وزارة التعليم العالي والبحث العلمي
جهاز الإشراف والتقويم العلمي
إدارة ضمان الجودة والاعتماد الأكاديمي

وصف البرامج الأكاديمية
جامعة الحلة
كلية التقنيات الهندسية
قسم هندسة تقنيات الاجهزة الطبية

2025

اسم الجامعة: جامعة الحلة

الكلية/ المعهد: كلية التقنيات الهندسية

القسم العلمي: هندسة تقنيات الاجهزة الطبية

اسم البرنامج الأكاديمي او المهني: بكالوريوس هندسة تقنيات الاجهزة الطبية

اسم الشهادة النهائية: بكالوريوس في هندسة تقنيات الاجهزة الطبية

النظام الدراسي: فصلي -مسار بولونيا

تاريخ اعداد الوصف : 01/10/2023

تاريخ ملء الملف : 10/09/2025

دقق الملف من قبل شعبة ضمان الجودة والأداء الجامعي

اسم مسؤول شعبة ضمان الجودة والأداء الجامعي:

التاريخ 13/9/2025

التوقيع

مصادقة السيد العميد

1. الرؤية

تأهيل الطالب ليكون مهندسا تطبيقياً ذو كفاءة بالتقنيات الحديثة في مجال هندسة الاجهزة الطبية، اضافة الى ذلك توفير بيئة اكاديمية تواكب التطور السريع في مجال الأجهزة الطبية وتقديم أحدث البرامج الدراسية للأقسام العلمية المناظرة لقسم هندسة تقنيات الاجهزة الطبية في الجامعات العربية والعالمية الرصينة.

2. مهمة البرنامج

توفير مناهج علمية والمختبرات عملية وبحوث تطبيقية متطورة لمحاكات حاجة سوق العمل والانفتاح على المؤسسات الصحية والمساهمة في الارتقاء بالواقع الصحي على الصعيد الدولي والاقليمي.

3. أهداف 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 الأجهزة الطبية.
3- نصب وتشغيل مختلف الأجهزة الطبية الالكترونية والكهروميكانيكية بنوعيها التشخيصية والعلاجية المساهمة
4- والاشراف في ادامة وصيانة واجراء المعايرة للأجهزة الطبية المختلفة للأجهزة الطبية)
5- لتصميم والتطوير ومحاولة ايجاد البدائل لبعض الاجزاء المتعلقة بالأجهزة الطبية.
6- القيام بجدولة وبرمجة اعمال الصيانة الدورية.

4. الاعتماد البرامجي

البرنامج ليس لديه أي اعتماد

5. مؤثرات خارجية

رصد التطورات في الأجهزة الطبية ومواءمة المناهج الدراسية مع هذه التطورات، والاستفادة من الموارد الدولية وتلبية متطلبات سوق العمل.

6. هيكل البرنامج

هيكل البرنامج	عدد الدورات	الساعات المعتمدة	نسبة مئوية	ملاحظات*
متطلبات المؤسسة	20	60	%37	اساسي
متطلبات الكلية	9	17	%16	اساسي
متطلبات القسم	25	170	%46	اساسي
التدريب الصيفي	**الثانية والثالثة**			
غير ذلك				

أهداف البرنامج الاكاديمي:

- الهدف من البرنامج هو تخريج كادر هندسي يمتلك المهارات العلمية والعملية في تشخيص وإصلاح أعطال الأجهزة.
- تم تصميم البرنامج لتزويد المهندسين بالكفاءات اللازمة لمواكبة التطورات السريعة في مجال الأجهزة الطبية. ويهدف إلى تزويدهم بالمهارات اللازمة لتطوير وتحديث الأجهزة الطبية.
- كما يعد تركيب وتشغيل الأجهزة الطبية الإلكترونية والكهروميكانيكية المختلفة بنوعيها التشخيصية والعلاجية عنصراً أساسياً في البرنامج.
- وعلاوة على ذلك، يساهم البرنامج ويشرف على صيانة ومعايرة الأجهزة الطبية المختلفة.
- - الأجهزة الطبية.
- صُمم البرنامج لتزويد الطلاب بالمهارات العلمية والعملية اللازمة لتشخيص وإصلاح أعطال الأجهزة.
- ويهدف البرنامج إلى إعداد مهندسين أكفاء قادرين على مواكبة التطور السريع في مجال الأجهزة الطبية ومزودين بالمهارات اللازمة لتطوير وتحديث الأجهزة الطبية.
- كما سيتعلم الطلاب أيضاً تركيب وتشغيل مختلف الأجهزة الطبية الإلكترونية والكهروميكانيكية بنوعيها التشخيصية والعلاجية.
- بالإضافة إلى ذلك، سيساهم الطلاب في صيانة الأجهزة الطبية المختلفة ومعايرتها والإشراف عليها.
- سيقوم الطلاب بتصميم وتطوير واستكشاف بدائل لبعض الأجزاء المتعلقة بالأجهزة الطبية.
- القيام بجدولة وبرمجة اعمال الصيانة الدورية.
- العمل على تعزيز معايير الأداء بما يتضمن تطبيق المعايير الدولية في مجال التعليم التقني.
- .مواكبة التطورات الحاصلة في المناهج الدراسية
- تعزيز الصلات بين القسم ومختلف شرائح المجتمع
- الانفتاح والتواصل مع المؤسسات العلمية المناظرة داخل وخارج القطر .

أ- الأهداف المعرفية

أ1- القدرة على تجزئة وتحليل أجزاء الجهاز الطبي ووظيفة كل جزء منها.

أ2 - القدرة على تشخيص الأعطال في الأجهزة الطبية.

أ3 - القدرة على إعطاء الحلول المناسبة لأعطال الأجهزة الطبية.

أ4- القدرة على إعطاء خطة صيانة مناسبة للأجهزة الطبية.

أ5- القدرة على وضع ودراسة الشروط المناسبة لكل جهاز.

ب- أهداف التأهيل للبرنامج:

ب 1- تدريب وتطوير الكوادر الفنية في تشغيل وصيانة الأجهزة الطبية.
ب 2- تصميم أجهزة طبية ذات كفاءة عالية وتكلفة اقتصادية.
ب 3- تقديم المشورة العلمية والعملية في مجال الأجهزة الطبية.

طرق التدريس والتعلم

المحاضرات النظرية والمختبرات العملية والندوات العلمية والدورات التدريبية والمعارض المتخصصة في مجال الأجهزة الطبية.

طرق التقييم

الامتحانات اليومية، والامتحانات الفصلية، والحضور اليومي، والتقارير المعملية، والتقييم السنوي.

ت- **الأهداف الوجدانية والقيمية**

ج1 - تصميم أجهزة طبية عالية الكفاءة وفعالة من حيث التكلفة
ج2 - تقديم المشورة العلمية والعملية

ث- تخطيط التنمية الشخصية

الزيارات العلمية للمستشفيات والمراكز المتخصصة والمعارض المتخصصة والدورات التدريبية من قبل الشركات الخاصة

ج- معايير القبول

- خريجو الدورة الإعدادية السادسة للفروع الاحيائي والتطبيقية.
- خريجو المعاهد الفنية

المرحلة الأولى

UGI

وصف المقرر لمادة

Information Module معلومات المادة الدراسية					
Title Module	MEDICAL CHEMISTRY			**Delivery Module**	
Type Module	Support			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒**Tutorial** ☐ **Practical** ☐ **Seminar**	
Code Module	MIET1107				
Credits ECTS	7				
(hr/sem) SWL	175				
Level Module	UGI		**Delivery of Semester**	1	
Department Administering	MIET		**College**	UOH	
Leader Module	Zahra Aamer Ismail		**mail-e**	zahraa_amer@hilla-unc.edu.iq	
Title .Acad Leader's Module	Assistant Lecturer		**Qualification Leader's Module**	Ms.c	
Tutor Module			**mail-e**		
Name Reviewer Peer			**mail-e**		
Committee Scientific Approval Date	11/2/2025		**Number Version**	1	

Modules other with Relation العالقة مع المواد الدراسية ألخرى			
module Prerequisite	None	Semester	None
module requisites-Co	None	Semester	None

Contents Indicative and Outcomes Learning ,Aims Module أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims **أهداف المادة الدراسية**	1. Develop the ability to write and balance chemical equations, which serve as the foundation for various calculations. 2. Learn to determine the percent composition of elements in a compound and derive its empirical formula based on composition data. 3. Predict the feasibility of specific reactions by analyzing their economic pathways through stoichiometric calculations of balanced chemical equations. 4. Gain an understanding of how to prepare buffer solutions with different pH ranges using acids with appropriate dissociation constants. 5. Explore the impact of common ions on the equilibrium of reversible reactions. 6. Examine the theoretical principles underlying the operation of spectrophotometric instruments. .Discuss the significance of isotopes in the diagnosis and treatment of diseases .7
Learning Module Outcomes **مخرجات التعلم للمادة الدراسية**	1. Name chemical compounds systematically and write their formulas. 2. Calculate and convert chemical concentrations using various units. 3. Determine composition percent and empirical formulas of compounds. 4. Write and balance chemical equations, predict limiting reactants, and calculate product yields. 5. Assess reaction direction using equilibrium constants. 6. Prepare buffer solutions and understand their function. 7. Recognize the significance of slightly soluble salts. 8. Understand galvanic and electrolytic cells, including their applications. 9. Apply thermodynamic principles to evaluate reaction spontaneity. .Highlight the role of isotopes in medical diagnosis and treatment .10
Indicative Contents **المحتويات الإرشادية**	This module covers chemical nomenclature, concentration calculations, stoichiometry, preparation and the role of slightly soluble salts. It and equilibrium, including buffer explores electrochemistry, focusing on galvanic and electrolytic cells, and applies thermodynamic principles to assess reaction spontaneity. The importance of isotopes in .nt is also highlightedmedical diagnosis and treatme

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Homework assignments, written exam, Quizzes, seminars, reports, practical tests and Online tests

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

Evaluation Module

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Due Week	Learning Relevant Outcome
Formative assessment	**Quizzes**	10min/ 3 times	20% (20)	2,4,5	LO# 1st – 5 th LO# 10th – 12th
	Seminar	1.5 hr/ 1 time	10% (10)	6	LO# 1st LO# 10th
	lab	/Each lab 5 times	5% (5)	3,4,5,6	LO# 1-6
	Report	1	5% (5)	13	12 ,9 ,8 ,5 # LO
Summative assessment	**Midterm Exam**	1.5 hr/ 1 time	(10) %10	7	7-1 # LO
	Exam Final	3 hr/ 1 time	(50) %50	16	All
assessment Total			100) %100 (Marks)		

(Syllabus Weekly) Plan Delivery

المنهاج االسبوعي النظري

	Covered Material
Week 1	Introduction, Units conversion, Isotopes, Chemical formula
Week 2	Methods of expressing analytical concentrations: Normality, Formality, Molarity, Molality, Mole .fraction, Mill equivalent, ppm, ppb, wt. and vol. percent ratio
Week 3	Stoichiometry
Week 4	Chemical equilibrium
Week 5	Base dissociation constant-Acid
Week 6	pH-scale, buffer solution+ Solubility of precipitations, common ion effect
Week 7	Mid-term Exam
Week 8	Errors & statistical treatment of analytical data sources of errors, types of errors, average mode, range, average derivation, standard deviation, relative standard deviation, variance, method of expressing accuracy, Absolute error, relative error.
Week 9	Redox reactions, balancing of redox equation
Week 10	Electrochemistry: electrochemical cells, types of electrodes, electrolytes, Nernst equation, cell potential
Week 11	Thermodynamic, Zero and first law of thermodynamic, Reversible and irreversible expansion, Heat .capacities, adiabatic expansion, Isothermal processes
Week 12	.Second law of thermodynamic: spontaneous processes, entropy and Gibbs free energy
Week 13	Photochemistry (spectrophotometer analysis), Regions of electromagnetic spectrum, Absorption and emission of electromagnetic spectrum, Beer Lambert law, instrumentations components of .spectrophotometer
Week 14	.IR Spectrophotometer, mass spectroscopy, flame ionization spectrophotometry
Week 15	and some other applications of chemical sensors+ meter-Potentiometer, conductive meter, pH Preparatory week before the final Exam

(Syllabus .Lab Weekly) Plan Delivery المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Principals of qualitative analysis
Week 2	Qualitative analysis of cations of 1 st and 2nd groups.
Week 3	Qualitative analysis of cations of 3 rd and fifth groups.
Week 4	Introduction to Quantitative (volumetric) analysis and types of standard substance in titration, principles and calculations of titration.
Week 5	How to prepare solution of primary standard materials and to standardize secondary standard substance of HCl, (acid-base titration
Week 6	Standardization secondary standard substance of NaOH and its application by determination of vinegar acidity.
Week 7	Determination of residual chloride in tape water by titration against silver nitrate (precipitation titration).
Learning and Teaching Resources مصادر التعلم والتدريس	

	Text	the in Available Library?
Texts Required		
Texts Recommended	-1ESSENTIALS OF GENERAL CHEMISTRY By EBBING GABBON RAGSDALE CHEMICAL PRINCIPLES By Steven S Zumdahl - 4th edition	
Websites		

Scheme Grading مخطط الدرجات				
Group	Grade	**التقدير**	Marks (%)	Definition
Group Success (50- 100)	Excellent - A	امتياز	100 - 90	Outstanding Performance
	Good Very - B	جيد جدا	89 - 80	Above average with some errors
	Good - C	جيد	79 - 70	Sound work with notable errors
	Satisfactory - D	متوسط	69 - 60	Fair but with major shortcomings
	Sufficient - E	مقبول	59 - 50	Work meets minimum criteria
Group Fail (0 – 49)	Fail – FX	راسب (قيد المعالجة)	(49-45)	More work required but credit awarded
	Fail – F	راسب	(44-0)	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 Workshops**			**Module Delivery**	
Module Type	**Support**			☐ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**EETC1001**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGI		**Semester of Delivery**		2
Administering Department	Medical Devices Technologis		**College**	HUC	
Module Leader	Ruqayah Nassr Jawad		**e-mail**	Ruqaya_nasr_jawad@hilla_unc.edu.iq	
Module Leader's Acad. Title	Assist. lecturer		**Module Leader's Qualification**		M.Sc.
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	14/1/2025		**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 explain the lathe workshop: various measuring devices and how to use them. How to operate the lathe and use different tools and cutting tools. 2. To explain the welding and gas welding processes and familiarize yourself with the devices and equipment used. Point welding, familiarization with the devices and equipment used, and carrying out a simple exercise. 3. To understand the electrical transformers and their types: magnetic circuits; electrical circuits; measuring the wire diameters of the transformer. 4. To understand the drawing of a circuit for establishing (the lamp ladder) two roads using a two-way switch—a practical application of the circuit. 5. To learn how to use the different measuring devices in the workshop (such as a multimeter, oscilloscope, etc.). 6. To learn how to use caustics, soldering irons, and various printed electronic circuits, identify how to install them, and install various electronic components on them. 7. To understand different types of coils and methods of checking them. Different types of capacitors differ in terms of the type of insulator used between the capacitor plates and the methods of checking them. The different types of resistors, in terms of the material they are made of and the capacity they can withstand, How to read the values of the resistors in different ways Variable and special resistors: how to check them. 8. To understand the different types of switches used in electronic devices and their examination methods. Different types of fuses There are different types of resistors in terms of the material they are made of. Types of semiconductor diodes and transistors and finding the equivalents Semiconductor check, diode check, and transistor check. 9. To understand how to read the electronic map and how to track faults on the electronic map How to install and solder electronic components on the printed board Implementation of a simple electronic circuit on the printed board integrated electronic circuits: identify the types of these circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1. Recognize the methods of work on the lathe. 2. Cuts metals with a cutting and punching machine. 3. Install some simple structures. 4. Providing the student with manual experience and scientific proficiency in it. 5. Learn about electronic components. 6. Electronic components exchange is used to build and solder simple circuits. 7. Examine electronic circuits and their components.

	8. Read the electronic map and learn how to track faults on the electronic map. 9. How to install and solder electronic components on the printed board. 10. Implementation of a simple electronic circuit on the printed board. 11. Removing solder from circuits for the purpose of lifting and replacing. 12. How to design electronic circuits on the printed board. 13. Methods of soldering integrated circuits.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Lathe workshop, measuring devices, different tools, cutting tools, welding, gas welding, and point welding. [7 hrs.]. Electrical transformers, magnetic circuit, and electrical circuits. [6 hrs.]. Different measuring devices in the workshop (such as an ovometer, oscilloscope, power supply, etc.) [8 hrs.]. Soldering iron and printed electronic circuits [4 hrs.]. Coils, capacitors, and resistors [6 hrs.]. Switches and fuses [4 hrs.]. Semiconductor diode, and transistor [6 hrs.]. Electronic map, faults on the electronic map, and design electronic circuits on the printed board [8 hrs.]. Implemented a simple electronic circuit on the printed board [4 hrs.]. Integrated electronic circuits [4 hrs.].

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Daily assessment - weekly assessment - quarterly assessment - objective questions - general questions - practical tests.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Lathe workshop: various measuring devices and how to use them. How to operate the lathe and use different tools and cutting tools
Week 2	Lab 2: Welding and gas welding, and familiarization with the devices and equipment used. Point welding, familiarization with the devices and equipment used, and carrying out a simple exercise.
Week 3	Lab 3: Electrical transformers: their types magnetic circuits; electrical circuits; opening transformers; taking information from the old transformer for primary and secondary coils measuring the wire diameters of the transformer; measuring the plastic coil template rewinding primary and secondary coils.
Week 4	Lab 4: Drawing a circuit for establishing two roads using a two-way switch is a practical application of the circuit. Identifying electrical collectors-their types, their use, thermal follow-ups, and time position.
Week 5	Lab 5: Training on making electrical installations (establishing inside tubes).Pipe cutting process: dental work, pipe bending, using drag springs.
Week 6	Lab 6: How to use the different measuring devices in the workshop (such as a multimeter, oscilloscope, etc.).
Week 7	Lab 7: How to use caustics: types of caustics used in the workshop; caustic welding training. Types of solder used: auxiliary materials for soldering; soldering some wires with each other

	and with some components. How to use a soldering iron and a soldering absorbent kit such as a solder sucker or solder remover, training on some electronic components, and lifting them from the printed plate. Various printed electronic circuits, identifying how to install them, and the installation of various electronic components on them. Lab 8- Coil types, methods of checking them, electrical transformers, types, checking, auto-transformer, the difference between an auto-transformer and an ordinary transformer. The different types of capacitors in terms of the type of insulator used between the capacitor plates, the effort that the capacitor bears, and reading the values of the capacitors using the different methods used in coding How to check the amplifiers and how to switch them. Making connections of the capacitors in parallel, series, and mixed on the printed board with the examination.
Week 8	Midterm- Exam
Week 9	Lab 9: The different types of switches used in electronic devices and their examination methods, the current that each switch bears, and the use of each type.Types of fuses used in electronic circuits, types and diameters of wires used and diameters of wires used in fuses, the current that each type bears, and how to repair fuses
Week 10	Lab 10: The different types of resistors, in terms of the material they are made of and the capacity they can withstand, How to read the values of the resistors in different ways Variable and special resistors (VDR-PYC-NTC) how to check them. Make a circuit to connect the resistors in series, make a circuit to connect the resistors in parallel, make a circuit to connect the resistors in series and parallel, and check the circuit.
Week 11	Lab 11: Types of semiconductor diodes and transistors and finding the equivalents. Semiconductor check, diode check, transistor check
Week 12	Lab 12: How to read the electronic map and track faults on the electronic map. Introduce the student to how to design electronic circuits on the printed board.
Week 13	Lab 13: How to install and solder electronic components on the printed board. Implementation of a simple electronic circuit on the printed board.
Week 14	Lab 14: Integrated electronic circuits: identify the types of these circuits. Cautery for soldering integrated circuits, the correct method of soldering integrated circuits, and removing solder from circuits for the purpose of lifting and replacing.
Week 15	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Recommended Texts	1- Encyclopedia of Electronic Components Volume 1 (Charles Platt). 2- Encyclopedia of Electronic Components Volume 2 (Charles Platt). 3- Encyclopedia of Electronic Components Volume 3 (Charles Platt). 4- Encyclopedia of Electronic Components Volume 4 (Charles Platt). 5- Encyclopedia of Electronic Components Volume 5 (Charles Platt).	NO
Websites	https://www.electricaltechnology.org/2013/03/how-to-remember-direction-of-pnp-and.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.

