept and their examples in human body. 8. Explain the osmotic conduction concept and their examples in human body. 9. List the types and function of enzyme in human body and their measurements techniques. 10. Discuss the importance of proteins in human body and describe their measurements. 11. Explain the importance of fats in human body and explain their measurement techniques. 12. Define the hemoglobin and explain the hemoglobin diseases with its clinical significant. 13. List all types of minerals in human body and describe their daily requirements. 14. Define the immune system and recognize the foreign material and explain the disorders of immune system.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Clinical chemistry definition, analysis lists, work security rules, best laboratory uses guidelines. [3hr].

	Spectrophotometer instruments criteria, theory, types, components, advantage and disadvantage, physical and medical application and Beer-Lambert law derivative .[10hr]
	Electrolyte analyzer definition, features, theory, components, configuration advantages, disadvantages and application. [6hr]
	Autoanalyzer concept, Blood Gas Analyzer (BGA) criteria, types, theory, components, figuration, advantages and disadvantages. [6hr]
	ELISA Technique concept, theory ,methods:(direct and indirect), components ,figuration, advantages ,disadvantages and applications [6hr].
	Minerals definition, classifications, sources, function, nutrition(mg/day) and diagnostic procedure[6hr].
	Electrical conduction concept , examples ,performing tests. Osmotic conduction concept, examples ,performing tests [10hr].
	Enzyme definition, classification, function, performing test and clinical significant. [6hr]
	Proteins definition, classification ,function, clinical significant, Electrophoresis Technique :diagnostic procedure, theory and principle work [6hr].
	Fats concept, classification, sources, importance, clinical signifcation and measurements: Hydro densitometry Weighing (Underwater Weighing, Near – infrared interaction (NIR), Skin Fold Caliper, Dual energy X-ray absorptiometry (DEXA), BMI (Body mass impedance) [10hr] .
	Hemoglobin definition, structure, analysis, hemoglobin diseases, clinical significant and diagnostic procedure: complete blood count (CBC) [6hr].
	Concept of immunology, structure, material and disease diagnostic [3hr].

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Lectures - scientific laboratory- data show - summer training- workshops- seminars, written exam, Quizzes and online testing .
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Student Workload (SWL)

الحمل الدراسي للطالب

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

Module Evaluation

تقييم المادة الدراسية

As	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
	Quizzes	2	%10	3, 11
				LO:1,2,3.....14

Formative assessment	Assignments	2	10%	7,10	LO: 6, 13
	Projects / Lab.	2	10%	4,8	LO: 3, 10
	Report	1	10%	11	LO: 10,12
Summative assessment	Midterm Exam	2 hr	10%	7	LO: 1-7
	Final Exam	3 hr	50%	14	All
Total assessment			100%		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Introduction ,Best laboratory uses and quality control.
Week 2	Spectrum instruments and uses.
Week 3	Ion and salt measurement instruments
Week 4	Auto-analysis instruments
Week 5	Mineral measurement instrument
Week 6	Elisa instrument and its uses
Week 7	Mid term Exam
Week 8	Electrical conduction
Week 9	Osmotic conduction
Week 10	Enzyme and their measurement
Week 11	Protein and its importance
Week 12	Fats and its importance
Week 13	Hemoglobin
Week 14	Minerals and nutrition
Week 15	Immunological chemistry
Week 16	Preparatory week before the final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Introduction to Clinical Chemistry instrumentation
Week 2	Lab1: spectrophotometer and colorimeter, theory, principle of work, operation, component's function, maintenance and the faults.
Week 3	Lab2: Flame photometer, types, theory, principle of work, operation, component's function, maintenance and the faults.

Week 4	Lab3: Blood gas analyzer and PH meter, theory, principle of work, operation, components function, normal results, maintenance and the faults.
Week 5	Lab4: Auto-analysis, types, theory, principle of work, operation, component's function, maintenance and the faults.
Week 6	Lab5: Elisa, types, theory, principle of work, operation, components function, maintenance and the faults.
Week 7	Lab6: Hemodialysis and peritoneal technique, theory, principle of work, operation, maintenance and faults.
Week 8	Lab7: Electrophoresis, theory, principle of work, operation, component's function, normal results, maintenance and the faults.
Week 9	Lab 8: Body fat analyzer, theory, principle of work, operation, component's function, normal results, maintenance and the faults.
Week 10	Lab 9: review for the clinical chemistry instrumentation.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Clinical Chemistry Hand book :workbook of principles ,techniques and correlation by N.T.Coleman	yes
Recommended Texts	LABORATORY INSTRUMENTATION AND TECHNIQUES, Book by Dr.Mathew Folaranmi OLANIYAN,Associate Professor,Department of Medical Laboratory Science,Achievers University, Owo-Nigeria,2017.	No
Websites	1. https://byjus.com/chemistry/spectrophotometer-principle/ 2.3. https://www.bosterbio.com/media/pdf/ELISA_Handbook.pdf 3.	

Grading Scheme

مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

1. Course name :					
Computer Applications					
2. Course code :					
Computer Applications					
3. Semester / year :					
Third Year					
4. Description Preparation Date :					
16 / 9 / 2024					
5. Available Attendance Forms: weekly-lecture					
Weekly Lecture					
6. Number of Credit Hours (Total) / Number of Units (Total)					
4 unit, 1 theoretical, 2 practical per week – 90 hour					
7. Course administrator's name (mention all, if more than one name)					
Doaa Ali Abed					
8. Course Objectives					
Course Objectives			Teaching students the MATLAB program, basic functions, and how to deal with them		
9. Teaching and Learning Strategies					
Direct Instruction	Interactive Teaching	Active Learning	Adaptive Learning	Problem-Based Learning	Collaborative Teaching
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	1 theoretical, 2 practical per week	The student understands subject	Introduction, MATLAB Environment, MATLAB Windows(Command Window, Workspace Window, Command History window, Help Window, Editor Window).	Theoretical, Practical	Quiz
2nd, 3rd	1 theoretical, 2 practical per week	The student understands subject	A First Program, Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting ,End	Theoretical, Practical	Quiz

			a subscript, Colon Operator, Transpose, Deleting Rows or Columns.		
4th	1 theoretical, 2 practical per week	The student understands subject	Variables and assignment statement, logical operator.	Theoretical , Practical	Quiz
5th	1 theoretical, 2 practical per week	The student understands subject	Arrays, Built in functions, Basic Matlab Functions (sum, max, min, mean, magic, diag, length, size, median, sort).	Theoretical , Practical	Quiz
6th, 7th	1 theoretical, 2 practical per week	The student understands subject	Basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure Setting Axis Limits). Arguments and return values, M-file, input-output statement.	Theoretical , Practical	Quiz
8th	1 theoretical, 2 practical per week	The student understands subject	Control Statements(Conditional statements: If, Else, Elseif, switch case)	Theoretical , Practical	Quiz
9th	1 theoretical, 2 practical per week	The student understands subject	Repetition statements: (While statement, For statement)	Theoretical , Practical	Quiz
10th	1 theoretical, 2 practical per week	The student understands subject	Procedures and Functions(a custom-made Matlab function, define the name of the function, the input and the output variables, Calling Functions)	Theoretical , Practical	Quiz
11th,12th	1 theoretical, 2 practical per week	The student understands subject	GUI Interface (Attaching buttons to action, Getting Input, Setting Output), Predefined GUIs and Dialog Boxes.	Theoretical , Practical	Quiz
13th,14th,15th	1 theoretical, 2 practical per week	The student understands subject	Menu-driven programs: a) Controls: uimenu and uicontrol. b) Interactive graphics. c) Large program logic flow	Theoretical , Practical	Quiz
16th ,17 th	1 theoretical, 2 practical per week	The student understands subject	Introduces the LabVIEW environment including windows, menus, and tools	Theoretical , Practical	Quiz
18th ,19 th	1 theoretical, 2 practical per week	The student understands subject	Creating and using LabVIEW projects The LabVIEW front panel and block diagram Searching for controls, VIs, and functions.	Theoretical , Practical	Quiz
20th, 21 st	1 theoretical, 2 practical per week	The student understands subject	Understanding the dataflow programming model of LabVIEW, Recognizing different data types, Tools for developing, cleaning and organizing your Vis, Using Express VIs to build basic VI.	Theoretical , Practical	Quiz
22 nd	1 theoretical, 2 practical per week	The student understands subject	Correcting broken Vis, Using common debugging techniques, Addressing undefined or unexpected data, Implementing error checking and error handling.	Theoretical , Practical	Quiz
23rd , 24 th	1 theoretical, 2 practical per week	The student understands subject	Using structures like the While Loop and For Loop, Adding software timing to your code, Sharing data between iterations, Plotting data to a waveform chart.	Theoretical , Practical	Quiz
25th ,26 th	1 theoretical, 2 practical per week	The student understands subject	Creating and using array controls and indicators, Creating and using cluster controls and indicators, Using type definitions to improve reuse of data structures in applications.	Theoretical , Practical	Quiz
27th ,28 th	1 theoretical, 2 practical per week	The student understands subject	Creating and using Case structures, Creating and using Event structures, Creating and using Case structures, Creating and using Event structures,	Theoretical , Practical	Quiz