المرحلة الأولى
UGI

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Drawing**			**Module Delivery**	
Module Type	**Support**			☐ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**EETC102**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level		UGI	**Semester of Delivery**		1
Administering Department		Medical Devices Technologies	**College**	HUC	
Module Leader	Ruqayah Nassr Jawad		**e-mail**	Ruqaya_nasr_jawad@hilla_unc.edu.iq	
Module Leader's Acad. Title		Assistant Lecturer	**Module Leader's Qualification**		M.Sc.
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		14/2/2025	**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims	The module aims for the Basics of Engineering Drawing courseware is to teach the student the basic commands necessary for professional 2D drawing, design, and drafting using AutoCAD. Upon completion of the course, the student will: • Become familiar with the AutoCAD user interface. • Understand the fundamental concepts and features of AutoCAD. • Use the precision drafting tools in AutoCAD to develop accurate technical drawings. • Present drawings in a detailed and visually impressive manner. • Develop a level of comfort and confidence with AutoCAD through hands-on experience.
Module Learning Outcomes	Upon completion of the course, students should be able to: 1. The student will describe key terms and concepts associated with drafting and the drafting profession. • Identifying software drafting tools (e.g. AutoCAD, Micro station, SolidWorks, and Google Sketch Up). 2. The student will identify elements of the AutoCAD software interface. • Starting the AutoCAD program from the start menu. • Using existing AutoCAD templates to create drawing documents. • Identifying file extensions (such as.dwg, dxf, dwt, and .bak) and file locations. • Creating, formatting, editing and saving an Auto CAD drawing. 3. The student will demonstrate an understanding of the skills necessary to create basic 2D AutoCAD drawings. • Drawing lines, curves, circles, ellipses, rectangles, polygons, and donuts. • Modifying a drawing using the Erase tool. • Identifying and using the various types of Object Snaps and Auto tracking. • Using the offset tool, drawing points, construction lines and rays. 4. The student will demonstrate the ability to modify an AutoCAD drawing. • Creating and managing multiple layers that define line color, line width, line type, etc. • Identifying and using object editing tools (such as fillet, chamfer, break, join, trim, extend, lengthen, and scale). • Arranging and patterning objects with move, copy, mirror, rotate, align, and array. 5. The student will demonstrate an understanding How to assign: Dimension - Linear, Aligned, Radius, Diameter, Center Mark, Angle, Arc length, Continuous, Baseline, Tolerance, Dimension Space. 6. The student will demonstrate an understanding Dealing with: Text, Style, M text, Scale text, Spell, 7. The student will demonstrate the Object viewing. • Zooming techniques

	• Panning techniques 8. The student will demonstrate the ability to output drawings in AutoCAD. 9. Drawing 3d modeling. 10. Drawing the Exercises.
Indicative Contents	Indicative content includes the following. **Basic Drawing & Editing Commands** • Drawing Lines • Erasing Objects • Drawing Lines with Polar Tracking • Drawing Rectangles • Drawing Circles • Undo and Redo Actions [20 hrs.] **Making Changes in Your Drawing** • Selecting Objects for Editing • Moving Objects • Copying Objects • Rotating Objects • Scaling Objects • Mirroring Objects • Editing with Grips [4 hrs.] **Display Control** • Zoom • Pan • Redraw • Clean Screen. [4 hrs.] **Adding Dimensions** • Dimensioning Concepts •Adding Linear Dimensions •Adding Radial and Angular Dimensions •Editing Dimensions [4 hrs.] **Hatching** • Hatching •Editing Hatches [4hrs] **Printing Your Drawing** • Printing Layouts • Print and Plot Settings [4 hrs.] **3D MODELLING, Convert** 2D to 3D, Solid Editing [19 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	When it comes to learning and teaching engineering drawing using AutoCAD, there are several strategies that can be effective. Here are some recommendations: 1. Familiarize with the Software: Before diving into engineering drawing concepts, it's important to become familiar with the AutoCAD software. This includes understanding the user interface, basic tools, and commands. Start with introductory tutorials or online resources that cover the basics of AutoCAD. 2. Start with Fundamentals: Begin by teaching the fundamental concepts of engineering drawing, such as orthographic projection, isometric projection, dimensioning, and tolerancing. Explain the principles and techniques used in creating accurate and clear technical drawings. 3. Hands-on Practice: Engineering drawing is a practical skill, so provide ample opportunities for hands-on practice. Assign exercises and projects that require students to create different types of drawings using AutoCAD. Encourage them to explore and experiment with various tools and commands. 4. Step-by-Step Instructions: Break down complex drawing tasks into smaller, manageable steps. Provide step-by-step instructions and demonstrations using AutoCAD, showing students how to execute each step effectively. This approach helps students understand the workflow and build their confidence. 5. Visual Aids and Examples: Utilize visual aids, such as slides, diagrams, and examples, to reinforce concepts. Show real-world engineering drawings and explain how they were created using AutoCAD. Visual representations can enhance understanding and make abstract concepts more tangible. 6. Group Activities and Collaboration: Promote collaboration among students by assigning group activities or projects. This allows them to work together, share knowledge, and learn from one another. Encourage students to discuss their approaches and problem-solving techniques related to engineering drawing in AutoCAD. 7. Provide Feedback: Regularly provide constructive feedback on students' drawings. Highlight areas for improvement, suggest alternative methods, and point out common mistakes. This feedback loop is crucial for students to refine their skills and develop a deeper understanding of engineering drawing principles. 8. Stay Updated with AutoCAD Features: AutoCAD is regularly updated with new features and enhancements. Stay up to date with these changes to ensure you're teaching the latest tools and workflows. Familiarize yourself with new capabilities that can improve efficiency and accuracy in engineering drawing. 9. Online Resources and Communities: Encourage students to explore online resources, tutorials, and communities dedicated to AutoCAD and engineering drawing. There are numerous websites, forums, and YouTube channels that offer valuable content and support for learning AutoCAD. 10. Project-Based Learning: Incorporate project-based learning into the curriculum, where students can apply their engineering drawing skills to real-world scenarios. Assign projects that simulate industry-related tasks, such as creating architectural plans, mechanical assemblies, or electrical schematics using AutoCAD.

Student Workload (SWL) الحمل الدراسي للطالب محسوب ل 15 اسبوع			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعي	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعي	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20% (20)	5, 12	(LO #3,4) (LO #5,6)
	Online Assignments	3	6% (6)	Continuous	(LO # 3-5) (LO # 6-10)
	Projects	1	10% (10)	13	All
	Onsite assignment	4	1% (1)	4, 5, 10, 11	LO # 3-9
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-5
	Final Exam	3 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Introduction to Autodesk AutoCAD** • Starting the Software • User Interface • Working with Commands • Cartesian Workspace • Opening an Existing Drawing File • Saving a Drawing File
Week 2	**Basic Drawing & Editing Commands** • Drawing Lines • Erasing Objects • Drawing Lines with Polar Tracking

	• Drawing Rectangles • Drawing Circles • Undo and Redo Actions
Week 3	**Projects - Creating a Simple Drawing** • Create a Simple Drawing • Create Simple Shapes
Week 4	**Drawing Precision in AutoCAD** • Using Running Object Snaps • Using Object Snap Overrides • Polar Tracking at Angles • Object Snap Tracking • Drawing with Snap and Grid
Week 5	**Making Changes in Your Drawing** • Selecting Objects for Editing • Moving Objects • Copying Objects • Rotating Objects • Scaling Objects • Mirroring Objects • Editing with Grips
Week 6	**Advanced Object Types** • Drawing Arcs • Drawing Polylines • Editing Polylines • Drawing Polygons • Drawing Ellipses
Week 7	**Advanced Editing Commands** • Trimming and Extending Objects • Stretching Objects • Creating Fillets and Chamfers • Offsetting Objects • Creating Arrays of Objects
Week 8	Mid-term exam
Week 9	**Adding Dimensions** • Dimensioning Concepts • Adding Linear Dimensions • Adding Radial and Angular Dimensions

	•Editing Dimensions **Text** •Working with Annotations •Adding Text in a Drawing •Modifying Multiline Text •Formatting Multiline Text •Adding Notes with Leaders to Your Drawing
Week 10	**Hatching** •Hatching •Editing Hatches
Week 11	3D modeling
Week 12	Convert 2D To 3D.
Week 13	Exercises drawing
Week 14	**Printing Your Drawing** •Printing Layouts •Print and Plot Settings
Week 15	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	D. A. Madsen, D. P. Madsen, and J. E. Briesacher, Engineering Drawing and Design, 5th ed., Clifton Park, NY: Delmar Cengage Learning, 2011.	Yes
Recommended Texts	F. E. Giesecke, A. Mitchell, H. C. Spencer, I. L. Hill, and J. T. Dygdon, Technical Drawing with Engineering Graphics, 15th ed., Upper Saddle River, NJ: Pearson, 2016.	No
Websites	https://www.coursera.org/browse/physical-science-and-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 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	**Mechanics**			**Module Delivery**	
Module Type	**Support**			☒ **Theory** ☐**Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MIET 1203**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	UGI		**Semester of Delivery**		2
Administering Department	Medical Devices Technologies		**College**	HUC	
Module Leader	R[redacted]assr Jawad		**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/7/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To understand mechanics theory through the application of motion. 2. To determine the forces, stress and strain under force effected. 3. To determine the reaction forces under load applied. 4. To understand the friction basic under mechanic applied 5. To understand the newton laws in motion. 6. To understand and solve problems in forces analysis. 7. To determine the materials properties and selective of materials.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Identifying the basic of forces results in applications of structures. 2. Identify the basics of Equilibrium force system. 3. Recognize how phenomena motion in mechanic's subject. 4. Summarize what is mean of forces reaction in beams. 5. Explain the analysis force in mechanics application. 6. Identify the basics of stress and strain in mechanical applications. 7. List the various parameters associated with mechanics theory. 8. Identify the basics of forces analysis and their applications. 9. Explain the Newton's laws used in mechanics application. 10. Identify the basics of friction forces in motion. 11. Identify the basics of welding and riveted joints in mechanical applications. 12. Explain the mechanical test to determine the mechanical properties. 13. Discuss the phenomena of moment of forces under different force moment.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A :</u> 1- Introduction of forces, Analysis of Forces, Result of forces, Moment of forces, Equilibrium force system. [5 hrs] 2- Stress, Strain, stress – strain curve, Simple strain, Variable stress. [6 hrs] 3- Beams and bending, Analysis of structure. [5 hrs] 4- Friction, coefficient of friction, mechanism of friction. [5 hrs] <u>Part B:</u> 1- Materials properties, material selective, stress- strain diagram. [5 hrs]

	2- Mechanical tensile test, compression test, impact test, hardness test. [5 hrs] 3- Mechanical joint, Rivet joint, welding connection. [5 hrs] 4- Beams and bending, Analysis of structure, Centroid, Second moment of area. [7 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Strategies in mechanical subject like: The main strategy that will be adopted in delivering this module is to encourage students to participate in the exercises, while at the same time refining and expanding their mechanical subject thinking development 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 SSWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured USWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1:	• Introduction to Engineering Mechanics • Basic Concepts and Definitions
Week 2:	**Introduction to Statics and Vectors (Part 1)** • Course introduction, syllabus, and importance of Statics. • Fundamentals of forces, types of forces. • Scalars and vectors. • Vector addition and subtraction. • Vector components and unit vectors.
Week 3:	
Week 4:	**Introduction to Statics and Vectors (Part 2)** • Resultant of force systems (graphical method). • Resultant of force systems (analytical method). • Moments of forces (torque). • Conditions for equilibrium. • Free-body diagrams and solving equilibrium problems.
Week 5:	
Week 6:	**Stress, Strain, and Material Properties (Part 1)** • Stress and types of stress. • Strain and types of strain. • Hooke's Law and material properties. • Stress-strain diagrams. • Thermal stress and strain.
Week 7:	
Week 8:	**Mid-term Exam**
Week 9:	**Stress, Strain, and Material Properties (Part 2)** • Simple strain and deformation. • Stress and strain transformations. • Shear and axial deformation. • Review and applications of stress and strain. • Assignment on stress and strain analysis.
Week 10:	
Week 11:	**Second Moment of Area and Structural Analysis (Part 1)** • Geometric properties of shapes.

Week 12:	• Centroids and center of mass. • Second moment of area (moment of inertia). • Bending stress in beams. • Shear stress in beams.
Week 13:	**Second Moment of Area and Structural Analysis (Part 2)** • Shear and moment diagrams. • Introduction to beams and types of loads. • Determining reactions in statically determinate structures. • Truss analysis. • Frame analysis.
Week 14:	**Friction** • Friction coefficient • Type of friction • Mechanism of friction. **Stress Concentration, Fatigue, and Special Topics** • Review of special topics. • Comprehensive review of the course material. • Final exam or project presentations. Course evaluation and feedback.
Week 15:	Preparatory week before the final Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Engineering Mechanic's Statics, 12th Edition by R. C. Nibbler, 1995.	Yes
Recommended Texts	2- Engineering Mechanic's Statics, 7th Edition by James, L. Meriam, L. G Kraige, 1995.	No
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Fundamentals of Electrical Engineering (DC)**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MIET1101**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		UGI	**Semester of Delivery**		1
Administering Department		Medical Devices Technologies	**College**		HUC
Module Leader	Morteza Abbas Imran		**e-mail**		mortezaabbas@hilla-unc.edu.iq
Module Leader's Acad. Title		Asst. Lecturer	**Module Leader's Qualification**		M.Sc
Module Tutor	Name (if available)		e-mail		E-mail
Peer Reviewer Name		Name	**e-mail**		E-mail
Scientific Committee Approval Date			**Version Number**		

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To develop knowledge on standard units of electricity and understanding of DC circuit theorems. 2. To understand voltage, current and power of DC circuits. 3. To learn the basic concept of DC electrical circuits connections. 4. To explain the DC electrical circuits. 5. To understand basic laws of electricity. 6. To perform DC-network theorem. 7. To perform DC-circuit analysis methods. 8. To understand independent sources and dependent sources.
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. Describe electrical power, voltage, and current. 5. Define Ohm's law and define the relation between voltage, resistance, and current. 6. Identify the basic circuit elements and their applications. 7. Discuss the operations of power and energy in electric circuit. 8. Discuss the various properties of resistors connections. 9. Explain the two Kirchhoff's laws used in circuit analysis. 10. Identify the implementation of resistor circuit's connection. 11. Learn measurements of voltage ad current. 12. Practical Identification of resistance based on color code.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. DC circuits – Current and voltage definitions, and circuit elements, Combining resistive elements in series and parallel. Kirchhoff's laws and Ohm's law, Network reduction, Introduction to mesh and nodal analysis. [20 hrs] Conversion of delta – connected resistance into an equivalent Wye connection & Vic versa. [10 hrs] Fundamentals of the Power sources connected in parallel, Thevenin and Norton equivalent circuits, current and voltage division, Loop current method, Super position method ,maximum power transfer, Non- linear direct current circuit [20 hrs] Independent sources and dependent sources [10 hrs] source transformation [5 hrs] Revision problem classes [5 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, 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	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Symbols and abbreviations, Units, Electric circuits, and its elements.
Week 2	The direct–current network (Ohm's law, Kirchhoff's voltage and current laws & their use in network).
Week 3 **Week 4**	Series elements and Voltage Division Parallel elements and Current Division
Week 5	Power sources are connected in parallel,
Week 6 **Week 7**	Circuit analysis methods: 1- Node voltage method. 2- Loop current method.
Week 8	Mid-term exam
Week 9	Conversion of delta–connected resistance into an equivalent Wye connection & Vic versa
Weeks 10-13	Circuit analysis Theorems: 1. Superposition 2. Thevenin 3. Norton 4. Maximum power
Weeks 14-15	Independent sources and Dependent sources, source transformation and preparation for final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to electrical elements, sources, and measuring devices related to electrical circuits.
Week 2	Resistance measurement based on AVO meter readings and color code identification.
Week 3	Verification of Ohm's Law
Weeks 4-5	Verification of KVL and KCL
Weeks 6-7	Verification of Thevenin's and Norton's theorems
Weeks 8-9	Verification of the superposition theorem
Week 10	Verification of the maximum power transfer theorem
Week 11	Verification of the Nodal Voltage Theorem
Week 12	Verification of the Mesh Theorem
Weeks 13-14	practical implementation of Independent sources and Dependent sources
Week 15	Preparation for Final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Fundamentals of Electric Circuits, C.K. Alexander and M.N.O Sadiku, McGraw-Hill Education	Yes
Recommended Texts	Electric Circuits Seventh Edition, Schaum's Outline Series	No
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	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**	1	
Administering Department	MIET		**College**		
Module Leader	Hassanein Falah		**e-mail**		
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of Differential calculus through a broad range of Differentiation techniques. 2. To understand limits and theory of derivative and apply it on various types of functions. 3. This is the basic subject for all engineering fields. 4. Demonstrate basic knowledge and understanding of a core of plane analytical geometry, algebra and applied mathematics. 5. 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	**Fundamentals of Electrical Engineering (AC)**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MIET1201**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		UGI	**Semester of Delivery**		2
Administering Department		Medical Devices Technologies	**College**		HUC
Module Leader	Morteza Abbas Imran		**e-mail**		mortezaabbas@hilla-unc.edu.iq
Module Leader's Acad. Title		Asst. Lecturer	**Module Leader's Qualification**		M.Sc
Module Tutor			e-mail		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		1/7/2025	**Version Number**		1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Fundamentals of Electrical Engineering (DC)	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To develop problem solving skills and understanding of circuit theory through the application of techniques. 2. To understand capacitance, inductance and resistance from an AC circuit. 3. To learn the basic concept of First-Order electrical circuits. 4. To explain the parallel and series circuits. 5. To understand Sinusoids and Phasors problems. 6. To perform AC- network theorem. 7. To perform AC Power Analysis. 8. To understand 3-phase system.
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. Describe electrical capacitance, inductance and resistance. 5. Define First-Order electrical circuits' voltage, resistance, and current. 6. Identify the basic circuit elements and their applications. 7. Discuss the operations of sinusoids and phasors in an electric circuit. 8. Discuss the various properties of resistors, capacitors, and inductors. 9. Explain the parallel and series circuits. 10. Identify the capacitor and inductor phasor relationship with respect to voltage and current. 11. Learn the 3-Phase system, Wye connection and Delta connection. 12. Identify the power in balance phase circuit. 13. Describe the Magnetism and Magnetic Circuits
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. AC circuits I – Generation of alternating current, Sinusoidal current. The mean values of current and voltage. [15 hrs] AC Circuits II - The effective values of current and voltage. The vector diagram, [10 hrs] The instantaneous power and mean power of A.C , relative and apparent power . . [10 hrs] Revision problem classes [8 hrs] 3-Phase system, Wye connection, and Delta connection [10 hrs] The power in balance phase circuit. [7 hrs] Revision problem classes [5 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, 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	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Generation of alternating current, Sinusoidal current
Week 2	Average and RMS values of current & voltage
Week 3	AC in resistive circuits Current & voltage in an inductive circuit
Weeks 4-6	Current and voltage in an capacitive circuits AC series and parallel circuit RL, RC and RLC circuit analysis & phasor representation
Week 7	Mid-term exam
Weeks 8-11	Power in resistive circuits Power in inductive and capacitive circuits Power in circuit with resistance and reactance Measurement of power in a single-phase AC circuit
Week 12-15	Basic concept & advantage of Three-phase circuit Phasor representation of star & delta connection Measurements of power & power factor in 3-phase system Preparation for final exam
Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to electrical elements, sources, and measuring devices related to electrical circuits.
Week 2 + week3	Generating AC Voltages and Measurement Frequency, Period, Amplitude, and Peak Value.
Week 4	Calculations and Verification of the Impedance of RL series circuits
Weeks 5	Calculations and Verification of the current of RL series circuits
Week 6	Calculations and Verification of Impedance RC series circuits + Calculations and Verification of Current RC series circuits
Weeks 7	Mid-term exam
Week 8	Calculations and verification of the impedance of RLC series circuits
Week 9	Calculations and verification of the current of RLC series circuits