			Using a VI as a subVI, Creating sub from an existing VI.		
29th ,30 th	1 theoretical, 2 practical per week	The student understands subject	High-level and low-level file I/O functions available in LabVIEW, Implementing File I/O functions to read and write data to files. Techniques for sequential programming, Using state programming, Implementing a state machine design pattern.	Theoretical , Practical	Quiz
11. Course Evaluation					
1- Periodic and final theoretical exams 2- Periodic and final practical exams 3- Quizzes 4-Homework assignments					
12. Learning and Teaching Resources					
Theoretical Lectures					
Practical Lectures and Laboratory					
Group Discussions					

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

1. Course name :
Microprocessors
2. Course code :
3. Semester / year :
Third Year
4. Description Preparation Date :
2024-9-16
5. Available Attendance Forms: weekly-lecture
Weekly Lecture
6. Number of Credit Hours (Total) / Number of Units (Total)
6 unit, 2 theoretical, 2 practical per week- 120hour
7. Course administrator's name (mention all, if more than one name)
Mustafa Abdulrasool Ali

8. Course Objectives	
● Course Objectives	Understand the fundamentals: Gain a solid understanding of the basic principles and concepts of microprocessors, including their architecture, organization, and operation. Learn assembly language programming: Acquire skills in programming microprocessors using assembly language, including instruction set architecture, addressing modes, and assembly language programming techniques. Study microprocessor architecture: Explore the internal architecture of microprocessors, including the various components such as registers, arithmetic logic units (ALUs), control units, and memory interfaces. Understand input/output (I/O) operations: Learn about the mechanisms for input and output operations in microprocessors, including I/O ports, memory-mapped I/O, interrupt handling, and interfacing with peripheral devices.

9. Teaching and Learning Strategies					
Direct Instruction	Interactive Discussions: Encourage students to actively participate in discussions by asking questions, sharing their thoughts, and engaging in peer-to-peer learning.	Problem-Based Learning	Collaborative Teaching	Hands-on Lab Sessions: Conduct practical lab sessions where students can gain hands-on experience.	Assessments and Feedback: Use variety of assessment methods such as quizzes, assignments, projects and exams to evaluate students' understanding.

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st , 2 nd	2 theoretical, 2 practical per week	The student understands subject	Introduction to Microprocessor Intel 8086, Register types	Theoretical, Practical	Quiz
3 rd , 4 th	2 theoretical, 2 practical per week	The student understands subject	Bus interface system, Data transfer instructions	Theoretical, Practical	Quiz
5 th , 6 th	2 theoretical, 2 practical per week	The student understands subject	Microprocessor Architecture, Arithmetic instructions	Theoretical, Practical	Quiz
7 th , 8 th , 9 th	2 theoretical, 2 practical per week	The student understands subject	The operations of a CPU and memory, Arithmetic instructions	Theoretical, Practical	Quiz
10 th	2 theoretical, 2 practical per week	The student understands subject	Central Processing Unit (CPU) organization, Arithmetic instructions	Theoretical, Practical	Quiz
11 th , 12 th	2 theoretical, 2 practical	The student understands subject	Arithmetic Logic Unit (ALU) and Data operations, Logic instructions	Theoretical, Practical	Quiz
13 th , 14 th	2 theoretical, 2 practical per week	The student understands subject	Memory Segmentation, Physical Address, Control instruction	Theoretical, Practical	Quiz

15 th , 16 th	2 theoretical, 2 practical per week	The student understands subject	Flag Register, Control transfer instructions	Theoretical, Practical	Quiz
17 th , 18 th , 19 th	2 theoretical, 2 practical per week	The student understands subject	System Components the Intel 8086, Shift instructions	Theoretical, Practical	Quiz
20 th , 21 th , 22 th	2 theoretical, 2 practical per week	The student understands subject	Addressing modes in 8086, Rotate instructions	Theoretical, Practical	Quiz
23 th , 24 th	2 theoretical, 2 practical per week	The student understands subject	Memory-mapped I/O Writing a small program in 8086 MPU	Theoretical, Practical	Quiz
25 th , 26 th , 27 th	2 theoretical, 2 practical per week	The student understands subject	interfaces and I/O ports, Writing a program in 8086 MPU using conditional instructions	Theoretical, Practical	Quiz
28 th , 29 th , 30 th	2 theoretical, 2 practical per week	The student understands subject	Pin Diagram of 8086 and description of 8086, Writing a program in 8086 MPU using all instructions	Theoretical, Practical	Quiz

11. Course Evaluation

4- Quizzes

5- Homework assignments

6- Periodic and final practical exams

12. Learning and Teaching Resources

Theoretical Lectures	Microprocessor 8086: Architecture, Programming and Interfacing. Websites https://www.shahucollegeelatur.org.in/Department/StudyMaterial/sci/compsci/intelarchitecture.pdf
Practical Lectures and Laboratory	Intel 8086 MICROPROCESSOR ARCHITECTURE
Group Discussions	1- Active Participation 2- Sharing Knowledge 3- Exchange of Ideas 4- Problem-Solving 5- Interaction
Case Study	1- Background Information 2- Problem Identification 3- Analysis 4- Solutions/Recommendations 5- Conclusion

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

1. Course name :					
Electrical Technology					
2. Course code :					
Electrical Technology					
3. Semester / year :					
Third Year					
4. Description Preparation Date :					
2024-9-16					
5. Available Attendance Forms: weekly-lecture					
Weekly Lecture					
Number of Credit Hours (Total) / Number of Units (Total)					
2 theoretical, 2 practical per week- (120hour)/ 6 units					
6. Course administrator's name (mention all, if more than one name)					
Karrar Ali Kzar					
7. Course Objectives					
Course Objectives		Study of the technical foundations of electricity, electric motors, various electrical transformers, how they work, how to operate them, how to repair faults, and how to perform maintenance them.			
8. Teaching and Learning Strategies					
Effective Teaching	Diverse Assessment	Problem-Solving Learning	Effective Feedback	Deep Learning	Formative Assessment
9. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation

					method
, 2 nd , 1 st	2 theoretical, 2 practical per week	The student understands subject	Transformers : single phase transformer and construction	Theoretical , Practical	Quiz
3 th	2 theoretical, 2 practical per week	The student understands subject	Theory of operation no load and short circuit test.	Theoretical , Practical	Quiz
4 th 5 th	2 theoretical, 2 practical per week	The student understands subject	Equivalent circuit auto-transformers, instrument transformers.	Theoretical , Practical	Quiz
, 7 th 6 th	2 theoretical, 2 practical per week	The student understands subject	Three phase transformers, constructions methods connection.	Theoretical , Practical	Quiz
, 8 th 9 th	2 theoretical, 2 practical per week	The student understands subject	Electromechanical energy conversion principles, reoperation.	Theoretical , Practical	Quiz
, 11 th 12 th 10 th	2 theoretical, 2 practical per week	The student understands subject	D.C machines: e.m.f and torque equations equivalent circuit methods excitation, generated characteristics.	Theoretical , Practical	Quiz
, 15 th , 14 th 13 th	2 theoretical, 2 practical per week	The student understands Subject	Motor characteristics testing, calculation losses and efficiency	Theoretical , Practical	Quiz
, 16 th , 17 th 18 th	2 theoretical, 2 practical per week	The student understands Subject	Induction machines equivalent circuit basic equations simple analysis testing.	Theoretical , Practical	Quiz
, 19 th 20 th 21 th	2 theoretical, 2 practical per week	The student understands Subject	Single phase induction motors methods of starting splitphase, capacitor short, capacitor and shaded pole motors.	Theoretical , Practical	Quiz
, 23 th 22 th	2 theoretical, 2 practical per week	The student understands Subject	Synchronous machines, generator and motor equivalent circuit basic equation.	Theoretical , Practical	Quiz
, 24 th , 25 th	2 theoretical, 2 practical per week	The student understands subject	Special machines: Reluctance motor hysteresis motor linear motor , step motor , dray cup motor , servo motor etc ...	Theoretical , Practical	Quiz
, 26 th 27 th	2 theoretical, 2 practical per week	The student understands subject	Control switches pilot switches , push bottoms , limits	Theoretical , Practical	Quiz