Week 10	Calculations of Power in AC Circuits
Week 11	Calculations and verification of the impedance of RL and RC parallel circuits
Week 12	Calculations and verification of the current of RL and RC parallel circuits
Week 13	Calculations and verification of the impedance RLC parallel circuits
Week 14	Calculations and verification of the impedance current RLC parallel circuits
Week 15	Final exam

Learning and Teaching Resources
مصادر التعلم والتدريس

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

Grading Scheme
مخطط الدرجات

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

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Medical physics**			**Module Delivery**	
Module Type	**Support**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MIET1202**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UG1		**Semester of Delivery**	2	
Administering Department	Medical Devices Technologies		**College**	HUC	
Module Leader	[redacted]ateef		**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/7/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1- to recognize the influence of forces on the human body Identify how the skeleton works 2- to show how pressure affects the body's organs Recognize physical activity of the lungs and breathing 3- to demonstrate the physics of the cardiovascular system and the urinary system 4- to distinguishes the basic principles using the applications of electricity and magnetism in medicine 5- to shall be acquainted with respiratory, cardiovascular and cardiovascular equipment 6- to distinguishes the basic principles, using the sound waves in medicine and the use of x-rays in the diagnosis and identification of diseases
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Upon completion of the course, students should be able to: 1- Understand the difference between the Forces. 2- Know the bone has at least six functions. What are the main components of the bone, and to study the methods of Measurement the minerals quantity in the bone 3- know methods of diathermy 4- understand how Energy change in the body 5- know pressures inside the body parts and measure it 6- understand how to work the lungs and How the blood and lungs interact 7- know nervous system and the neuron 8- know the graphing devices of the body organs 9- know the applications of Electricity and Magnetism in Medicine 10- know the application of sound in medicine, know sonar devices 11- know the application of light and laser in medicine 12- know Major components of the cardiovascular system 13- know physics of nuclear medicine 14- know the x- ray device
Indicative Contents المحتويات الإرشادية	1- Define the Forces , Frictional Forces , Dynamics (5hrs) 2- functions of the skeleton and Bone consists of quite different materials and how to measure mineral in the bones (5 hrs) 3- Types of thermometers , Heat therapy, Cryogenics (5 hrs) 4- Sphygmomanometer, blood pressure, bladder pressure , tonometer(4hrs) 5- Function of Lungs & Breathing, breath rate, airways, Dalton's law of partial pressures(3hrs) 6- The nervous system and the neuron, Electrocardiogram, Electro retion gram (ERG), The magneto cardiogram (MCG)(4hrs)

	7- Magnetic signals from the heart –magneto cardiogram(3hrs) 8- Macro shock, Micro shock (3hrs) 9- General Properties of Sound, Acoustic Impedance, Absorption, A-mode Display, Doppler Ultrasound(5hrs) 10- Endoscope, cystoscopes, Emissive IR photography. (5hrs) 11- Laser, population inversion, X-ray (6hrs) 12- Physics of the cardiovascular system (5 hrs)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Daily assessment - weekly assessment - quarterly assessment - objective questions - general questions - practical tests.

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

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Forces on and in the body.
Week 2	Physics of the skeleton.
Week 3	Heat & cold in medicine
Week 4	Energy, work and power of the body, Pressure in body organs
Week 5	Physics of the lungs and breathing.
Week 6	Physics of cardiovascular system
Week 7	**Mid Term Exam**
Week 8	Physics of urinary system.
Week 9	Electricity within the body.
Week 10	Sound in medicine and physics of hearing.
Week 11	Light in medicine and physics of vision.
Week 12	Diagnostic X-rays
Week 13	Physics of nuclear medicine (radioisotopes in medicine).
Week 14	Physics of radiation therapy+ Radiation protection
Week 15	**Preparatory week before the final exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to laboratory tools
Week 2	Lab 2: the simple pendulum
Week 3	Lab 3: hook's law
Week 4	Lab 4: the blood pressure
Week 5	Lab 5: the friction
Week 6	Lab 6: the speed of sound
Week 7	Lab 7: the laser
Week 8	Lab 8: viscosity of liquids
Week 9	Lab 9: The cylindrical body
Week 10	Lab 10: The convex lens
Week 11	Lab 11: the concave lens

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Recommended Texts	Introductory Physics I Elementary Mechanics by Robert G. Brown	NO
Websites	https://webhome.phy.duke.edu/~rgb/Class/intro_physics_1/intro_physics_1.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	**Computer Programming and Applications I**			**Module Delivery**	
Module Type	**Support**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MIET1206**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	Medical Devices Technologies		**College**	HUC	
Module Leader	Refad Imad		**e-mail**		
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	M.Sc	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/7/2025		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Understanding the fundamental concepts of MATLAB programming language environment. 2. The students will understand and learn how to use MATLAB as an effective programming language. 3. The students will be able to solve different mathematical and engineering problems as well as using plotting functions and design projects using codes or GUI. 4. Students will acquire the knowledge of basic MATLAB syntax such as: variables, input, output, vectors, matrices, functions, plotting, and GUI, 5. The students will gain the necessary skills to design and implements appropriate algorithms that solve problems dealing with different mathematical and engineering applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the MATLAB environments and windows (Command Window, Workspace Window, Command History window, Help Window, Editor Window). 2. The students learn how to write first program and learn Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns. 3. Explain how to use variables and assignment statement, logical operator. 4. Practice on using Arrays, Built in functions, Basic Matrix Functions(sum, max, min, mean, magic, diag, length, size, median, prod, sort). 5. Learn how to perform basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits). 6. Understand arguments and return values, M-file, input-output statement. 7. Train on using control Statements (Conditional statements: If, Else, Elseif, switch case) 8. Identify the repetition statements: (While statement, For statement). 9. Learn how to use combination of conditional and repetition statements. 10. Understand the procedures and functions (a custom-made MATLAB function, define the name of the function, the input and the output variables, Calling Functions). 11. Learn how to handle graphics and user interface. 1.pre-defined dialogs 2. Handle graphics a) Graphics objects b) Properties of objects c) Modifying properties of graphics objects. 12. Train of GUI Interface (Attaching buttons to actions, Getting Input, Setting Output).
Indicative Contents المحتويات الإرشادية	1. Window, Workspace Window, Command History window, Help Window, Editor Window. (3 hr) 2. Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns. (5 hr) 3. variables and assignment statement, logical operator. (5 hr)

	4. sum, max, min, mean, magic, diag, length, size, median, prod, sort. (2 hr) 5. Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits. (2 hr) 6. M-file, input-output statement. (2 hr) 7. Conditional statements: If, Else, Elseif, switch case. (3 hr) 8. While statement, For statement. (4 hr) 9. conditional and repetition statements. (4 hr) 10. accustom-made MATLAB function. (4 hr) 11. GUI. (4 hr) 12. GUI attaching buttons to actions, Getting Input, Setting Output. (4 hr)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students. Moreover, motivate the creative side by posing various problems to students and urging them to find appropriate solutions. Also forming work teams to assess the results of their work and change their structure periodically to develop the spirit of cooperation and development and motivate students to make intensive efforts to work different roles.

Student Workload (SWL) الحمل الدراسي للطالب			
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	15% (20)	5, 10	LO #1, 2, 3, 4,7,8,9 and 10
	Assignments	2	15% (20)	6, 13	LO # 9 and 10
	Projects / Lab.	10	10% (10)		
	Report	N/A			
Summative assessment	**Midterm Exam**	3hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction, MATLAB Environment, MATLAB Windows(Command Window, Workspace Window, Command History window, Help Window, Editor Window).
Week 2	A First Program, Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns.
Week 3	Variables and assignment statement, logical operator.
Week 4	Arrays, Built in functions, Basic Matrix Functions (sum, max, min, mean, magic, diag, length, size, median, prod, sort).
Week 5	Basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits).
Week 6	Arguments and return values, M-file, input-output statement,+ + Control Statements (Conditional statements: If, Else, Elseif, switch case)
Week 7	Mid-Exam
Week 8	Repetition statements: (While statement, For statement)
Week 9	Combination of conditional and repetition statements I
Week 10	Combination of conditional and repetition statements II
Week 11	Procedures and Functions (a custom-made MATLAB function, define the name of the function, the input and the output variables, Calling Functions)
Week 12	Handle graphics and user interface. 1.pre-defined dialogs 2. Handle graphics a) Graphics

	objects b) Properties of objects c) Modifying properties of graphics objects
Week 13	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) I
Week 14	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) II
Week 15	**Preparatory week before the final exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction, MATLAB Environment, MATLAB Windows (Command Window, Workspace Window, Command History window, Help Window, Editor Window).
Week 2	A First Program, Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns.
Week 3	Variables and assignment statement, logical operator.
Week 4	Arrays, Built in functions, Basic Matrix Functions (sum, max, min, mean, magic, diag, length, size, median, prod, sort).
Week 5	Basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits).
Week 6	Arguments and return values, M-file, input-output statement
Week 7	Control Statements (Conditional statements: If, Else, Elseif, switch case)
Week 8	Repetition statements: (While statement, For statement)
Week 9	Combination of conditional and repetition statements I
Week 10	Combination of conditional and repetition statements II
Week 11	Procedures and Functions(a custom-made Matlab function, define the name of the function, the input and the output variables, Calling Functions)
Week 12	Handle graphics and user interface. 1.Pre-defined dialogs 2. Handle graphics a) Graphics objects b) Properties of objects c) Modifying properties of graphics objects
Week 13	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) I
Week 14	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) II

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Introduction to MATLAB for Engineers William J. Palm III	yes
Recommended Texts	INTRODUCTION TO MATLAB FOR ENGINEERING STUDENTS ,David Houcque	
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	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	Medical Devices Technologies		**College**	HUC	
Module Leader	Hassanin Falah		**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/7/2025		**Version Number**	2.0	

Relation with other Modules العلاقة 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	1. To develop problem solving skills and understanding of Integral calculus through a broad range of Integration techniques. 2. To understand theory and methods of integrations and apply it on various types of functions. 3. This is the basic subject for all engineering fields 4. Demonstrate basic knowledge and understanding of a core of linear algebra and applied mathematics. 5. Introduce student to integration of trigonometric functions and their inverses.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Identify the integration. 2. Interpret definite and indefinite integrals. 3. Integrate functions resulting in inverse trigonometric functions. 4. Integrate functions involving exponential and logarithmic functions. 5. Learn approximation techniques for integration. 6. Calculate the areas of curved regions by using integration methods. 7. Find the volume of a solid of revolution using various integration methods. 8. 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 DiagonalizationSolution 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 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)	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 الاسبوعي 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	(0-44)	Considerable amount of work required

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Arabic Language**			**Module Delivery**	
Module Type	**support**			☒ **Theory**	
Module Code	**MTU1001**			☐ **Lecture**	
ECTS Credits	**2**			☐ **Lab**	
SWL (hr/sem)	**50**			☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	Medical Devices Technologies		**College**	HUC	
Module Leader	Ridab		**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/7/2024		**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	أهداف المادة الدراسية هي اني يكون الطالب قادراً على أن : 1. يتعرف على أنواع الأخطاء اللغوية المشتركة وتوضيح أسبابها وكيفية تجنبها. 2. يتعلم القواعد المتعلقة بالتاء المربوطة والطويلة والتاء المفتوحة وكيفية كتابتها بشكل صحيح. 3. يتعلم قواعد كتابة الألف الممدودة والمقصورة واستخدام الحروف الشمسية والقمرية بشكل صحيح. 4. التعرف على الضاد والظاء ومعرفة كيفية التمييز بينهما في الكتابة. 5. يتعلم طرق كتابة الهمزة بشكل صحيح وفقًا للقواعد اللغوية. 6. التعرف على علامات الترقيم واستخدامها بشكل صحيح في النصوص. 7. يفهم الفروق بين الاسم والفعل والتمييز بينهما في الجمل. 8. يفهم المفاعيل و كيفية استخدامها بشكل صحيح في النصوص. 9. يتعلم الأرقام والعدد واستخدامها في التعبير عن الكميات. 10. يتجنب الأخطاء اللغوية الشائعة في سياقات عملية لتعزيز فهم القواعد وتحسين المهارات اللغوية. 11. يدرس النون والتنوين وفهم معاني حروف الجر واستخدامها بشكل صحيح في الجمل. 12. يركز على الجوانب الشكلية للخطاب الإداري وكيفية كتابته بأسلوب صحيح ومناسب. 13. التعرف على لغة الخطاب الإداري وفهم استخدامها في التواصل الإداري. 14. يفهم نماذج من المراسلات الإدارية لتطبيق المفاهيم والمهارات المكتسبة في الخطاب الإداري.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	مخرجات التعلم للمادة الدراسية هي: 1. قدرة الطلاب على تحليل وتعريف الأخطاء اللغوية المشتركة وتطبيق القواعد الصحيحة لتجنبها. 2. القدرة على استخدام القواعد اللغوية المتعلقة بالتاء المربوطة والطويلة والتاء المفتوحة بشكل صحيح. 3. قدرة الطلاب على استخدام الألف الممدودة والمقصورة بشكل صحيح واستخدام الحروف الشمسية والقمرية بطريقة صحيحة. 4. تمكين الطلاب من التمييز بين الضاد والظاء وتطبيق القواعد الصحيحة في الكتابة. 5. القدرة على كتابة الهمزة بشكل صحيح وفقًا للقواعد اللغوية. 6. استخدام علامات الترقيم بشكل صحيح في النصوص المكتوبة. 7. فهم الطلاب للفروق بين الاسم والفعل وتمكينهم من استخدامهما بشكل صحيح في الجمل. 8. القدرة على استخدام المفاعيل بشكل صحيح في النصوص المكتوبة. 9. استخدام الأرقام والعدد بطريقة صحيحة للتعبير عن الكميات. 10. التمكن من تطبيق الأخطاء اللغوية الشائعة في سياقات عملية وتصحيحها بشكل مناسب. 11. فهم استخدام النون والتنوين ومعاني حروف الجر واستخدامها بشكل صحيح في الجمل. 12. القدرة على كتابة الخطاب الإداري بأسلوب صحيح ومناسب وفهم لغة الخطاب الإداري. 13. تطبيق المفاهيم والمهارات المكتسبة في كتابة المراسلات الإدارية بشكل صحيح وفعال.
Indicative Contents المحتويات الإرشادية	المحتويات الإرشادية في مادة اللغة تشمل مجموعة من المفاهيم والمواضيع التي يتم تغطيتها خلال عملية التعلم. ومن بين المحتويات الإرشادية المهمة: 1. مقدمة عن الأخطاء اللغوية والتعريف بالتاء المربوطة والتاء المطوّلة والتاء المفتوحة. (3 ساعات) 2. قواعد كتابة الألف الممدودة والمقصورة والتعرف على الحروف الشمسية والقمرية. (3 ساعات) 3. دراسة الضاد والظاء وتعلم طرق كتابتهما بشكل صحيح. (3ساعات) 4. تعلم كتابة الهمزة بشكل صحيح وفقًا للقواعد اللغوية. (3 ساعات) 5. دراسة علامات الترقيم وتعلم استخدامها بشكل صحيح في النصوص اللغوية. (3 ساعات) 6. التعرف على الاسم والفعل والتفريق بينهما وفهم القواعد المتعلقة بهما. (3 ساعات) 7. دراسة المفاعيل وتعلم استخدامها في الجمل اللغوية. (3 ساعات) 8. التعرف على الأعداد واستخدامها بشكل صحيح في العبارات والجمل. (3 ساعات) 9. دراسة الأخطاء اللغوية الشائعة وتطبيقاتها في النصوص اللغوية. (3 ساعات)

	10. تعلم استخدام النون والتنوين وفهم معاني حروف الجر واستخدامها بشكل صحيح في الجمل. (2 ساعات) 11. التعرف على الجوانب الشكلية للخطاب الإداري وفهم لغته وقواعده. (2 ساعات) 12. دراسة نماذج من المراسلات الإدارية وتطبيقها في الكتابة. (2 ساعات) توفر هذه المحتويات الإرشادية للطلاب فهمًا شاملاً للمفاهيم اللغوية وتعلم القواعد والتطبيقات العملية التي تساعدهم في تطوير مهاراتهم اللغوية.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	استراتيجيات التعلم والتعليم المستخدمة في مادة اللغة تشمل مجموعة متنوعة من النهج والتقنيات التي تعزز عملية التعلم للطلاب. من بين هذه الاستراتيجيات: 1. التفاعل النشط: يتم تشجيع الطلاب على المشاركة والمشاركة الفعالة في الدروس من خلال المناقشات الجماعية والأنشطة التفاعلية. 2. التعلم التعاوني: يشجع التعاون والتعاون بين الطلاب من خلال العمل الجماعي والمشاريع الجماعية، حيث يتعاون الطلاب مع بعضهم البعض لتحقيق أهداف التعلم المحددة. 3. التطبيق العملي: يتم توفير فرص للطلاب لتطبيق المفاهيم والمهارات المكتسبة في سياقات عملية وواقعية، مما يعزز التفاعل الفعال مع المادة. 4. استخدام التقنيات الحديثة: يستفيد الطلاب من استخدام التكنولوجيا في عملية التعلم، مثل استخدام الحواسيب والإنترنت للبحث والتعلم الذاتي. 5. توفير ردود فعل فورية: يتم توفير ردود فعل فورية وتقييم مستمر للطلاب، سواء عن طريق التقييمات الشفهية أو الكتابية، مما يساعدهم على تحسين أدائهم وتطوير مهاراتهم. 6. التنويع في وسائل التواصل: يتم استخدام مجموعة متنوعة من وسائل التواصل والتعليم، مثل المحاضرات التوضيحية، والمناقشات الجماعية، والأنشطة العملية، والعروض التقديمية، لتلبية احتياجات وأساليب التعلم المختلفة للطلاب. 7. باستخدام هذه الاستراتيجيات، يتم تعزيز التفاعل والتعلم الفعال للطلاب، و 8. تحفيزهم على المشاركة واكتساب المعرفة والمهارات بشكل شامل وشيق.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

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

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

1-8	مقدمة عن الأخطاء اللغوية –التاء المربوطة والطويلة والتاء المفتوحة	الأسبوع الأول
9-14	قواعد كتابة الالف الممدودة والمقصورة – الحروف الشمسية والقمرية	الأسبوع الثـــاني
15-19	الضاد والظاء	الاسبوع الثـــالث
20-30	كتابة الهمزة	الأسبوع الـــرابـع
31-36	علامات الترقيم	الأسبوع الخـــامس
37-44	الاسم والفعل والتفريق بينهما	الأسبوع الســـادس
45-50	المفاعيل + العـــدد	الأسبوع الســـابع
51-61	امتحان منتصف الفصل الدراسي	الأسبوع الثـــامن
62-69	تطبيقات الأخطاء اللغوية الشائعة	الأسبوع التاسع والعاشر
70-75	النون والتنوين ـ معاني حروف الجر	الاسبوع الحادي عشر
76-80	الجوانب الشكلية للخطاب الإداري	الاسبوع الثاني عشر
81-86	لغة الخطاب الإداري +نماذج من المراسلات الإدارية	الأسبوع الثالث عشر والرابـــع عشر
	الاستعداد للأمتحان النهائي	الأسبوع الخامس عشر

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?

Required Texts	-اخطاء لغوية شائعة ،تأليف: خالد بن هلال بن ناصر العنبري ،مكتبة :الجيل الواعد الطبعة الاولى. ٢-قواعد الاملاء وعلامات الترقيم ، تأليف : عبد السلام هارون، تحقيق :نبيل عبد السلام هارون، دار الكتب العلمية ،الطبعة الاولى ،٢٠٠٥.	Yes
Recommended Texts	أقسام الكلام العربي من حيث الشكل والوظيفة، تأليف: الدكتور فاضل مصطفى الساق ، تقديم الاستاذ الدكتور: تمام حسان ،مكتبة الخانجي – القاهرة، طبعة ١٩٧٧م.	No
Websites	The Collage E-Library	

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	**English Language 1**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MTU1002**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level		UGI	**Semester of Delivery**		1
Administering Department		MIET	**College**		
Module Leader	Hussin Fadel		**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The module aims of English Language (1) are designed to help learners at the beginner – pre-intermediate level develop their English language skills and achieve specific learning objectives, By the end of this course, students will: 1. Grammar Mastery: Develop a strong command of grammar rules, including possessive forms, question words, pronouns, prepositions, present simple, past simple, present continuous, past continuous, comparative and superlative adjectives, verb patterns, modal verbs (have/got to, should, must), time and conditional clauses, present perfect, past perfect, reported statements, and more. 2. Vocabulary Expansion: Expand their vocabulary in various contexts, covering numbers, family members, rooms and furniture, locations in and out of town, food and dining, parts of speech, synonyms, antonyms, and phrasal verbs. 3. Everyday English Proficiency: Develop practical language skills for everyday communication, including greetings, introductions, short answers, conversations, and expressions commonly used in daily life. 4. Reading Comprehension: Improve their reading comprehension skills through the analysis of diverse texts, including stories, articles, and informative content on a wide range of topics. 5. Writing Competence: Enhance their writing abilities by composing informal letters, using linking words, writing reviews of books or films, and crafting stories. 6. Critical Thinking and Analysis: Develop critical thinking skills by analyzing and discussing texts, comparing and contrasting information, and drawing conclusions from reading materials. 7. Cultural Awareness: Gain cultural insights through readings and discussions about various cultures and places around the world, fostering a broader worldview. 8. Effective Communication: Improve their ability to express ideas clearly and confidently in both spoken and written forms, making them effective communicators in English. 9. Language Assessment: Prepare for assessments, including a midterm exam, by reviewing and demonstrating their understanding of grammar, vocabulary, and reading comprehension. 10. Independent Learning: Develop independent learning skills, enabling them to continue improving their English language proficiency beyond the course. 11. Language Fluency: Work towards achieving fluency in English, allowing them to engage in conversations, express thoughts, and write coherently with ease. 12. Cultural Competency: Build cultural competence and sensitivity through exposure to diverse texts and discussions about different cultures and lifestyles. These course goals reflect the overarching objectives of the English class and provide a clear direction for student learning and language development throughout the 15-week course.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The learning outcomes for English (1) 15-week English class syllabus: 1. Students will comprehend and discuss texts on different topics 2. Students will expand their vocabulary related to various topics 3. Students will acquire vocabulary related to Various topics 4. Students will be able to write letters , and reviews.

	5. Students will be able to use possessive forms correctly in sentences, indicating ownership. 6. Students will master question words, pronouns, and prepositions. 7. Students will distinguish between present simple and past simple tenses. 8. Students will learn about the present continuous, present simple vs. continuous, and have & have got. 9. Students will study the past continuous and quantity and articles. 10. Students will understand comparative and superlative adjectives. 11. Students will focus on verb patterns, future intentions, and present perfect and past simple tenses. 12. Students will study modal verbs (have/got to, should, must). 13. Students will learn about time and conditional clauses. 14. Students will cover present perfect continuous, present perfect simple vs. continuous, past perfect for clarification, and reported statements
Indicative Contents المحتويات الإرشادية	Beginners book : **Grammar :** Possessive (CH1,2,4) **Vocabulary –** numbers –(CH1, 2, 5) -- the family (Ch4) **Every day English-**all (Ch1,3) **Reading-** where are they (Ch2) , The Chairty Walk, (Ch3) , My best Friend,(Ch4) …….. (2 hours) **Grammar :** Question words (CH 7) – Pronouns (Ch7) – Prepositions (Ch8) **Vocabulary –** Rooms and Furniture –(CH8) – in and out of Town (Ch4), Saying Years (ch9) **Every day English-**all (Ch 9) **Reading-** A Postcard from San Fransisco (Ch7) , Vancouver , the best city in the world, (Ch8) , It is a Jacksin Pollock ,(Ch9) …….. (2 hours) **Grammar :** Present Simple (Ch5,6)- Past Simple (Ch9,10) **Vocabulary – shopping, food, in a restaurant** (ch12) **Every day English-**all (Ch 14) **Reading-** The internet (Ch11) , You are what you eat (Ch12) , This week is different (Ch13) , Life's big events (Ch14) …….. (2 hours) Pre-intermediate book: **Grammar :** - **Vocabulary –** Parts of speech (ch1,3, 7) **Every day English-**Social expressions (Ch 1) **Reading-** People the great communicators (Ch1) **Writing-** A letter to a pen friend (informal) (Ch1) …….. (2 hours) **Grammar :** - Present continuous – Present simple vs. continuous- have &have got (ch2) **Vocabulary –** **Every day English-**Making conversation (Ch 2) **Reading-** Living in the USA (Ch2) **Writing-** Linking words (Ch2,3) …….. (2 hours) **Grammar :** - Past continuous (ch3) – Quantity and Articles (Ch4) **Vocabulary –** **Every day English-** **Reading-** The burglar's friend – The thief, his mother and 2 billion – Sherlock Holmes the three students (Ch3) **Writing-** …….. (2 hours) **Grammar :** - comparative and superlative adj (ch6) **Vocabulary –** synonyms and antonyms (ch6) **Every day English-** **Reading-** Markets around the world(Ch4) **Writing-** …….. (2 hours) **Grammar :**

	Vocabulary: **Every day English:** **Reading-** Hollywood Kids (Ch5) – A tale of two millionaires (ch6) **Writing-** …….. (2 hours) **Grammar :** Verb Patterns (Ch5) – Future intentions (Ch5)- Present Perfect and Past simple (ch7) **Vocabulary:** **Every day English:** **Reading:** **Writing:** Relative clauses (ch6,7)…….. (2 hours) **Grammar :** have (got)to, should, must (ch8) **Vocabulary: -** **Every day English:** Short Answers (ch7) – At the doctor's (ch8) **Reading-** Celebrity interview from Hi (Ch7) **Writing-** …….. (2 hours) **Grammar :** Time and conditional clauses (ch9) **Vocabulary: -** **Every day English:** In a hotel (ch9) **Reading-** Problem page (Ch8) **Writing-** Formal letter (ch8) …….. (2 hours) **Grammar :** **Vocabulary: -** **Every day English:** Exclamation (ch11) – saying goodbye (ch14) **Reading-** The world's first megalopolis (Ch9) **Writing-** writing a review of a book or a film (ch11)…….. (2 hours) **Grammar :** **Vocabulary:** Phrasal verbs (ch12)- word formation (ch3) **Every day English:** Social expressions (ch12) **Reading-** Super volcano (Ch12) **Writing-** writing a story (ch14)…….. (2 hours) **Grammar :** present perfect continuous (ch13) - Present perfect simple vs continuous (ch13)- Past perfect for clarification (ch14) – Reported statement (ch14) **Vocabulary:** **Every day English:** **Reading-** A funny way to earn a living (Ch13) **Writing-** …….. (2 hours)
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The learning and teaching strategies for the English Language (Beginner) module may include: 1. Interactive Language Practice: Engage learners in communicative activities that promote active participation and language practice. This can include pair work, group discussions, role-plays, and language games. 2. Authentic Materials: Incorporate authentic materials such as videos, audio recordings, and reading texts that reflect real-life language use. This helps learners develop their listening, speaking, reading, and writing skills in authentic contexts. 3. Task-Based Learning: Design tasks and projects that require learners to use the target language to accomplish specific goals or solve problems. This promotes meaningful language use and encourages critical thinking and problem-solving skills.

	4. Visual Aids and Multimedia: Utilize visual aids, charts, diagrams, and multimedia resources to support language learning and comprehension. Visuals can enhance understanding, aid in vocabulary acquisition, and provide context for language use. 5. Error Correction and Feedback: Provide timely and constructive feedback on learners' language production to help them identify and correct errors. Encourage self-correction and peer correction to foster a supportive learning environment.

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

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

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	3, 12	LO #1-6 and 1,2,4,10-12
	Assignments	2	10% (10)	4, 10	LO # 1-7 and 1-11
	Discussion	2	10% (10)	continuous	1-14
	Onsite assignment	5	10% (10)	continuous	1-14
Summative assessment	**Midterm Exam**	2 hours	10% (10)	7	LO # 1-9
	Final Exam	3 hours	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Grammar :** Possessive (CH1,2,4) **Vocabulary –** numbers –(CH1, 2, 5) -- the family (Ch4) **Every day English-**all (Ch1,3) **Reading-** where are they (Ch2) , The Chairty Walk, (Ch3) , My best Friend,(Ch4)
Week 2	**Grammar :** Question words (CH 7) – Pronouns (Ch7) – Prepositions (Ch8) **Vocabulary –** Rooms and Furniture –(CH8) – in and out of Town (Ch4), Saying Years (ch9) **Every day English-**all (Ch 9) **Reading-** A Postcard from San Fransisco (Ch7) , Vancouver , the best city in the world (Ch8) , It is a Jacksin Pollock (Ch9)

Week 3	**Grammar :** Present Simple (Ch5,6)- Past Simple (Ch9,10) **Vocabulary – shopping, food, in a restaurant** (ch12) **Every day English-**all (Ch 14) **Reading-** The internet (Ch11) , You are what you eat (Ch12) , This week is different (Ch13) , Life's big events (Ch14)
Week 4	**Vocabulary –** Parts of speech (ch1,3, 7) **Every day English-**all (Ch 1) **Reading-** People the great communicators (Ch1) **Writing-** A letter to a pen friend (informal) (Ch1)
Week 5	**Grammar :** - Present continuous – Present simple vs. continuous- have &have got (ch2) **Every day English-**Making conversation (Ch 2) **Reading-** Living in the USA (Ch2) **Writing-** Linking words (Ch2,3)
Week 6	**Grammar :** - Past continuous (ch3) – Quantity and Articles (Ch4) **Reading-** The burglar's friend – The thief, his mother and 2 billion – Sherlock Holmes the three students (Ch3)
Week 7	**Midterm**
Week 8	**Grammar:** - comparative and superlative adj (ch6) **Vocabulary –** synonyms and antonyms (ch6) **Reading-** Markets around the world(Ch4)
Week 9	**Reading-** Hollywood Kids (Ch5) – A tale of two millionaires (ch6)
Week 10	**Grammar :** Verb Patterns (Ch5) – Future intentions (Ch5)- Present Perfect and Past simple (ch7) **Writing:** Relative clauses (ch6,7)
Week 11	**Grammar :** have (got)to, should, must (ch8) **Every day English:** Short Answers (ch7) – At the doctor's (ch8) **Reading-** Celebrity interview from Hi (Ch7)
Week 12	**Grammar :** Time and conditional clauses (ch9) **Every day English:** In a hotel (ch9) **Reading-** Problem page (Ch8) **Writing-** Formal letter (ch8)
Week 13	**Every day English:** Exclamation (ch11) – saying goodbye (ch14) **Reading-** The world's first megalopolis (Ch9) **Writing-** writing a review of a book or a film (ch11)
Week 14	**Vocabulary:** Phrasal verbs (ch12)- word formation (ch3) **Every day English:** Social expressions (ch12) **Reading-** Super volcano (Ch12) **Writing-** writing a story (ch14)
Week 15	**Grammar :** present perfect continuous (ch13) - Present perfect simple vs continuous (ch13)- Past perfect for clarification (ch14) – Reported statement (ch14) **Reading-** A funny way to earn a living (Ch13)

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Soars, J., Soars, L. (2014). New Headway Plus: Beginner Student's Book. United Kingdom: Oxford University Press. • Soars, J., Soars, L. (2006). New Headway Plus: Pre-intermediate. United Kingdom: Oxford University Press.	Yes

Recommended Texts	Audio CDs or Online Audio: Recordings of listening exercises, dialogues, and pronunciation practice. Beginner workbook Pre-intermediate Workbook	No
Websites		

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Democracy and Human Rights**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MTU1006**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	MIET		**College**	HUC	
Module Leader	Lubna Abed Alrasol		**e-mail**		
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**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. التطور التاريخي لحقوق الإنسان: دراسة التطور التاريخي لفهم حقوق الإنسان من الحضارات القديمة إلى العصور الحديثة. 2. حقوق الإنسان في الشرائع السماوية: التركيز على حقوق الإنسان في الإسلام وكيف تم تضمينها في الشريعة الإسلامية. 3. اعتراف إقليمي بحقوق الإنسان: فحص اعتراف الأقاليم الأوروبي، الأمريكي، الإفريقي، الإسلامي، والعربي بحقوق الإنسان. 4. دور المنظمات غير الحكومية: دراسة دور المنظمات مثل اللجنة الدولية للصليب الأحمر ومنظمة العفو الدولية في حماية حقوق الإنسان. 5. الإطار القانوني الدولي والإقليمي: التركيز على المواثيق الدولية والإقليمية، مثل الاعلان العالمي لحقوق الإنسان. 6. تحليل حقوق الإنسان في التشريعات الوطنية: دراسة كيفية ترجمة حقوق الإنسان في التشريعات الوطنية، مع التركيز على الدستور العراقي. 7. تصنيف حقوق الإنسان وضماناتها: فهم مختلف أشكال حقوق الإنسان والضمانات الدستورية والقضائية والسياسية لحمايتها.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. القدرة على وصف وتحليل التطور التاريخي لحقوق الإنسان منذ الحضارات القديمة حتى العصور الحديثة. 2. القدرة على فحص حقوق الإنسان في حضارة وادي الرافدين وغيرها لفهم التأثير الثقافي على تطورها. 3. تفسير حقوق الإنسان في الإسلام وفهم كيف تم تضمينها في الشريعة الإسلامية. 4. القدرة على تحليل تطور حقوق الإنسان خلال العصور الوسطى والحديثة. 5. الفهم الشامل لاعتراف الأقاليم الأوروبي، الأمريكي، الإفريقي، الإسلامي، والعرب بحقوق الإنسان. 6. القدرة على تقييم دور منظمات مثل اللجنة الدولية للصليب الأحمر ومنظمة العفو الدولية في حماية حقوق الإنسان. 7. القدرة على دراسة وتحليل المواثيق الدولية والإقليمية، بما في ذلك الاعلان العالمي لحقوق الإنسان. 8. القدرة على فحص كيف تم ترجمة حقوق الإنسان في التشريعات الوطنية، مع التركيز على مثال الدستور العراقي. 9. القدرة على تصنيف حقوق الإنسان إلى أشكال فردية وجماعية، وأجيال مثل الحقوق المدنية والسياسية والاقتصادية والاجتماعية. 10. القدرة على تحليل الضمانات الدستورية والقضائية والسياسية لحقوق الإنسان على الصعيدين الوطني والدولي والإقليمي.
Indicative Contents المحتويات الإرشادية	فهم التاريخ التطوري لحقوق الإنسان (3 س) تحليل حقوق الإنسان في الحضارات القديمة (3 س) فهم حقوق الإنسان في الشرائع السماوية (3 س) تحليل حقوق الإنسان في العصور الوسطى والحديثة (3 س) فهم الاعتراف الإقليمي بحقوق الإنسان (3 س) تقدير دور المنظمات غير الحكومية (3 س) فهم الإطار القانوني لحقوق الإنسان (3 س)

	تحليل حقوق الإنسان في التشريعات الوطنية (3 س) فهم أشكال وأجيال حقوق الإنسان (3 س) تحليل ضمانات حقوق الإنسان (3 س)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	تشجيع الطلاب على المشاركة في مناقشات تفاعلية حول تطور حقوق الإنسان عبر التاريخ. مشروعات بحثية: توجيه الطلاب في إعداد مشروعات بحثية تستكشف تطور حقوق الإنسان في فترات تاريخية محددة. استخدام التكنولوجيا: تضمين وسائل تكنولوجية لتعزيز تفاعل الطلاب وتقديم المعلومات بشكل أكثر تفاعلية. ورش العمل والتمثيل العملي: إجراء ورش عمل تفاعلية وأنشطة تمثيل لفهم أعمق لمفاهيم حقوق الإنسان. تقديم تقييم مستمر: تقديم تقييم مستمر لفحص تقدم الطلاب وفهمهم لتطور حقوق الإنسان على مر العصور.