, 28 th	2 theoretical, practical per week	The student understands subject	Switches, f switches, contact pressure switches.	Theoretical , Practical	Quiz
, 29 th 30 th	2 theoretical, practical per week	The student understands subject	High voltage circu	Theoretical , Practical	Quiz
10. Semester Assessment					
7- Daily and final theoretical exams					
8- Daily and final practical exams					
9- Quizzes					
4-Homework assignments					
11. Learning and Teaching References					
Theoretical Lectures		Electrical Sciences Fundamentals of Electrical Machines - Generators & Motors https://www.scribd.com/home			
Practical Lectures and Laboratory		Learn about the importance of electrical transformers and how work, Conduct tests on transformers and know their types, Study electrical motors, Study electrical generators, Conduct tests on alternating and direct electrical motors generators,			
Group Discussions		6- Active Participation 7- Information Sharing 8- Intellectual Feedback 9- Problem-Solving 10- Brainstorming			
Case Study		6- Background Information 7- Problem Identification 8- Analysis 9- Solutions/Recommendations 10- Conclusion			

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

1. Course name :
Medical Communication System
2. Course code :
Medical Communication System
3. Semester / year :
Third Year

4. Description Preparation Date :					
2024-9-16					
5. Available Attendance Forms: weekly-lecture					
Weekly Lecture					
6. Number of Credit Hours (Total) / Number of Units (Total)					
6 unit, 2 theoretical, 2 practical per week- 120hour					
7. Course administrator's name (mention all, if more than one name)					
Ghadeer Alaa Nasrullah					
8. Course Objectives					
Course Objectives			To teach students the fundamental principles of signal processing and its application in processing audio and image signals		
9. Teaching and Learning Strategies					
Direct Instruction	Interactive Teaching	Problem-Based Learning	Collaborative Teaching	Active Learning	Adaptive Learning
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	2 theoretical, practical per week	The student understands subject	General review electrostatic.	Theoretical , Practical	Quiz
2 nd	2 theoretical, practical per week	The student understands subject	Gauss's Law	Theoretical , Practical	Quiz
3 rd	2 theoretical, practical per week	The student understands subject	Study magnetic field	Theoretical , Practical	Quiz
5 th , 4 th	2 theoretical, 2 practical per week	The student understands subject	Timevarying magnetic field	Theoretical , Practical	Quiz
6 th	2 theoretical, practical per week	The student understands subject	Uniforms plan waves	Theoretical , Practical	Quiz
8 th 7 th	2 theoretical, practical per week	The student understands subject	Fourier Transform	Theoretical , Practical	Quiz
9 th 10 th	2 theoretical, 2 practical per week	The student understands subject	Signals & Systems	Theoretical , Practical	Quiz