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

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 9	LO #1, 2, 3, LO # 6, 7
	Assignments	2	10% (10)	6, 13	LO # 4 and LO#9
	Seminar	1	10% (10)	12	LO# 5, 6, 7, 8
	Report	1	10% (10)	14	LO# 8, 9, 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) المنهاج الاسبوعي النظري	
الأسبوع الأول	التطور التاريخي لحقوق الانسان حقوق الانسان في الحضارات القديمة (حضارة وادي الرافدين، والحضارات القديمة الأخرى)
الأسبوع الثـــــاني	حقوق الانسان في الشرائع السماوية مع التركيز على حقوق الانسان في الاسلام. حقوق الانسان في العصور الوسطى والحديثة.
الاسبوع الثـــــالث	الاعتراف الاقليمي بحقوق الانسان على الصعيد الأوربي الأمريكي، الأفريقي، الإسلامي، العربي
الأسبوع الـــرابـــع	المنظمات غير الحكومية ودورها في حقوق الانسان اللجنة الدولية للصليب الاحمر، منظمة العفو الدولية، منظمة مراقبة حقوق الانسان المنظمة العربية لحقوق الانسان)
الأسبوع الخـــامس	حقوق الانسان في المواثيق الدولية والاقليمية والتشريعات الوطنية. حقوق الانسان في المواثيق الدولية (الاعلان العالمي لحقوق الانسان العهدين الدوليين الخاصين بحقوق الانسان
الأسبوع الســـادس	حقوق الانسان في المواثيق الاقليمية (الاتفاقية الأوربية لحقوق الانسان الاتفاقية الامريكية لحقوق الانسان الميثاق الأفريقي لحقوق الانسان الميثاق العربي لحقوق الانسان
الأسبوع الســـابع	امتحان منتصف الفصل الدراسي
الأسبوع الثـــــامن	حقوق الانسان في التشريعات الوطنية (الدستور العراقي)
الأسبوع التاسع	اشكال واجيال حقوق الانسان: اشكال حقوق الانسان الحقوق الفردية، الحقوق الجماعية اجيال حقوق الانسان الجيل الاول الحقوق المدنية والسياسية)، (الجيل الثاني الحقوق الاقتصادية والاجتماعية)، (الجيل الثالث: حقوق الانسان الحديثة ، الوعي الماني والبيتي
الأسبوع العاشر	ضمانات حقوق الانسان وحمايتها على الصعيد الوطني الضمانات الدستورية والقضائية والسياسية
الاسبوع الحادي عشر	ضمانات حقوق الإنسان وحمايتها على الصعيدين الاقليمي والدولي (دور الامم المتحدة، دور المنظمات الاقليمية جريمة الإبادة الجماعية.
الاسبوع الثاني عشر	تصنيف الحريات العامة الحريات الأساسية والفردية حرية الامن والشعور بالاطمئنان حرية الذهاب والاياب، الحرية الشخصية
الأسبوع الثالث عشر	الحريات الفكرية والثقافية حرية الرأي حرية المعتقد حرية التعليم حرية الصحافة حرية التجمع حرية تشكيل الجمعيات
الأسبوع الرابـــع عشر	الحريات الاقتصادية والاجتماعية حرية العمل، حرية التملك حرية التجارة والصناعة
الأسبوع الخامس عشر	الاستعداد للامتحان النهائي

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1. "حقوق الإنسان في العالم العربي: القضايا والتحديات"، تأليف: علي حجازي وجمال شعت. الطبعة: الطبعة الثانية، العام: 2017. مبادئ حقوق الإنسان: المفاهيم والقضايا الحديثة"، تأليف: أحمد المجالي " وغسان حمدان. الطبعة: الطبعة الأولى، العام: 2019.	Yes
Recommended Texts	1. "حقوق الإنسان والديمقراطية"، تأليف: مصطفى كامل محمود. الطبعة: الطبعة الأولى، العام: 2015. 2. "تاريخ حقوق الإنسان في العصور القديمة والوسطى"، تأليف: نبيل رزق. الطبعة: الطبعة الثالثة، العام: 2012. 3. "حقوق الإنسان في العراق: الواقع والتحديات"، تأليف: سعد الله عباس. الطبعة: الطبعة الأولى، العام: 2014. 4. "حقوق الإنسان في العراق: المفهوم والتطور"، تأليف: عبد الكريم السامرائي. الطبعة: الطبعة الأولى، العام: 2018. "حقوق الإنسان في العراق: بين التحديات والآفاق"، تأليف: محمد السامرائي ولقاء الحربي. الطبعة: الطبعة الأولى، العام: 2020.	No
Websites	The Collage E-Library	

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.

المرحلة الثانية

UGII

وصف المقرر لمادة

Module Information معلومات المادة الدراسية					
Module Title	Electronics devices and circuits			**Module Delivery**	
Module Type				☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒**Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code					
ECTS Credits					
SWL (hr/sem)					
Module Level			**Semester of Delivery**		Three
Department Administering			**College**	College of engineering	
Module Leader	Ruqaya Alaa Ebrahim		**e-mail**	ruqia_alaa_ibrahim@hilla-unc.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Ruqaya Alaa Ebrahim		**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules العالقة مع المواد الدراسية ألخرى			
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	Developing the skills of understanding, analyzing and designing electronic circuits for semiconductor diodes and BJT transistors and their practical applications
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Recognize how Semiconductor Diode work . List the various Applications associated with Semiconductor Diode . Summarize what is meant by a Bipolar Junction Transistor . Discuss the operation of BJT Transistor . Discuss the various operation regions of BJT Transistor . DC Biasing design of BJT transistor . Ability to analyze the BJT AC circuits . Design Various type of amplifiers using BJT Transistor .
Indicative Contents المحتويات الإرشادية	**Part A** – PN Diode Semiconductor Diodes – Introduction, Semiconductor Materials: Ge, Si, AND .GaAs Energy levels, n-Type and P-Type Materials, Semiconductor diode Biasing, Diode equivalent circuits, Light Emitting Diodes [7 hrs] Diode Applications – Load line analysis, Series and parallel circuit, Sinusoidal Rectification, Clippers, Clampers, Zener Diodes. [11 hrs] Revision problem classes [3 hrs] **Part B** – BJT Transistor BJT Transistor –Transistor construction, Transistor Operation, Transistor operation regions, Transistor Configurations, Transistor Limits. [9 hrs] BJT Biasing – Operating Point and Load Line, Fixed Bias, Emitter Bias, ,Voltage divider and feedback Bias, Design operations. [12 hrs] BJT AC analysis – Amplification in AC domain, BJT Transistor Modelling, re Transistor model, BJT configuration AC analysis, BJT loading effects, Cascaded systems. [13 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	Theory in class room Practical in Lab .Quizzes and home works .

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	107	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.13
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج االسبوعي النظري

	Material Covered
Week 1	Semiconductor Diodes: Unbiased PN Junction,Forward & Reverse Biased PN Junction,Diode Characteristics: Diode Equation, Diode Equivalent Circuits,Graphical Solution,
Week 2	Breakdown & Biasing diode, Dc characteristics power dissipation in a diode.
Week 3	Zenor diodes
Week 4	Diode Applications: Rectifiers, Half and full wave rectifiers, wave form shaping Capacitor :Filter, Inductor smoothing.
Week 5	Bipolar Junction Transistor(BJT):Operation of pnp and npn, Current ,Components
Week 6 Week 7	Biasing the BJT: Fixed Bias, the emitter current, Base common emitter amplifier, Self-Bias
Week 8	.Mid-term exam
Week 9	Equivalent circuit model, Dc analysis of transistor, Load line, h parameters in common emitter.
Week 10-13	Small Signal Low Frequency Analysis: Transistor amplifier, Ac equivalent circuit Graphical Analysis
Week 14-15	Comparison of BJT Amplifier Configurations, Cascading Amplifiers, Simplified Models.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week 1	Introduction to NI Multisim
Week 2	Half wave rectifier
Week 3	Full wave rectifier
Weeks 4-5	Clippers
Weeks 6-7	Clampers
Weeks 8-9	Zener Diode regulator
Week 10	BJT DC analysis
Week 11	BJT amplifier
Week 12	Astable Multivibrator
Weeks 13-14	\Bistable Multivibrator
Week 15	Monostable Multivibrator
Learning and Teaching Resources مصادر التعلم والتدريس	

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50- 100)	A - Excellent	امتياز	100 - 90	Outstanding Performance
	B - Very Good	جيد جدا	89 - 80	Above average with some errors
	C - Good	جيد	79 - 70	Sound work with notable errors
	D - Satisfactory	متوسط	69 - 60	Fair but with major shortcomings
	E - Sufficient	مقبول	59 - 50	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(49-45)	More work required but credit awarded
	F – Fail	راسب	(44-0)	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)	**100**				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	Medical Devices Technologies		**College**	HUC	
Module Leader	Hawraa Fadel		**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/7/2024		**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.
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	Topics include:

المحتويات الإرشادية	• 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					
		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 : 1,2,3 ……12
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	
	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	
	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), *Essentials of Anatomy and Physiology*, 14th edn, Pearson Education, San Francesco, 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	Electrical Machines			**Module Delivery**	
Module Type	Core			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	MIET2203				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	Medical Devices Technologies		**College**	HUC	
Module Leader	Thamer Mohammed		**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/7/2025		**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 أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	**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)	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 الاسبوعي 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, siplitphase, capacitor short, capacitor run and shaded pole motors.
Week 13	Single phase induction motor, methods of starting, siplitphase, capacitor short, 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 , dray cup type motor , s motor , etc ……..
Week 15	Preparatory week before final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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 (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	**English Language II**			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MTU1003**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Medical Devices Technologies		**College**	HUC	
Module Leader	Hussein Fadhil Hamdan		**e-mail**		
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	PHD	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/7/2024		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	**English Language1** **MTU1002**	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	*Module Aims* The module aims of the English Language Course are structured to support learners at the intermediate to upper-intermediate level in enhancing their English language skills and achieving specific learning outcomes. By the end of this course, students will: 1. *Grammar Mastery:* - Achieve a comprehensive understanding of advanced grammar rules, including the use of auxiliary verbs, present simple, present continuous, past simple, present perfect, future forms, questions and negatives, modals, comparatives and superlatives, conditionals, passive voice, relative clauses, present perfect continuous, and reported speech. 2. *Vocabulary Expansion:* - Expand their vocabulary across various topics and contexts, such as everyday expressions, common activities, storytelling, experiences, permissions, hypothetical situations, descriptive details, and phrasal verbs. This will include learning advanced vocabulary related to describing characteristics, actions, and consequences. 3. *Everyday English Proficiency:* - Develop practical language skills for everyday communication, focusing on effective use of everyday expressions, making comparisons, discussing future intentions, and navigating social interactions. This includes enhancing the ability to participate in conversations and use language appropriately in various social settings. 4. *Reading Comprehension:* - Improve reading comprehension skills through engagement with diverse texts, including stories, articles, and informative content. Students will analyze and interpret texts, building the ability to understand complex language structures and themes. 5. *Writing Competence:* - Enhance writing skills by composing various forms of written content, such as short stories, comparative essays, descriptive passages, and reviews. Students will learn to use linking words, express opinions, and structure their writing coherently. 6. *Critical Thinking and Analysis:* - Develop critical thinking skills by analyzing and discussing texts, drawing comparisons, and making inferences. Students will be encouraged to engage with texts critically, assessing arguments and evidence. 7. *Cultural Awareness:* - Gain insights into different cultures and lifestyles through readings and discussions, fostering a broader understanding of the world. This will help students develop cultural sensitivity and an appreciation for diversity. .

	8. *Effective Communication:* - Improve their ability to express ideas clearly and confidently in both spoken and written forms. The course will emphasize clarity, coherence, and fluency in communication, preparing students to articulate their thoughts effectively. 9. *Language Assessment Preparation:* - Prepare for language assessments, including a final review and exam, by consolidating their understanding of grammar, vocabulary, and reading comprehension. This will include practicing various question formats and test-taking strategies. 10. *Independent Learning:* - Develop skills for independent learning, enabling students to continue enhancing their English proficiency beyond the course. This includes fostering a habit of self-study and utilizing resources effectively. 11. *Language Fluency:* - Work towards achieving greater fluency in English, allowing students to engage in complex conversations, express nuanced ideas, and write with increased sophistication and ease. 12. *Cultural Competency:* - Build cultural competence and sensitivity through exposure to diverse texts and discussions about different cultural perspectives. This will enhance students' ability to interact respectfully and knowledgeably in multicultural contexts. These module aims provide a comprehensive framework for student learning and development, ensuring that participants gain both linguistic competence and cultural awareness throughout the course.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Module Learning Outcomes Students will comprehend and discuss a variety of texts on diverse topics, enhancing their reading and analytical skills. Students will expand their vocabulary related to various topics, including everyday expressions, actions, experiences, and descriptive details. Students will be able to write various forms of text, including short stories, comparative essays, descriptive passages, and reviews. Students will use auxiliary verbs correctly in sentences, mastering their application in different tenses. Students will distinguish between present simple, past simple, present continuous, and present perfect tenses, understanding their appropriate contexts.

	Students will study and apply modal verbs such as must, should, can, and could, understanding their use in expressing necessity, possibility, and advice. s tudents will understand and correctly use comparative and superlative adjectives to describe and compare objects and situations. Students will focus on verb patterns and express future intentions using appropriate grammatical structures. Students will learn the correct usage of first and second conditionals and the passive voice in various contexts. Students will effectively use defining and non-defining relative clauses to provide additional information in sentences. Students will describe ongoing actions and experiences using the present perfect continuous tense and appropriate time expressions. Students will learn to report statements, questions, and commands accurately, mastering the use of reported speech. Students will discuss hypothetical situations and understand the use of time and conditional clauses in various contexts. Students will acquire and use advanced vocabulary, including phrasal verbs and synonyms/antonyms, in both written and spoken communication.
Indicative Contents المحتويات الإرشادية	Intermediate Book (Based on "New Headway Plus: Intermediate Student's Book") Total Hours: 21 hours Week 1 (2 hours) Grammar: Auxiliary Verbs (Unit 1) Focus: Usage of "to be," "have," and other auxiliary verbs. Vocabulary: Everyday Expressions (Unit 1) Reading: "It's a Wonderful World!" (Unit 1) Writing: Basic sentences using auxiliary verbs Week 2 (2 hours) Grammar: Present Simple (Unit 2) Focus: Usage in daily routines and habits. Vocabulary: Common Activities (Unit 2) Reading: "Get Happy!" (Unit 2) Week 3 (2 hours) Grammar: Present Continuous (Unit 2) Focus: Actions happening now. Vocabulary: Actions and Activities (Unit 2) Reading: "Simple or Continuous?" (Unit 2) Week 4 (2 hours) Grammar: Past Simple (Unit 3)

	Focus: Narrating past events. Vocabulary: Telling Stories (Unit 3) Reading: "Telling Tales" (Unit 3) Writing: Writing a short story using past simple tense Week 5 (2 hours) Grammar: Present Perfect (Unit 1, 3) Focus: Describing experiences and actions with present relevance. Vocabulary: Experiences and Achievements (Unit 1, 3) Reading: "Present Perfect Stories" (Unit 1, 3) Week 6 (2 hours) Grammar: Future Forms (Unit 5) Focus: "Going to," "will," and present continuous for future plans. Vocabulary: Plans and Predictions (Unit 5) Reading: "On the Move" (Unit 5) Week 7 (2 hours) Grammar: Questions and Negatives (Unit 4) Focus: Formulating questions and negative sentences. Vocabulary: Social Interactions (Unit 4) Reading: "Nothing but the Truth" (Unit 4) Week 8 (2 hours) Grammar: Modals (Unit 4, 7) Focus: Expressing obligation, permission, and possibility. Vocabulary: Permissions and Possibilities (Unit 4, 7) Reading: "Doing the Right Thing" (Unit 4) Week 9 (2 hours) Grammar: Comparatives and Superlatives (Unit 6) Focus: Comparing people, objects, and situations. Vocabulary: Describing Characteristics (Unit 6) Reading: "Making Comparisons" (Unit 6) Writing: Comparative essay Week 10 (1 hour) Grammar: Conditionals (Unit 8) Focus: First and second conditional structures. Vocabulary: Hypothetical Situations (Unit 8) Reading: "Just Imagine!" (Unit 8) Week 11 (1 hour) Grammar: Passive Voice (Unit 2, 3) Focus: Usage in various tenses to emphasize actions. Vocabulary: Actions and Consequences (Unit 2, 3) Reading: "Passive Constructions" (Unit 2, 3) Week 12 (1 hour) Grammar: Relative Clauses (Unit 8) Focus: Defining and non-defining clauses. Vocabulary: Descriptive Details (Unit 8) Reading: "Descriptive Sentences" (Unit 8) Week 13 (1 hour) Grammar: Present Perfect Continuous (Unit 10)

	Focus: Describing ongoing actions and experiences. Vocabulary: Time Expressions (Unit 10) Reading: "Obsessions" (Unit 10) Writing: Describing ongoing activities using present perfect continuous Week 14 (1 hour) Grammar: Reported Speech (Unit 11) Focus: Reporting statements, questions, and commands. Vocabulary: Reporting Verbs (Unit 11) Reading: "Reported Conversations" (Unit 11) Week 15 (2 hours) Review and Exam Preparation Focus: Reviewing key grammar, vocabulary, and reading topics covered. Upper-Intermediate Book (Based on "New Headway Plus: Upper-Intermediate Student's Book") Total Hours: 7 hours (Max 25% of Total Content) Week 8 (1 hour) Reading: "Getting on Together" (Unit 7) Focus: Permissions and possibilities. Week 9 (1 hour) Vocabulary: Describing Characteristics (Unit 6) Reading: "Making it Big" (Unit 6) Week 10 (1 hour) Vocabulary: Hypothetical Situations (Unit 8) Reading: "Going to Extremes" (Unit 8) Week 11 (1 hour) Vocabulary: Actions and Consequences (Unit 7) Reading: "Getting on Together" (Unit 7) Week 12 (1 hour) Vocabulary: Descriptive Details (Unit 8) Reading: "Going to Extremes" (Unit 8) Week 13 (1 hour) Vocabulary: Time Expressions (Unit 10) Reading: "Risking Life and Limb" (Unit 10) Week 14 (1 hour) Vocabulary: Reporting Verbs (Unit 11) Reading: "In Your Dreams" (Unit 11)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Learning and Teaching Strategies for the English Language Course Interactive Language Practice: Engage learners in communicative activities that promote active participation and practical language use. Strategies include pair work, group discussions, role-plays, and language games, which are designed to foster speaking and listening skills in an engaging and supportive environment. Use of Authentic Materials: Integrate authentic materials such as videos, audio recordings, and reading texts that reflect real-life language use. These materials help learners develop their listening, speaking, reading, and writing skills by exposing them to various dialects, accents, and real-world contexts. Task-Based Learning: Design tasks and projects that require learners to use the target language to accomplish specific objectives or solve problems. This approach promotes meaningful language use, encouraging learners to think critically and develop problem-solving skills while using English in practical scenarios. Visual Aids and Multimedia: Utilize visual aids, such as charts, diagrams, and multimedia resources, to enhance language learning and comprehension. These tools aid in vocabulary acquisition, provide context, and support understanding, making abstract concepts more concrete and accessible. Error Correction and Feedback: Provide timely and constructive feedback on learners' language production, focusing on both strengths and areas for improvement. Encourage self-correction and peer correction, fostering a supportive learning environment where students can learn from their mistakes and from each other. This approach helps build confidence and promotes a growth mindset.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Grammar: Auxiliary Verbs (Intermediate: Unit 1) Vocabulary: Everyday Expressions (Intermediate: Unit 1) Reading: "It's a Wonderful World!" (Intermediate: Unit 1) Writing: Basic sentences using auxiliary verbs (Intermediate: Unit 1)
Week 2	Grammar: Present Simple (Intermediate: Unit 2) Vocabulary: Common Activities (Intermediate: Unit 2) Reading: "Get Happy!" (Intermediate: Unit 2)
Week 3	Grammar: Present Continuous (Intermediate: Unit 2) Vocabulary: Actions and Activities (Intermediate: Unit 2) Reading: "Simple or Continuous?" (Intermediate: Unit 2)
Week 4	Grammar: Past Simple (Intermediate: Unit 3) Vocabulary: Telling Stories (Intermediate: Unit 3) Reading: "Telling Tales" (Intermediate: Unit 3) Writing: Writing a short story using past simple tense (Intermediate: Unit 3)
Week 5	Grammar: Present Perfect (Intermediate: Unit 1, 3) Vocabulary: Experiences and Achievements (Intermediate: Unit 1, 3) Reading: "Present Perfect Stories" (Intermediate: Unit 1, 3)
Week 6	Grammar: Future Forms (Intermediate: Unit 5) Vocabulary: Plans and Predictions (Intermediate: Unit 5) Reading: "On the Move" (Intermediate: Unit 5)
Week 7	Grammar: Questions and Negatives (Intermediate: Unit 4) Vocabulary: Social Interactions (Intermediate: Unit 4) Reading: "Nothing but the Truth" (Intermediate: Unit 4)
Week 8	Grammar: Modals (Intermediate: Unit 4, 7) Vocabulary: Permissions and Possibilities (Intermediate: Unit 4, 7; Upper-Intermediate: Unit 7)

	Reading: "Doing the Right Thing" (Intermediate: Unit 4; Upper-Intermediate: Unit 7 "Getting on Together")
Week 9	Grammar: Comparatives and Superlatives (Intermediate: Unit 6) Vocabulary: Describing Characteristics (Intermediate: Unit 6; Upper-Intermediate: Unit 6) Reading: "Making Comparisons" (Intermediate: Unit 6; Upper-Intermediate: Unit 6 "Making it Big") Writing: Comparative essay (Intermediate: Unit 6)
Week 10	Grammar: Conditionals (Intermediate: Unit 8) Vocabulary: Hypothetical Situations (Intermediate: Unit 8; Upper-Intermediate: Unit 8) Reading: "Just Imagine!" (Intermediate: Unit 8; Upper-Intermediate: Unit 8 "Going to Extremes")
Week 11	Grammar: Passive Voice (Intermediate: Unit 2, 3) Vocabulary: Actions and Consequences (Intermediate: Unit 2, 3; Upper-Intermediate: Unit 7) Reading: "Passive Constructions" (Intermediate: Unit 2, 3; Upper-Intermediate: Unit 7 "Getting on Together")
Week 12	Grammar: Relative Clauses (Intermediate: Unit 8) Vocabulary: Descriptive Details (Intermediate: Unit 8; Upper-Intermediate: Unit 8) Reading: "Descriptive Sentences" (Intermediate: Unit 8; Upper-Intermediate: Unit 8 "Going to Extremes")
Week 13	Grammar: Present Perfect Continuous (Intermediate: Unit 10) Vocabulary: Time Expressions (Intermediate: Unit 10; Upper-Intermediate: Unit 10) Reading: "Obsessions" (Intermediate: Unit 10; Upper-Intermediate: Unit 10 "Risking Life and Limb") Writing: Describing ongoing activities using present perfect continuous (Intermediate: Unit 10)
Week 14	Grammar: Reported Speech (Intermediate: Unit 11) Vocabulary: Reporting Verbs (Intermediate: Unit 11; Upper-Intermediate: Unit 11) Reading: "Reported Conversations" (Intermediate: Unit 11; Upper-Intermediate: Unit 11 "In Your Dreams")
Week 15	Review and Exam Preparation

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**

Required Texts	• L. Soars and J. Soars, New Headway Plus - Intermediate, 4th ed. Oxford: Oxford University Press, 2019. • Soars, J., Soars, L. New Headway Plus: Upper-Intermediate. United Kingdom: Oxford University Press.	Yes
Recommended Texts	• Audio CDs or Online Audio: Recordings of listening exercises, dialogues, and pronunciation practice.	No
Websites	Collage E- Library	

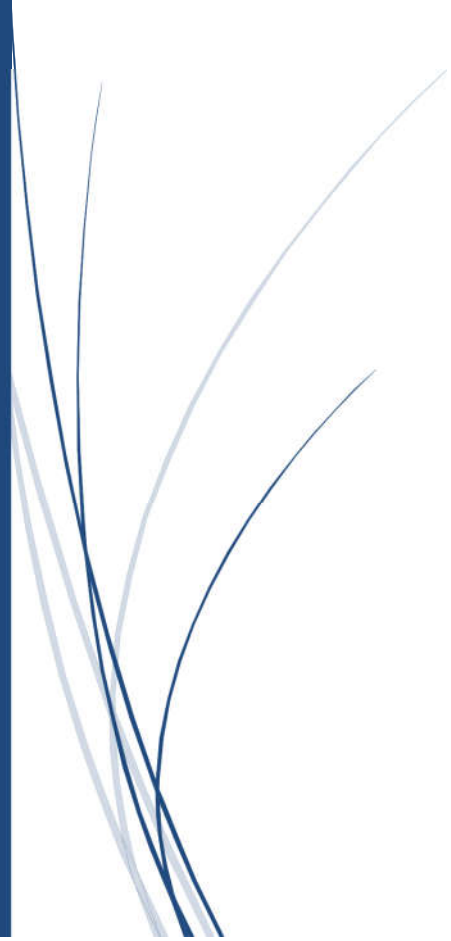
Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	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.

6/3/2023

Computer Applications

MTU1005



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer applications**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MTU1005**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	UGII 2		**Semester of Delivery**	3	
Administering Department	**Medical Devices Technologies**		**College**	HUC	
Module Leader	Hayder Kareem		**e-mail**		
Module Leader's Acad. Title	Dr		**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/7/2024		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The module aims to: 1. To provide an overview of Microsoft Word, Excel, and PowerPoint, and familiarize students with their key features and user interfaces. 2. To develop essential skills in creating, saving, and opening documents in Microsoft Word, including formatting text and paragraphs and working with styles and themes. 3. To explore advanced features in Microsoft Word, such as page layout options, working with headers, footers, and page numbers, and incorporating tables, images, and objects. 4. To introduce spreadsheets and worksheets in Microsoft Excel, and develop students' skills in data entry, manipulation, and basic formulas and functions. 5. To delve into advanced Microsoft Excel features, including working with ranges and cells, sorting and filtering data, and creating charts and graphs. 6. To guide students in creating and editing slides in Microsoft PowerPoint, applying themes and templates, and adding text, images, and multimedia elements. 7. To explore advanced PowerPoint features, such as slide transitions, animations, using SmartArt and shapes, and utilizing presenter tools and slide show options. 8. To teach word processing techniques in Microsoft Word, such as mail merge, document collaboration, creating professional documents, and managing references and citations. 9. To provide advanced data analysis skills in Microsoft Excel, covering advanced formulas and functions, data validation, conditional formatting, and PivotTables. 10. To explore collaboration and sharing features in Microsoft Office, including sharing and co-authoring documents, using comments and track changes, and protecting documents.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Demonstrate a solid understanding of Microsoft Word, Excel, and PowerPoint, including their key features, user interfaces, and common functions. 2. Create, format, and manage documents effectively in Microsoft Word, utilizing styles, themes, page layout options, headers, footers, tables, images, and objects. 3. Utilize Microsoft Excel for data entry, manipulation, basic calculations using formulas and functions, sorting and filtering data, and creating charts and graphs. 4. Develop proficiency in creating and editing slides, applying themes, templates, and multimedia elements, and utilizing advanced features in Microsoft PowerPoint. 5. Employ word processing techniques in Microsoft Word, including mail merge, document collaboration, creating professional documents, and managing references and citations. 6. Apply advanced data analysis skills in Microsoft Excel, including advanced formulas and functions, data validation, conditional formatting, and PivotTables. 7. Collaborate and share documents effectively using Microsoft Office features, such as sharing and co-authoring, comments and track changes, and document protection.

	8. Automate tasks in Word, Excel, and PowerPoint using macros, customizing the ribbon, creating shortcuts, and integrating data between applications for enhanced productivity and efficiency.
Indicative Contents المحتويات الإرشادية	The indicative contents for the Computer Application module may include: 1. Introduction to Microsoft Office Suite: [8 hrs.] 2. Microsoft Word Basics: [8 hrs.] 3. Advanced Microsoft Word Features: [8 hrs.] 4. Microsoft Excel Basics: [8 hrs.] 5. Advanced Microsoft Excel Features: [8 hrs.] 6. Microsoft PowerPoint Basics: [8 hrs.] 7. Advanced Microsoft PowerPoint Features: [8 hrs.] 8. Word Processing Techniques in Microsoft Word: [8 hrs.] 9. Data Analysis in Microsoft Excel: [8 hrs.] 10. Presentation Design in Microsoft PowerPoint: [8 hrs.] 11. Collaboration and sharing in Microsoft Office: [8 hrs.] 12. Automating Tasks in Microsoft Office: [8 hrs.] 13. Integrating Office Applications: [8 hrs.] 14. Advanced Tips and Tricks: [8 hrs.] 15. Final Projects and Review: [8 hrs.]
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The learning and teaching strategies employed in the applied mathematics module are designed to facilitate active engagement, critical thinking, and practical application of mathematical concepts. The following strategies are commonly used: 1. Lectures: Lectures serve as the primary mode of content delivery, where instructors present key concepts, theories, and techniques. Lectures may include visual aids, examples, and demonstrations to enhance understanding and provide real-world context. 2. Interactive Discussions: Interactive discussions encourage student participation and facilitate deeper understanding of the material. Students are encouraged to ask questions, share their insights, and engage in discussions on specific topics or problem-solving strategies. 3. Problem-solving Sessions: Problem-solving sessions allow students to apply mathematical principles to solve a variety of problems. These sessions may be conducted in groups or individually, allowing students to collaborate, exchange ideas, and develop problem-solving skills. 4. Practical Exercises: Practical exercises involve hands-on application of mathematical concepts through computational tasks, modeling exercises, or simulations. These exercises reinforce theoretical knowledge and help students develop proficiency in using mathematical tools and software. 5. Case Studies and Real-world Applications: Case studies and real-world applications demonstrate the relevance of mathematics in various fields. Students analyze and solve mathematical problems based on real-life scenarios, enabling them to connect theoretical concepts with practical applications. 6. Computer-based Learning: Computer-based learning resources, such as online tutorials, interactive simulations, and mathematical software, are utilized to enhance students' understanding and proficiency in applying mathematical techniques. 7. Group Projects: Group projects promote teamwork, communication, and problem-solving skills. Students work collaboratively on

	mathematical projects or research assignments, allowing them to explore advanced topics or applications of mathematics. 8. Self-directed Learning: Students are encouraged to take responsibility for their learning by engaging in self-directed study. This may involve reading recommended textbooks, exploring additional resources, and practicing problem-solving independently. 9. Assessments: Regular assessments, including quizzes, tests, and assignments, evaluate students' understanding and application of mathematical concepts. These assessments provide feedback and help track progress throughout the module. 10. Tutorial Sessions: Tutorial sessions provide opportunities for students to seek clarification, discuss challenging topics, and receive individualized guidance from instructors or teaching assistants.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	26	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
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, 10	LO #1, 2, 8 and 9
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO # 1-14
Summative assessment	**Midterm Exam**	2 hours	10% (10)	7	LO # 1-7
	Final Exam	4 hours	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Microsoft Office Suite • Overview of Microsoft Word, Excel, and PowerPoint • Understanding the user interface and common features
Week 2	Microsoft Word Basics • Creating, saving, and opening documents • Formatting text and paragraphs • Working with styles and themes
Week 3	Advanced Microsoft Word Features • Page layout and formatting options • Working with headers, footers, and page numbers • Using tables, images, and other objects
Week 4	Microsoft Excel Basics

	• Introduction to spreadsheets and worksheets • Data entry and manipulation • Formulas and functions
Week 5	Advanced Microsoft Excel Features • Working with ranges and cells • Sorting and filtering data • Creating charts and graphs
Week 6	Microsoft PowerPoint Basics • Creating and editing slides • Applying themes and templates • Adding text, images, and multimedia elements
Week 7	Mid Exam + Advanced Microsoft PowerPoint Features • Slide transitions and animations • Using SmartArt and shapes • Presenter tools and slide show options
Week 8	Word Processing Techniques in Microsoft Word • Mail merge and document collaboration • Creating professional documents (reports, resumes, etc.) • Managing references and citations
Week 9	Data Analysis in Microsoft Excel • Advanced formulas and functions • Data validation and conditional formatting • PivotTables and data visualization
Week 10	Presentation Design in Microsoft PowerPoint • Design principles for effective presentations • Customizing slide layouts and master slides • Adding interactive elements (hyperlinks, buttons, etc.)
Week 11	Collaboration and Sharing in Microsoft Office • Sharing and co-authoring documents • Using comments and track changes • Protecting documents and controlling access
Week 12	Automating Tasks in Microsoft Office • Macros and automation in Word, Excel, and PowerPoint • Customizing the ribbon and creating shortcuts • Using add-ins and productivity tools
Week 13	Integrating Office Applications • Linking data between Word, Excel, and PowerPoint • Embedding objects and creating dynamic content • Importing and exporting data
Week 14	Advanced Tips and Tricks • Time-saving techniques and shortcuts • Troubleshooting common issues • Customizing settings and options
Week 15	Final Projects and Review • Students work on individual or group projects using Word, Excel, and PowerPoint • Review of key concepts and features covered throughout the course
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week	**Material Covered**
Week 1	• Introduction to Lab Environment and Office Suite - Lab setup and software installation. Overview of Microsoft Office Suite tools and features.
Week 2	• Microsoft Word Lab - Creating, editing, and formatting documents. Inserting and formatting images and tables.
Week 3	• Microsoft Excel Lab - Creating spreadsheets and entering data. Formulas and functions for calculations.
Week 4	• Microsoft PowerPoint Lab - Creating, editing, and designing slides. Adding multimedia elements and animations.
Week 5	• Word Processing Techniques Lab - Mail merge and document collaboration exercises. Creating professional documents with advanced formatting.
Week 6	• Data Analysis Lab with Excel - Advanced formula and function exercises. Sorting, filtering, and analyzing data.
Week 7	• Presentation Design Lab with PowerPoint - Applying design principles to create visually appealing slides. Adding interactive elements and customizing slide layouts.
Week 8	• Collaboration and Sharing Lab - Collaborative document editing and reviewing. Sharing and protecting documents with permissions.
Week 9	• Automation and Customization Lab - Recording and running macros for repetitive tasks. Customizing the ribbon and creating shortcuts.
Week 10	• Integrating Office Applications Lab - Linking and embedding data between Word, Excel, and PowerPoint. Importing and exporting data between applications.
Week 11	• Advanced Tips and Tricks Lab - Exploring time-saving techniques and productivity hacks. Troubleshooting common issues and errors.
Week 12-15	• Project-based Labs - Students work on individual or group projects that integrate Word, Excel, and PowerPoint skills. Projects can involve tasks such as creating a professional report, analyzing data, or designing an interactive presentation.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	M. E. Vermaat, S. M. Freund, C. Hoisington, and E. Schmieder, "Microsoft Office 365 & Office 2019: Introductory," Boston, MA: Cengage Learning, 2020.	Yes
Recommended Texts	Triad Interactive, Inc., "Microsoft Office 2019: A Skills Approach," Boston, MA: Cengage Learning, 2019.	Yes
Websites	The Collage E-Library	

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	**The crimes of the Ba'ath regime in Iraq**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MTU1007**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	MIET		**College**	UOH	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	2024/7/1		**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	يهدف هذا المقرر الدراسي إلى تعزيز فهم الطلاب للجرائم والانتهاكات التي وقعت خلال فترة نظام البعث في العراق وتأثيرها على الأفراد والمجتمع، وتشجيع التحليل والنقاش حول هذه القضايا المهمة. ومن ابرز الأهداف للمادة الدراسية هي اني يكون الطالب قادراً على أن : 1. فهم مفهوم الجرائم وأقسامها. 2. دراسة جرائم نظام البعث والقوانين المتعلقة بها. 3. التعرف على الجرائم النفسية والاجتماعية وآثارها على الفرد والمجتمع. 4. تحليل الانتهاكات القانونية في العراق، بما في ذلك الانتهاكات لحقوق الإنسان والجرائم ذات الصلة. 5. فهم الجرائم البيئية وآثارها، بما في ذلك التلوث وتدمير المدن والقرى وتجفيف الأهوار. 6. دراسة جرائم المقابر الجماعية وفهم أحداث المقابر والتصنيف الزمني لها في العراق.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	مخرجات التعلم للمادة الدراسية هي: 1. فهم مفهوم الجرائم وقدرة الطلاب على تصنيف الجرائم وفقًا لأقسامها. 2. تحليل جرائم نظام البعث وفهم القوانين المتعلقة بها، بما في ذلك الجرائم الدولية. 3. القدرة على التعرف على الجرائم النفسية لنظام البعث وفهم الآثار النفسية لجرائم نظام البعث على الأفراد والمجتمع. 4. القدرة على التعرف على الجرائم الاجتماعية لنظام البعث الآثار الاجتماعية لجرائم نظام البعث على الأفراد والمجتمع. 5. التعرف على الانتهاكات القانونية لنظام البعث في العراق وفهم أنواع الانتهاكات ومكان احتجاز الأفراد. 6. التعرف على صور انتهاكات حقوق الإنسان وجرائم السلطة التي وقعت خلال فترة نظام البعث 7. التعرف على الانتهاكات السياسية والعسكرية لنظام البعث 8. فهم الجرائم البيئية لنظام البعث والقدرة على تحليل تأثيرها على البيئة والمجتمع. 9. دراسة جرائم المقابر الجماعية لنظام البعث 10. فهم الأحداث المرتبطة بجرائم المقابر الجماعية وتصنيفها زمنيًا.
Indicative Contents المحتويات الإرشادية	المحتويات الإرشادية في مادة اللغة تشمل مجموعة من المفاهيم والمواضيع التي يتم تغطيتها خلال عملية التعلم. ومن بين المحتويات الإرشادية المهمة: 1. تعريف الجريمة لغة واصطلاحًا، مفهوم الجريمة، اقسام الجريمة 2. جرائم نظام البعث وفق توثيق قانون المحكمة الجنائية العراقية العليا عام 2005 3. الجرائم النفسية والاجتماعية وأثارها 4. عسكرة المجتمع، موقف النظام البعثي من الدين 5. انتهاكات القوانين العراقية، صور انتهاكات حقوق الإنسان وجرائم السلطة 6. بعض قرارات الانتهاكات السياسية والعسكرية لنظام البعث 7. أماكن السجون والاحتجاز لنظام البعث 8. الجرائم البيئية لنظام البعث في العراق 9. جرائم المقابر الجماعية 10. أحداث مقابر الإبادة الجماعية المرتكبة من النظام البعثي في العراق 11. التصنيف الزمني لمقابر الإبادة الجماعية في العراق للمدة 1963م - 2003م

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	استراتيجيات التعلم والتعليم المستخدمة في مادة جرائم حزب البعث البائد تشمل مجموعة متنوعة من النهج والتقنيات التي تعزز عملية التعلم للطلاب. من بين هذه الاستراتيجيات: 1. التفاعل النشط: يتم تشجيع الطلاب على المشاركة والمشاركة الفعالة في الدروس من خلال المناقشات الجماعية والأنشطة التفاعلية. 2. التعلم التعاوني: يشجع التعاون والتعاون بين الطلاب من خلال العمل الجماعي والمشاريع الجماعية، حيث يتعاون الطلاب مع بعضهم البعض لتحقيق أهداف التعلم المحددة. 3. استخدام التقنيات الحديثة: يستفيد الطلاب من استخدام التكنولوجيا في عملية التعلم، مثل استخدام الحواسيب والإنترنت للبحث والتعلم الذاتي. 4. توفير ردود فعل فورية: يتم توفير ردود فعل فورية وتقييم مستمر للطلاب، سواء عن طريق التقييمات الشفهية أو الكتابية، مما يساعدهم على تحسين أدائهم وتطوير مهاراتهم. 5. التنويع في وسائل التواصل: يتم استخدام مجموعة متنوعة من وسائل التواصل والتعليم، مثل المحاضرات التوضيحية، والمناقشات الجماعية، والأنشطة العملية، والعروض التقديمية، لتلبية احتياجات وأساليب التعلم المختلفة للطلاب.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

الأسبوع الأول	تعريف الجريمة لغة واصطلاحًا، مفهوم الجريمة، اقسام الجريمة	
الأسبوع الثـــاني	جرائم نظام البعث وفق توثيق قانون المحكمة الجنائية العراقية العليا عام 2005	
الاسبوع الثـــالث	الجرائم النفسية لنظام البعث وفهم الآثار النفسية لجرائم نظام البعث على الأفراد والمجتمع.	
الأسبوع الـــرابـع	الجرائم الاجتماعية لنظام البعث وفهم الآثار الاجتماعية لجرائم نظام البعث على الأفراد والمجتمع.	
الأسبوع الخـــامس	انتهاكات القوانين العراقية	
الأسبوع الســـادس	بعض قرارات الانتهاكات السياسية والعسكرية لنظام البعث	
الأسبوع الســـابع	امتحان نصف الفصل	
الأسبوع الثـــامن	الجرائم البيئية لنظام البعث في العراق (التلوث الحربي وسياسة الأرض المحروقة)	
الأسبوع التاسع والعاشر	تجفيف الاهوار و تجريف بساتين النخيل والأشجار والمزروعات	

الاسبوع الحادي عشر و الاسبوع الثاني عشر	جرائم المقابر الجماعة واحداث مقابر الإبادة الجماعية المرتكبة من النظام البعث في العراق	
الأسبوع الثالث عشر والرابـــع عشرو الخامس عشر	التصنيف الزمني لمقابر الإبادة الجماعية في العراق للمدة من (1963-2003) م	
الأسبوع السادس عشر	التهيئة للامتحان النهائي	

Module Evaluation

تقييم المادة الدراسية

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

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	منهاج وزارة التعليم العالي والبحث العلمي العراقية - جرائم نظام البعث في العراق 2023	Yes
Recommended Texts		No
Websites	The Collage E-Library	

Grading Scheme

مخطط الدرجات

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

Group (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	(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.