, 11 th , 12 th	2 theoretical, 2 practical per week	The student understands subject	Periodic & non- Periodic signals	Theoretical , Practical	Quiz
, 14 th 13 th	2 theoretical, 2 practical per week	The student understands subject	AM & FM Systems	Theoretical , Practical	Quiz
, 17 th 16 th 15 th	2 theoretical, 2 practical per week	The student understands subject	Sampling PAM, PWM, PPM, PCM	Theoretical , Practical	Quiz
, 18 th , 20 th 19 th	2 theoretical, 2 practical per week	The student understands subject	Digital modulation ASK, FSK, PSK	Theoretical , Practical	Quiz
, 21 th , 22 th	2 theoretical, 2 practical per week	The student understands subject	Noise in analogue & digital systems	Theoretical , Practical	Quiz
, 24 th 23 th	2 theoretical, 2 practical per week	The student understands subject	Rectangular wave guides	Theoretical , Practical	Quiz
, 26 th , 25 th	2 theoretical, 2 practical per week	The student understands subject	Microwaves passive devices	Theoretical , Practical	Quiz
27 th 28 th	2 theoretical, practical per week	The student understands subject	Microwaves generators	Theoretical , Practical	Quiz
, 29 th , 30 th	2 theoretical, practical per week	The student understands subject	Antennas	Theoretical , Practical	Quiz

11. Course Evaluation

10- Periodic and final theoretical exams

11- Periodic and final practical exams

12- Quizzes

4-Homework assignments

12. Learning and Teaching Resources

Theoretical Lectures	Fundamentals of Communication Systems For John G Proakis , Masoud Salehi
Practical Lectures and Laboratory	* Hwei P. Hsu, "Schaum's Outlines of Theory and Problems of Signals and Systems" McGraw- Hill Companies.
Group Discussions	11- Active Participation 12- Sharing Knowledge 13- Exchange of Ideas 14- Problem-Solving 15- Interaction
Case Study	11- Background Information 12- Problem Identification 13- Analysis 14- Solutions/Recommendations 15- Conclusion

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

1. Course name :					
Medical electronic system					
2. Course code :					
Medical electronic system					
3. Semester / year :					
Third Year					
4. Description Preparation Date :					
2024-9-16					
5. Available Attendance Forms: weekly-lecture					
Weekly Lecture					
6. Number of Credit Hours (Total) / Number of Units (Total)					
6 unit ,2theoretical ,2 practical per week-120 hour					
7. Course administrator's name (mention all, if more than one name)					
Murtadha Mohamed Ali					
8. Course Objectives					
Course Objectives				To teach students the fundamental of medical electronic system	
9. Teaching and Learning Strategies					
Direct Instruction	Interactive Teaching	Problem-Based Learning	Collaborative Teaching	Active Learning	Adaptive Learning
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1st	2 theoretical, practical per week	The student understands subject	Regulatedpower supplied	Theoretical , Practical	Quiz

2nd	2 theoretical, 2 practical per week	The student understands subject	Monolithic regulators.	Theoretical , Practical	Quiz
3rd	2 theoretical, 2 practical per week	The student understands subject	Switching regulators.	Theoretical , Practical	Quiz
4th , 5th	2 theoretical, 2 practical per week	The student understands subject	Additional switch regulator to power	Theoretical , Practical	Quiz
6th	2 theoretical, 2 practical per week	The student understands subject	Active filters.	Theoretical , Practical	Quiz
7th , 8th	2 theoretical, 2 practical per week	The student understands subject	Butter worth filter practical realization	Theoretical , Practical	Quiz
9th , 10th	2 theoretical, 2 practical per week	The student understands subject	Band pass filter, band reject filter.	Theoretical , Practical	Quiz
11th , 12th	2 theoretical, 2 practical per week	The student understands subject	Active resonant band pass filter.	Theoretical , Practical	Quiz
13th	2 theoretical, 2 practical per week	The student understands subject	Active RC band pass filter.	Theoretical , Practical	Quiz
14th	2 theoretical, 2 practical per week	The student understands subject	Digital to analogue converters (DAC)	Theoretical , Practical	Quiz
15th	2 theoretical, practical per week	The student understands subject	A ladder – type DAC multiplying DAC.	Theoretical , Practical	Quiz
16th	2 theoretical, practical per week	The student understands subject	. Analogue to digital converters (ADC)	Theoretical , Practical	Quiz
17th , 18th	,theoretical 2 practical per week 2	student understands subject	The counting successive approximation ADC	oretical , Practical	Quiz
19th , 20th	,theoretical 2 practical per week 2	student understands subject	The parallel comparator ADC dual – slope radiometric ADC.	oretical , Practical	Quiz
21st , 22nd ,23rd	,theoretical 2 practical per week 2	student understands subject	Medical acquisition system	, Practical	Quiz
24th	,theoretical 2 practical per week 2	student understands subject	Microcomputer based system.	oretical , Practical	Quiz
25th	,theoretical 2 practical per week 2	student understands subject	Monitoring	oretical , Practical	Quiz