جامعة الحلة الاهلية
كليات التقنيات الهندسية
م.م علي توفيق لطيف

Module Information معلومات المادة الدراسية					
Module Title	Laboratory Medical Instrumentation I			**Module Delivery**	
Module Type	Core			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☒ **Practical** ☒ **Seminar**	
Module Code					
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department			**College**		
Module Leader	Ali Tawfeeq		**e-mail**	Ali_tq@hilla-unc.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor	None		**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	16/9/2025		**Version Number**		

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.
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					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	% (10)	3,10	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	
	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	
	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.

جامعة الحلة الاهلية

كلية التقنيات الهندسية

م.م علي توفيق لطيف

Module Information معلومات المادة الدراسية					
Module Title	Laboratory Medical Instrumentation II			**Module Delivery**	
Module Type	Core			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☒ **Practical** ☒ **Seminar**	
Module Code					
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	UGII		**Semester of Delivery**	4	
Administering Department			**College**		
Module Leader	Ali Tawfeeq Lateef		**e-mail**	ali_tq@hilla_unc.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor	None		**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	16/9/2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Laboratory Medical Instrumentation I	**Semester**	**UGII-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].

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

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	% (1 0)	3,10	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

	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	
	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.

المرحلة الثانية

UGII

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Biomedical Transducers and Sensors**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MIET2205**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level			**Semester of Delivery**	4	
Administering Department			**College**	EETC	
Module Leader	Huda Kadhim Rumuh		**e-mail**	Huda_kaddim_ramah@hilla-unc.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**		
Module Tutor	Huda Kadhim Rumuh		**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Fundamental of Electrical Engineering (AC) - MIET1201	**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. Analyze errors and uncertainty of experimental results obtained from biomedical sensors. 2. Understand requirements, calibration, characteristics, and parameters of biomedical sensors. 3. Design with confidence signal conditioning systems required for processing the sensors responses. 4. Understand the operating principle, types, parameters, signal conditioning, and applications of resistive, reactance variation and self-generating sensors. 5. Understand the operating principle of different types of optical sensors and their features. 6. Understand the operation, models, and parameters of ultrasound transducers. 7. Understand the design, main building blocks, features, and calibration of intelligent sensors.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define biomedical sensors, biosensors, and biomedical transducers. 2. Classify the biomedical sensors. Acquire knowledge about sensor data processing and feature extraction. 3. Recognize the requirements of biomedical sensors. 4. Explain the Static and dynamic characteristics of biomedical sensors. 5. Explain the requirements of signal conditioning circuits suitable for biomedical sensors. 6. Identify design principles of conditioning circuits. 7. Identify the different types of resistive, reactance variation and self- 8. generating sensors. 9. Explain the operating principle, parameters, calibration and applications. of resistive, reactance variation and self-generating sensors. 10. Identify the different types of optical sensors. 11. Reveal the advantages of optical sensors. 12. Classify ultrasound transducers. 13. Recognize the main parts of ultrasound transducers. 14. List the main features of intelligent sensors.

Indicative Contents المحتويات الإرشادية	Indicative Contents including the following: General concept and terminology, Sensor classification and calibration, static and dynamic characteristics, errors [10 hrs] Resistive Temperature Detectors (RTD), Thermistors, light-dependent resistors, signal conditioning for resistive sensors [5hrs] Capacitive sensors, Inductive sensors, Electromagnetic sensors, signal conditioning for reactance variation sensors [5 hrs] Thermoelectric sensors, Piezoelectric sensors, Electrochemical sensors, Signal conditioning for self-generating sensors.[7 hrs] Optical techniques, General principles of optical sensing, Fiber-optic basics, Fiberoptic sensor technologies and applications[7 hrs] Fundamentals of ultrasonic-based sensors, Ultrasonic-based sensing methods and applications.[8 hrs] Definition, parameters, features, operating principle , main building blocks and applications.[5 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Active learning, where students should be active and involved in the learning process inside the classroom, will be emphasized in the delivery of this course. ➢ Different active learning methods/approaches such as: Engaged Learning, Project-Based Learning, Cooperative Learning, Problembased Learning, Structured Problem-solving, will be used. ➢ The teaching method that will be used in this course will be composed of a series of mini lectures interrupted with frequent discussions and brainstorming exercises. PowerPoint presentations will be prepared for the course materials. ➢ Use software packages for design and simulation of signal conditioning circuits implemented using these sensors.

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered

Week 1,2	**Introduction to Biomedical Sensors** General concept and terminology, Sensor classification and calibration, static and dynamic characteristics, errors and uncertainty.
Week 3,4	**Resistive Sensors and their signal conditioning** Potentiometers, Strain gages, Resistive Temperature Detectors (RTD), Thermistors, light-dependent resistors, signal conditioning for resistive sensors
Week 5,6	**Reactance Variation and Electromagnetic Sensors** Capacitive sensors, Inductive sensors, Electromagnetic sensors, signal conditioning for reactance variation sensors,
Week 7	**Mid- Exam**
Week 8,9	**Self-Generating Sensors and Signal Conditioning** Thermoelectric sensors, Piezoelectric sensors, Electrochemical sensors, Signal conditioning for self-generating sensors.
Week 10,11	**Optical Sensors** Optical techniques, General principles of optical sensing, Fiber-optic basics, Fiber-optic sensor technologies and applications.
Week 12,13	**Ultrasound Transducers** Fundamentals of ultrasonic-based sensors, Ultrasonic-based sensing methods and applications.
Week 14	**Intelligent Sensors** Definition, parameters, features, operating principle , main building blocks and applications.
Week 15	Preparatory week before final exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1,2	Characteristics of various Biomedical sensors(Pulse sensor, Galvanic skin Response, Glucose sensor, EMG sensor).
Week 3,4	Measurement of Resistance, Inductance and Capacitance using bridge circuits.
Week 5	Measurement of temperature using thermistor and RTD.

Week 6	Design of preamplifiers to acquire bio-signals along with impedance matching circuit using suitable ICs.
Week 7,8	Design of EEG, ECG amplifiers and Measurement of heart rate.
Week 9,10	Acquire and display electrical and biological biosignals on a computer using the appropriate hardware and software tools.
Week 11	e-Health Sensor Platform V2.0 using Arduino and Raspberry Pi.
Week 12	Measurement of respiration rate.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Sensors and Signal Conditioning, Ramon Pallas-Areny and John G. Webster, John Wiley & Sons, 2001,2nd Edition	No
Recommended Texts	Biosensors: An Introduction , Eggins, Brian, John Wiley & Sons, 1996,1st Edition	No
Websites	https://www.multisim.com/	

Grading Scheme
مخطط الدرجات

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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Digital Electronics			**Module Delivery**	
Module Type	Core			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	HUC-MDT303				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	2		**Semester of Delivery**	4	
Administering Department	113		**College**	HUC	
Module Leader	Hussein Fadhil Hamdan		**e-mail**	hussein_fadhil@hilla-unc.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	PhD	
Module Tutor			**e-mail**		
Peer Reviewer Name	Hussein Fadhil Hamdan		**e-mail**	hussein_fadhil@hilla-unc.edu.iq	
Scientific Committee Approval Date			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electronics Circuits I ()	**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) الحمل الدرا ي س المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدرا ي س المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراي س غري المنتظم للطالب خلال الفصل	46	**Unstructured SWL (h/w)** الحمل الدرا ي س غري المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراي س الك ي ل للطالب خلال الفصل	125		

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 (Theoritical)**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	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	YES
Websites	https://www.udemy.com/course/digital-electronics-logicdesign/?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_EiwAlQVyxcuQ427tsVehXbetXE4NUFlekP4rqq-PrCWgQfIucPuo7Mqz8SXRVxoC5asQAvD_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

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.

المرحلة الثانية

UGII

وصف المقرر لمادة

Module Information معلومات المادة الدراسية					
Module Title	Mathematics			**Module Delivery**	
Module Type	Support or related learning			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒**Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code					
ECTS Credits					
SWL (hr/sem)					
Module Level			**Semester of Delivery**		3
Department Administering			**College**	Collage of engineering	
Module Leader	Huda Kadhim Rumuh		**e-mail**	Huda_kadhim_ramah@hilla-unc.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Huda Kadhim Rumuh		**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

Relation with other Modules العالقة مع المواد الدراسية ألخرى			
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. Memorize change of coordinate formulae between rectangular, cylindrical, and spherical coordinate systems. 2. Convert equations between rectangular, cylindrical and spherical coordinate systems. 3. Perform geometric operations on vectors: addition, subtraction, multiplication by a scalar, dot product, and cross product. 4. Memorize formulae for length and direction of vector. 5. Compute dot and cross products given either algebraic or geometric information. 6. Memorize formulae for parametric equation of a line in space and explain geometrical and physical interpretations 7. Given information in a variety of ways, find the critical information needed to write the equation of a plane; namely, a point and a normal vector. 8. Solve geometric problems involving vectors. 9. Prove basic algebraic properties of vectors. 10. Gain deeper knowledge of multivariate differentiation operations such as Gradient, Divergent and Curl, and Jacobians. 11. Calculate first and second partial derivatives. 12. Compute double and triple integrals. 13. Recognize 1st order equations that can be solved by each of the three methods: separation of variables, linear equations, and exact equations, and use the appropriate method to solve them. 14. Use first-order differential equation as a mathematical model in some engineering applications. 15. Solve linear and nonlinear higher-order differential equations as well as systems of linear -first-order differential equations. 16 .Solve first-order differential equation numerically
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Students are able to Identify coordinate surfaces in rectangular, cylindrical and spherical coordinate systems. 2. Students are prepared for further study in the relevant technological disciplines and more advanced mathematics courses. 3. Students are able to develop better understanding of key concepts concerning vector field. 4. Students can apply their knowledge of vector analysis to solve problems in engineering and the natural sciences. 5. Solve problems involving geometric relationships between lines and/or planes. 6. Students will be able to use tree diagrams to formulate versions of the multivariable chain rule and apply to compute derivatives of compositions of functions of several variables. 7.Students will be able to apply Gradient, Divergent, Curl, and Jacobians to solve engineeringproblem. 8. Students will be able to identify the most appropriate coordinate system in which to compute double and triple integrals.

	9. Students will be able to generate solutions to first order, second order and systems of differential equations using a variety of different techniques, develop approximate solutions to first order ordinary differential equations numerically and evaluate the accuracy of these approximations. 10.Students will develop the ability to apply the knowledge of the differential and difference equations which will enable them to analyze dynamics of the processes.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Vectors analysis, vector components, unit vectors, space coordinates (Cartesian, cylindrical and spherical), as well as scalar and vector products. [12 hrs.] Parametric equations of line and plane, application of vectors, Del and Curl operators, partial differentiation, directional derivative, and Jacobians. [12 hrs.] Multiple integrals, double integrals, and triple integrals. [9 hrs.]. Ordinary differential equations, 1st order equations, separable variables equations, linear equations, exact equations, Modeling with First-Order Differential Equations: Linear Models and Nonlinear Models, Modeling with First-Order Differential Equations: Modeling with Systems of First-Order Des., Higher-Order Differential Equations, Homogeneous and Nonhomogeneous Equations, Modeling with Higher-Order Differential Equations: Linear Models and Nonlinear Models, Systems of Linear First-Order Differential Equations, Homogeneous Linear Systems, Systems of Linear FirstOrder Differential Equations, Nonhomogeneous Linear Systems, and Numerical Solutions of Ordinary Differential Equations٣٠ hrs .

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	In this classroom, active learning techniques are employed and the focus is placed on more challenging problems. Teams work together in class to come up with a result and explain why it makes sense to use a more formal writing style. Outside of class, students individually practice problem-solving skills.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.2
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)	5,10	LO #١-10
	Assignments	10	10%(10)	3-12	LO #1-10
	Projects	1	10%(10)	Continuous	LO #1-6
	Report	1	10%(10)	13	LO # 7,10
Summative assessment	Midterm Exam	2hr	10%(10)	7	LO # 1-8
	Final Exam	3hr	50%(50)	16	LO #1-10
Total assessment			100%(100) (Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج االسبوعي النظري

	Material Covered
Week1	3-D system coordinates: Cartesian, Cylindrical, and Spherical Coordinates, distance between two points in space, equation of sphere in space.
Week ٢	Vectors form, vector algebra operations, unit vector, and vector applications.
Week ٣	Dot product , cross product, and triple scalar or box product.
Week ٤	Lines in space and planes in space.
Week ٥	Del and Curl operators, First order partial differentiation, Second order partial differentiation, and Jacobians.
Week ٦ Week ٧	Multiple integrals, double integrals, and triple integrals. Mid-term Exam, Introduction to Differential Equation.
Week ٨	First-Order Differential Equations, separable variables equations, linear equations, and exact equations.
Week ٩	Modeling with First-Order Differential Equations: Linear Models and Nonlinear Models.
Week ١٠-١٣	1.Modeling with First-Order Differential Equations: Modeling with Systems of First-Order DEs. 2.Higher-Order Differential Equations, Homogeneous and Nonhomogeneous Equations. 3.Modeling with Higher-Order Differential Equations: Linear Models and Nonlinear Models. 4.Systems of Linear First-Order Differential Equations, Homogeneous Linear Systems.
Week ١٤-١٥	1.Systems of Linear First-Order Differential Equations, Nonhomogeneous Linear Systems. 2.Numerical Solutions of Ordinary Differential Equations 3.Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week 1	There is no Lab in this Module.
Week 2	There is no Lab in this Module.
Week 3	There is no Lab in this Module.
Weeks 4-5	There is no Lab in this Module.
Weeks 6-7	There is no Lab in this Module.
Weeks 8-9	There is no Lab in this Module.
Week 10	There is no Lab in this Module.
Week 11	There is no Lab in this Module.
Week 12	There is no Lab in this Module.
Weeks 13-14	There is no Lab in this Module.
Week 15	There is no Lab in this Module.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1. University Calculus Early Transcendentals Fourth Edition in SI Units, 2020. 2. "A First Course in Differential Equations with Modeling Applications, Eleventh Edition", Dennis G. Zill, 2018.	No
Recommended Texts	1. "Classical Vector Algebra", Vladimir Lepetic, 2023	No
	2. A First Course in Differential Equations, Modeling, and Simulation Second Edition. Carlos A. Smith and Scott W. Campbell, 2016.	
Websites	https://www.amazon.com/University-Calculus-Early-Transcendentals Units/dp/1292317302 https://www.amazon.com/Course-Differential-Equations-Modeling-Applications/dp/1305965728	

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	Electrical Circuits			**Module Delivery**	
Module Type	Core			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	HUC-MDT303				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	2		**Semester of Delivery**	4	
Administering Department	113		**College**	HUC	
Module Leader	Ruqaya Alaa		**e-mail**	ruqia_alaa_ibrahim@hilla-unc.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Ruqaya Alaa		**e-mail**	ruqia_alaa_ibrahim@hilla-unc.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Electronics Circuits I ()	**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. Design Various type of amplifiers using BJT Transistor 2. Discuss the operations of JFET, and MOSFET. 3. . Discuss the various operation regions of JFET, and MOSFET. 4. . Design an Amplifiers using JFET, and MOSFET transistors. 5. Identify the Operational Amplifier principle. 6. List the various Applications associated with Operational Amplifier.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At ending of course, student will: 1. Be able to perform a load-line analysis of the most common BJT configurations. 2. Become familiar with the re , hybrid, and hybrid h models for the BJT transistor. 3. Begin to understand the advantages associated with the two-port systems 4. approach to single- and multistage amplifiers. 5. . Become familiar with the construction and operating characteristics of 6. Junction Field Effect (JFET), and Metal-Oxide Semiconductor FET (MOSFET). 7. Be able to sketch the transfer characteristics from the drain characteristics of 8. a JFET, MOSFET, and MESFET transistor. Be aware of the differences between 9. the dc analysis of the various types of FETs. 10. . Be able to perform a dc analysis of JFET, MOSFET, and MESFET networks. 11. Become proficient in the use of load-line analysis to examine FET networks. 12. Become acquainted with the small-signal ac model for a JFET and MOSFET. Be 13. able to perform a small-signal ac analysis of a variety of JFET and MOSFET 14. configurations. 15. Understand what a differential amplifier does 16. Learn the basics of an operational amplifier and develop an understanding of 17. Learn about constant gain, summing, and buffering amplifiers

Indicative Contents المحتويات الإرشادية	Field-Effect transistor (FET) – Construction and characteristics of JFET, Transfer characteristics, Depletion-Type MOSFET, Enhancement- Type MOSFET. [9 hrs] Field-Effect transistor (FET) Biasing – JFET Fixed bias, Self bias, and voltage divider bias, Depletion-Type MOSFET biasing, Enhancement- Type MOSFET biasing. [12 hrs] JFET AC analysis – JFET parameters, small signal model, Mathematical Definition of gm, JFET configurations, Depletion-Type MOSFET small signal AC model, Enhancement-Type MOSFET small signal AC model. [13 hrs] Operational Amplifier – Ideal and Non-ideal Characteristics. Equivalent circuit, voltage gain, First stage of typical op-amp, Common mode rejection ratio (CMRR). [8 hrs] Operational Amplifier Applications – Addition and subtractions, Differential, Inverting and Non-inverting Amplifier, Integration, Comparator, Analogue computer, Rectifier, full wave rectifier, Voltage follower . [10 hrs]
	Learning and Teaching Strategies استراتيجيات التعلم والتعليم
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدرا ي س المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدرا ي س المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراي س غري المنتظم للطالب خلال الفصل	46	**Unstructured SWL (h/w)** الحمل الدرا ي س غري المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراي س الك ي ل للطالب خلال الفصل	125		

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	Full wave rectifier
Week 2	Clippers
Week 3	Clampers
Week 4	BJT DC analysis
Week 5	BJT amplifier
Week 6	Astable Multivibrator
Week 7 ,8	Bistable Multivibrator
Week 9	Monostable Multivibrator
Week 10,11	FET DC analysis
Week 11 ,12	FET amplifier
Week 13	Inverting and Non-inverting Operational Amplifie
Week	Differential and Integration Operational amplifier

14,15	

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to NI Multisim
Week 2	Lab 2: Half wave rectifier
Week 3	Lab 3: Full wave rectifier
Week 4	Lab 4: Clippers
Week 5	Lab 5: Clampers
Week 6	Lab 6: Zener Diode regulator
Week 7	Lab 7: BJT DC analysis
Week 8	Lab 8: BJT amplifier
Week 9	Lab 9: Astable Multivibrator
Week 10	Lab 10: Bistable Multivibrator
Week 11,12	FET DC analysis
Week 13	Lab 13: Inverting and Non-inverting Operational Amplifier
Week 14	Lab 14: Inverting and Non-inverting Operational Amplifier

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Electronic Devices and Circuit Theory 11th-ed Robert L. Boylestad Louis Nashelsky	YES
Recommended Texts	INTEGRATED ELECTRONICS MILLMAN · HALKIAS.	YES

Websites	

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

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

المرحلة الثانية

UGII

وصف المقرر لمادة

Information Module معلومات المادة الدراسية					
Title Module	Clinical Chemistry instrumentation			**Delivery Module**	
Type Module	Core			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒**Tutorial** ☐ **Practical** ☐ **Seminar**	
Code Module	MIET2204				
Credits ECTS	**5**				
(hr/sem) SWL	125				
Level Module	UGII	**Delivery of Semester**	**4**		
Department Administering	MIET	**College**	UOH		
Leader Module	Zahra Aamer Ismail	**mail-e**	zahraa_amer@hilla-unc.edu.iq		
Title .Acad Leader's Module	Assistant Lecturer	**Qualification Leader's Module**	Ms.c		
Tutor Module		**mail-e**			
Name Reviewer Peer		**mail-e**			
Committee Scientific Approval Date	11/2/2025	**Number Version**	1		

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

Contents Indicative and Outcomes Learning ,Aims Module أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Aims Module 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
Learning Module 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. Desribe the measurement instruments of ions and salts in human body 4. .Identify all the clinical chemistry analysis and their measurement techniques. 5. Discus 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. Discus 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.
Contents Indicative المحتويات الإرشادية	Course Summary: 1. Spectrophotometer: Criteria, theory, types, components, pros & cons, applications, Beer-Lambert law. (10h) 2. Electrolyte Analyzer: Definition, features, theory, components, advantages, applications. (6h) 3. Autoanalyzer & Blood Gas Analyzer (BGA): Concept, criteria, types, theory, components, pros & cons. (6h) 4. ELISA Technique: Concept, theory, methods (direct/indirect), components, applications. (6h) 5. Minerals: Definition, classification, sources, functions, nutrition, diagnostics. (6h) 6. Electrical & Osmotic Conduction: Concepts, examples, tests. (10h) 7. Enzymes: Definition, classification, function, tests, clinical significance. (6h) 8. Proteins: Definition, classification, function, electrophoresis, diagnostics. (6h) 9. Fats: Concept, classification, sources, importance, clinical significance, measurement methods. (10h) 10. Hemoglobin: Definition, structure, analysis, diseases, clinical significance, CBC. (6h)

	11. Immunology: Concept, structure, materials, disease diagnosis. (3h)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lectures - scientific laboratory- data show - summer training- workshop seminars, written exam, Quizzes and online testing .