11. Course Evaluation

- 13- Periodic and final theoretical exams
- 14- Periodic and final practical exams
- 15- Quizzes

4-Homework assignments	
12. Learning and Teaching Resources	
Theoretical Lectures	Boylestad introductory circuit analysis https://www.scribd.com/home
Practical Lectures and Laboratory	Connected circuit of power supply and analysis ,clipper Clamper,regulator,etl
Group Discussions	16- Active Participation 17- Sharing Knowledge 18- Exchange of Ideas 19- Problem-Solving 20- Interaction
Case Study	16- Background Information 17- Problem Identification 18- Analysis 19- Solutions/Recommendations 20- Conclusion

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

1. Course name :	Power Electronics
2. Course code :	Power Electronics
3. Semester / year :	Third Year
4. Description Preparation Date :	2024-9-16
5. Available Attendance Forms: weekly-lecture	Weekly Lecture
6. Number of Credit Hours (Total) / Number of Units (Total)	6 unit, 2 theoretical, 2 practical per week- 120hour
7. Course administrator's name (mention all, if more than one name)	Rawia Moaazer Esmail
8. Course Objectives	Course Objectives To teach students the fundamental principles

	of power electronics, which is concerned with converting and controlling electrical energy efficiently to meet different needs. They convert current between AC and DC, change voltage levels, control motors, and support renewable energy sources. The goal is to reduce energy loss and increase efficiency.
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9. Teaching and Learning Strategies

Direct Instruction	Interactive Teaching	Problem-Based Learning	Collaborative Teaching	Active Learning	Adaptive Learning
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 st	2 theoretical, practical per week	The student understands subject	Introduction to Power Electronics	Theoretical , Practical	Quiz
2 nd , 3 rd	2 theoretical, practical per week	The student understands subject	Switching devices , power&control device	Theoretical , Practical	Quiz
, 5 th , 4 th	2 theoretical, 2 practical per week	The student understands subject	Types characteristics, rat (diode, transistor .	Theoretical , Practical	Quiz
, 7 th , 8 th 6 th	2 theoretical, practical per week	The student understands subject	Method of turning -on & turning -off	Theoretical , Practical	Quiz
, 9 th 10 th	2 theoretical, 2 practical per week	The student understands subject	Protection of power devices	Theoretical , Practical	Quiz
, 11 th , 12 th	2 theoretical, 2 practical per week	The student understands subject	Triggering & drive circuits	Theoretical , Practical	Quiz
, 14 th , 15 th , 13 th	2 theoretical, 2 practical per week	The student understands subject	Controlled rectifier 1-phase& 3-ph circuits	Theoretical , Practical	Quiz
, 18 th , 16 th 17 th	2 theoretical, 2 practical per week	The student understands subject	Half-wave & full wave circuits	Theoretical , Practical	Quiz
, 19 th , 20 th 21 st	2 theoretical, 2 practical per week	The student understands subject	D.C choppers	Theoretical , Practical	Quiz
, 22 nd 23 rd	2 theoretical, 2 practical per week	The student understands subject	A.C phase control	Theoretical , Practical	Quiz

, 24 th 25 th , 26 th	2 theoretical, 2 practical per week	The student understands subject	Invertors	Theoretical , Practical	Quiz
, 28 th , 27 th	2 theoretical, 2 practical per week	The student understands subject	Some applications -uninterruptible power supply	Theoretical , Practical	Quiz
, 29 th , 30 th	2 theoretical, practical per week	The student understands subject	(UPS) b- switch mode power sup (SMP)	Theoretical , Practical	Quiz
11. Course Evaluation					
16- Periodic and final theoretical exams					
17- Periodic and final practical exams					
18- Quizzes					
4-Homework assignments					
12. Learning and Teaching Resources					
Theoretical Lectures		er Electronics Introduction: Basic concepts of power electronics, es of converters, and applications - Reference: Muhammad H. Rashid, "Power Electronics: Circ Devices and Applications", Pearson			
Practical Lectures and Laboratory		Practical labs using simulation of electronic circuits for converters as (inverters, AC to DC converters, DC to DC converters, and to AC converters) - Power control and efficiency measurement.			
Group Discussions		21- Active Participation: Discussing real-life applications of power electronics 22- Sharing Knowledge: Students share insights on renewable energy and power conversion 23- Exchange of Ideas: How to improve efficiency in power systems 24- Problem-Solving: Solving issues related to heat dissipation and switching losses 25- Interaction: Group-based interactive sessions for troubleshooting circuits			
Case Study		21- Background Information: Overview of a po electronics applications 22- Problem Identification: Identifying challenges power conversion and control 23- Analysis: Analyzing efficiency and power qua issues 24- Solutions/Recommendations: Proposing methods enhance performance. 25- Conclusion: Conclusion: Summarizing the findi and potential future improvments			

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

1. Course name :
Signal Processing

2. Course code :					
Signal Processing					
3. Semester / year :					
Third Year					
4. Description Preparation Date :					
2024-9-16					
5. Available Attendance Forms: weekly-lecture					
Weekly Lecture					
6. Number of Credit Hours (Total) / Number of Units (Total)					
6 unit, 2 theoretical, 2 practical per week- 120hour					
7. Course administrator's name (mention all, if more than one name)					
Noura Ahmed Sayer					
8. Course Objectives					
Course Objectives			To teach students the fundamental principles of signal processing and its application in processing audio and image signals		
9. Teaching and Learning Strategies					
Direct Instruction	Interactive Teaching	Problem-Based Learning	Collaborative Teaching	Active Learning	Adaptive Learning
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
, 2 nd , 3 rd 1 st	2 theoretical, practical per week	The student understands subject	Introduction to Signal Processing	Theoretical , Practical	Quiz
, 5 th , 6 th 4 th	2 theoretical, 2 practical per week	The student understands subject	Convolution and Sampled Data System	Theoretical , Practical	Quiz
, 8 th , 9 th 7 th	2 theoretical, 2 practical per week	The student understands subject	Fourier Series and Fourier Transform	Theoretical , Practical	Quiz
, 11 th , 12 th 10 th	2 theoretical, 2 practical per week	The student understands subject	Z-Transform	Theoretical , Practical	Quiz

, 14 th 13 th	2 theoretical, 2 practical per week	The student understands subject	Discrete Fourier Transform	Theoretical , Practical	Quiz
, 16 th 15 th	2 theoretical, 2 practical per week	The student understands subject	Fast Fourier Transform (FFT)	Theoretical , Practical	Quiz
, 18 th , 19 th 17 th	2 theoretical, 2 practical per week	The student understands subject	Digital Filtering	Theoretical , Practical	Quiz
, 21 th , 22 th 20 th	2 theoretical, 2 practical per week	The student understands subject	IIR Digital Filters	Theoretical , Practical	Quiz
, 24 th 23 th	2 theoretical, 2 practical per week	The student understands subject	FIR Digital Filters	Theoretical , Practical	Quiz
, 26 th , 27 th 25 th	2 theoretical, 2 practical per week	The student understands subject	Speech Processing	Theoretical , Practical	Quiz
, 29 th , 30 th 28 th	2 theoretical, practical per week	The student understands subject	Image Processing	Theoretical , Practical	Quiz

11. Course Evaluation

19- Periodic and final theoretical exams

20- Periodic and final practical exams

21- Quizzes

4-Homework assignments

12. Learning and Teaching Resources

Theoretical Lectures	“Signals and systems Introduction”, Tutorials Point website, http://www.tutorialspoint.com/dip/signals_and_system_introduction.htm
Practical Lectures and Laboratory	* Hwei P. Hsu, "Schaum's Outlines of Theory and Problems of Signals and Systems" McGraw- Hill Companies.
Group Discussions	26- Active Participation 27- Sharing Knowledge 28- Exchange of Ideas 29- Problem-Solving 30- Interaction
Case Study	26- Background Information 27- Problem Identification 28- Analysis 29- Solutions/Recommendations 30- Conclusion