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

Evaluation Module
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Due Week	Learning Relevant Outcome
Formative assessment	Quizzes	3	(10) 20%	2,4,6	LO: 1-14
	lab	10	(10) 10%	Continuous	LO: 6, 13
	Report	1	(10) 5%	8	LO: 3, 10
	Assignments	2	(5) 5%	6	LO: 4, 11
Summative assessment	Midterm Exam	1.5 hr	(10) 10%	7	LO: 10, 12
	Exam Final	3 hr	(50) %50	14	All
assessment Total			100) %100 (Marks)		

(Syllabus Weekly) Plan Delivery
المنهاج االسبوعي النظري

	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

(Syllabus .Lab Weekly) Plan Delivery المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	spectrophotometer and colorimeter, theory, principle of work, operation, component' function, maintenance and the faults
Week 2	Flame photometer, types, theory, principle of work, operation, component's function, maintenance and the faults
Week 3	Blood gas analyzer and PH meter, theory, principle of work, operation, components function, normal results, maintenance and the faults
Week 4	Auto-analysis, types, theory, principle of work, operation, component's function, maintenance and the faults
Week 5	Elisa, types, theory, principle of work, operation, components function, maintenance and the faults
Week 6	Electrophoresis, theory, principle of work, operation, component's function, normal results, maintenance and the faults.
Week 7	Body fat analyzer, theory, principle of work, operation, component's function, normal results, maintenance and the faults.

Learning and Teaching Resources

مصادر التعلم والتدريس

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

Scheme Grading

مخطط الدرجات

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

المرحلة الثالثة
UGIII

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Hilla University
2. University Department/Centre	Medical device technology engineering
3. Course title/code	Electrical Technology
4. Modes of Attendance offered	Weekly (2 hour practical + 2 hour theoretical)
5. Semester/Year	2024-2025
6. Number of hours tuition (total)	120 hours
7. Date of production/revision of this specification	
8. Aims of the Course	
A study of the basics of electricity technology, electric motors, and various electrical transformers, their work theory, methods of operation, and how to repair faults and perform maintenance for them.	

9· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Cognitive goals
A1- Identify the types of electrical devices and motors
A2- Identify the properties of transformers and electric motors
A3- Identify the types of electrical switches and their applications in the medical field

B - the skill objectives of the course.
B1 - Identify the types of devices and electric motors and their applications in the medical field
B-2 Identify the types of controls
B3 - Identify the connection of electric motors and transformers.

Teaching and Learning Methods

Theoretical and practical lectures, scientific films, paper and electronic books

Assessment methods

Daily exam before and after. Weekly tests - quarterly tests - annual tests scientific activities

. C- Emotional and value goals
1 - Introducing the student to transformers and electric motors and their applications in the medical field.
C 2- Design and implementation of some controller circuits
C 3- To develop the applied skills of the student

Teaching and Learning Methods

theoretical and practical lectures, scientific films, paper and electronic books

Assessment methods

Daily and weekly choices, daily attendance, monthly and quarterly tests, weekly reports

D - Transferred general and qualifying skills (other skills related to employability and personal development).
D1- Adding applied skills to the student
D2- Increase the student's ability to use transformers and electric motors
D 3- The student's ability to do scientific research

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st , 2nd	8	The student understands the lesson	Transformers : single phase transformer and construction	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
3rd	4	The student understands the lesson	theory of operation, no load and short circuit test.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
4th, 5th	8	The student understands the lesson	Equivalent circuit transformers, auto-transformers ,instrument transformers	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
6th,7th	8	The student understands the lesson	Three phase transformers , methods of constructions connection.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
8th , 9th	8	The student understands the lesson	Electromechanical energy conversion principles, relay operation.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
10th ، 11th , 12th	12	The student understands the lesson	D.C machines: e.m.f and torque equation, equivalent circuit methods of excitation, generator characteristics.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
13th , 14th 15th	12	The student understands the lesson	Motor characteristics, testing calculation of losses efficiency.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
,16th ,17th	12	The	Induction machines :	theoretical and	Before and after

,18th ,		student understands the lesson	equivalent circuit , basic equation, simple analysis testing.	practical lecture	questions, weekly, quarterly and yearly tests
19th , 20th 21st	12	The student understands the lesson	Single phase induction motor, methods of starting, split phase , capacitor short, capacitor run and shaded pole motors.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
22nd , 23rd	8	The student understands the lesson	Synchronous and machines generators equivalent and motors basic circuit equivalent	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
24th , 25th	8	The student understands the lesson	Special machines: Reluctance motor, hysteresis motor, linear motor, stepper motor, dray cup type motor, servo motor, etc	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
26th , 27th	8	The student understands the lesson	Control switches : pilot switches ,push bottoms , limits	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
28th	4	The student understands the lesson	Switches, flost switches contactors, pressure switches	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
29th , 30th	8	The student understands the lesson	High voltage circuits	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

11. Infrastructure	
1. Books Required reading:	
2. Main references (sources)	Theraga (electrical machine)

A- Recommended books and references (scientific journals, reports…).	
B-Electronic references, Internet sites…	

12. The development of the curriculum plan
1- Adding an introduction to the basic concepts of engine components and transformers. 2- Providing some transformers and laboratory equipment to train students on them. 3- Updating practical experiences in line with the development in the field of medical devices.

Name and Signature:
Huda Kadhim

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Hila
2. University Department/Centre	Medical device technology engineering
3. Course title/code	Medical communication systems
4. Modes of Attendance offered	Weekly (practical + theoretical)
5. Semester/Year	2024-2025
6. Number of hours tuition (total)	150 hours
7. Date of production/revision of this specification	1/7/2024
8. Aims of the Course	
Knowledge of radio, television and telephone systems and structures.	
Knowledge of methods of transmitting information in communication systems in medical devices	
Inform and train students on the latest developments in the field of communications.	

9· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Cognitive goals
A1. Learn about analog and digital embedding types
A2. Recognize the types of signals and systems.
A3. The ability to give appropriate solutions to the resulting malfunctions in communication systems.

B - The skill objectives of the course.
B1 - Understand how to include signs.
B2 - Designing digital communication systems with high efficiency and economic cost.
B 3 - Providing scientific and practical advice in the field of communication systems.

Teaching and Learning Methods

Theoretical lectures and practical laboratories. Weekly reports on the various communication systems - seminars

Assessment methods

Daily exam before and after. Weekly tests - quarterly tests - annual tests scientific activities

. C- Emotional and value goals
C1- The student listens carefully to the teacher’s explanation
C2 - The student should be familiar with the impact of the communication systems course in the field of medical devices.
C3 - Developing curricula and laboratories in line with the development in the field of medical communication systems.
C4 - Developing curricula and laboratories in line with the labor market.

Teaching and Learning Methods

Seminars - Guidance and Education

Assessment methods

Discussion and dialogues of the professor with the student and discussion and dialogues of the student with another student

D - Transferred general and qualifying skills (other skills related to employability and personal development).

1. Design and maintenance of various communications and electronic systems of all kinds.

2- Scheduling and programming periodic maintenance work for various communication systems

3- Contributing and supervising the maintenance and calibration procedure.

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st ,	4	The student understands the lesson	General review in electrostatic.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
2nd	4	The student understands the lesson	Gauss's law.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
3th	4	The student understands the lesson	Steady magnetic field	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
4th , 5th	8	The student understands the lesson	Time – varying magnetic field.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
6th	4	The student understands the lesson	Uniform plane waves.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
7th , 8th	8	The student understands the lesson	Fourier transform.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
9th ,10th	8	The student understands the lesson	Signals & system	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

11th , 12th	8	The student understands the lesson	Periodic, non periodic signals.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
13th .14 th	12	The student understands the lesson	AM & FM systems	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
15th , 16th ,17th	12	The student understands the lesson	Sampling, PAM, PWM, PPM, PCM.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
18th ,19th ,20th	12	The student understands the lesson	Digital modulation (ASK, FSK, PSK).	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
21st ,22nd ,	8	The student understands the lesson	Noise in analogue & digital systems.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
23rd ,24th	8	The student understands the lesson	Rectangular wave – guides.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
25th , 26th	8	The student understands the lesson	Microwave passive devices.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
27th ,28th	8	The student understands the lesson	Microwave generators	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
29th ,30th	8	The student understands the lesson	Antennas	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

11. Infrastructure

1. Books Required reading:	Engineering Electromagnetic (fifth edition – by William H. Hayt. JR)
2. Main references (sources)	Modern Digital and Analog Communication Systems (third edition by B.P Lathi
A- Recommended books and references (scientific journals, reports…).	Digital-Communication-John-R-Barry
B-Electronic references, Internet sites…	https://www.onlinestudies.com/Courses/Digital-Communication/

12. The development of the curriculum plan
1- Adding an introduction to the basic concepts of the components of communication systems. 2- Providing some technical devices and components for students to train on. 3- Updating practical experiences in line with the development in the field of medical communication systems

Name and Signature:

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Hilla
2. University Department/Centre	Medical device technology engineering
3. Course title/code	Medical instrumentation II
4. Modes of Attendance offered	Weekly (practical + theoretical)
5. Semester/Year	Year
6. Number of hours tuition (total)	150 hours
7. Date of production/revision of this specification	1/7/2024
8. Aims of the Course	
Qualifying students to be application engineers familiar with modern applications in the field of various medical devices.	
Providing students with a scientific skill that enables them to diagnose and treat malfunctions in medical devices.	
Informing and training students on the latest developments in the field of medical devices.	
Designing medical devices with high efficiency and appropriate economic cost.	
Developing medical devices through conducting developmental research in this field	

9· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals
1-a - The ability to segment and analyze the parts of the medical device and the function of each part
2-a- The ability to diagnose malfunctions resulting in medical devices.
3-a- The ability to give appropriate solutions to the resulting malfunctions in medical devices.
4-a- The ability to create and study the appropriate conditions for each device.

B - the skill objectives of the course.
B1 - Design and development of engineering cadres to operate and maintain medical devices.
B2 - Designing medical devices with high efficiency and economical cost.
B 3 - Providing scientific and practical advice in the field of various medical devices.

Teaching and Learning Methods

Theoretical lectures and practical laboratories. Laboratory Experiments concern medical instruments - Seminars

Assessment methods

Daily exam before and after. Weekly tests - quarterly tests - annual tests scientific activities

. C- Emotional and value goals
C1- The student listens attentively to the teacher’s explanation
C2- That the student knows the impact of medical devices on life
C3- Developing curricula and laboratories in line with the development in the field of medical devices.
C4- Developing curricula and laboratories in line with the labor market.

Teaching and Learning Methods

Seminars - Guidance and Education

Assessment methods

Discussion and dialogues of the professor with the student and discussion and dialogues of the student with another student

D - Transferred general and qualifying skills (other skills related to employability and personal development).
1- Installing and operating various medical and electronic devices of all kinds.
2- Scheduling and programming periodic maintenance work
3- Contributing and supervising the maintenance and calibration of various medical devices.

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st , 2nd , 3rd	15	The student understands the lesson	Cardiac function recorders and monitors	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
4th, 5th , 6th	15	The student understands the lesson	Surgical scopes	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
7th, 8th , 9th	15	The student understands the lesson	Audio logical system	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
10th , 11th , 12th	30	The student understands the lesson	Ophthalmic system .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
13th , 14th 15th ,16th ,17th ,18th	15	The student understands the lesson	Imaging tech . Ultrasound , Radiation , Thermal NMR , etc.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
19th , 20th 21st	15	The student understands the lesson	Pulmonary function system .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
22nd , 23rd ,24th	15	The student understands the lesson	Pathological units .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

25th , 26th , 27th	15	The student understands the lesson	Therapeutic diathermy .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
28th , 29th , 30th	15	The student understands the lesson	Coronary care units .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

11. Infrastructure	
1. Books Required reading:	Handbook of biomedical instrumentation, 2nd edition By: R.S. Khandpur
2. Main references (sources)	The Biomedical Engineering Handbook - BrainMaster
A- Recommended books and references (scientific journals, reports…).	A text book of medical instrument, By: S. Ananthi
B-Electronic references, Internet sites…	http://www.frankshospitalworkshop.com/equipment/centrifuges_equipment.html

12. The development of the curriculum plan
1- Adding an introduction to the basic concepts of the components of medical devices. 2- Providing some medical and laboratory equipment for students to train on. 3- Updating practical experiences in line with the development in the field of medical devices.

Name and Signature:

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, demonstrating whether he has made the most of the available learning opportunities. It must be linked to the description of the program.

1. Teaching Institution	University of Hilla
2. University Department/Centre	Medical device technology engineering
3. Course title/code	Power Electronics
4. Modes of Attendance offered	Weekly (practical + theoretical)
5. Semester/Year	2024-2025
6. Number of hours tuition (total)	120 hours
7. Date of production/revision of this specification	1/2/2025
8. Aims of the Course	
The Power Electronics course aims to teach students how to design various types of electronic power converters and methods for their implementation using appropriate engineering software. It also aims to prepare students to become designers of advanced electronic power circuits by developing their engineering intuition. The course begins with the process of building an idea, followed by learning the necessary steps for design, and culminates in the practical implementation of the designed system. This is achieved through various practical applications. The course also focuses on understanding the applications of power circuits in the field of medical devices. Students will be introduced to and trained on the latest power circuits used in medical devices.	

9· Learning Outcomes, Teaching ,Learning and Assessment Methode

A. Cognitive Objectives

A1- The student will gain knowledge of what power electronics is, the mathematical analysis of power electronics systems, their relationship with other engineering disciplines, and their electronic applications.

A2- Throughout the semester, the student will learn how to pursue self-directed learning to develop new skills in designing power electronics systems.

A3- Enable the student to understand, design, and implement various power electronics circuits.

A4- Reinforce the necessary knowledge for creating and simulating power electronics circuits using engineering software and converting them into hardware languages.

A5- Develop the student's ability to maintain medical devices.

A6- Design power electronics circuits.

A7- Recognize the use of electronic components in controlling external devices.

B. Skill-Based Objectives of the Course

B1- Mastery of the mathematical relationships required for designing power electronics systems.

B2- The ability to design and implement power electronics circuits related to electronic engineering.

B3- The ability to derive mathematical relationships and utilize engineering problems in a scientific manner to address emerging issues in power electronics converters.

B4- Enhancing the skills needed to solve practical problems related to power electronics circuits and providing appropriate engineering software for this purpose.

B5- Understanding electrical power electronics and their applications in the field of medical devices.

B6- Designing high-efficiency and cost-effective medical power electronics systems.

B7- Familiarity with different types of controllers.

Teaching and Learning Methods

Theoretical lectures and practical labs. Weekly Reports - Seminars

Assessment methods

Daily exams, quarterly exams - laboratory reports, annual exams, scientific activities

C- Emotional and value goals

C1- The student listens carefully to the teacher’s explanation

C2- That the student learns about the uses of power electronics in the field of medical devices.

C3- Introducing the student to the components of electronic circuits.

C4- Develop student's practical skills

Teaching and Learning Methods

Theoretical lectures and practical labs. Weekly Reports - Seminars
Assessment methods
Daily exams, quarterly exams - laboratory reports, annual exams, scientific activities

D - Transferred general and qualifying skills (other skills related to employability and personal development).

1. Enhance the student's ability to use measuring devices and electrical circuits.
2. Develop the student's practical skills.
3. Contribute to and supervise maintenance and calibration processes.
4. Utilize MATLAB software to simulate circuits and understand power electronics applications.

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	The student understands the lesson	**Introduction to power electronics**	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
2&3	4	The student understands the lesson	**Switching devices, power & control device**	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
4&5	4	The student understands the lesson	**Types and characteristic, rating (diode , transistor ...)**	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
6,7&8	8	The student understands the lesson	**Methods of turning – on & turning – off.**	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
9&10	4	The student understands the lesson	**Protection of power devices.**	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
11&12	8	The student understands the lesson	**Triggering & base drive circuits**	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
13,14&15	8	The student understands the lesson	**Controlled rectifiers , 1 – phase & 3 – phase circuits**	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
16,17&18	8	The student understands the lesson	**Half – wave & full – wave circuits**	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
19,20&21	8	The	**D.C choppers ; step –**	theoretical and	Before and after questions

		student understa nds the lesson	**up & step – down choppers. r**	practical lecture	and weekly and quarterly tests
22&23	12	The student understa nds the lesson	**A.C phase controllers.**	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
24,25&26	12	The student understa nds the lesson	**Invertors , 1 – phase & 3 – phase bridges.**	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
27&28	8		**Some applications : a – uninterruptible power supply**	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
29&30	8		**(UPS) b – switching mode power supply (SMP)**	theoretical and practical lecture	Before and after questions and weekly and quarterly tests

11. Infrastructure	
1. Books Required reading:	Power Electronics by C. W. Lander
2. Main references (sources)	Power Electronics.Converters,Applications and Design.Mohan/Undeland/Robbins
A- Recommended books and references (scientific journals, reports…).	Power Electronics Handbook Devices, Circuits, And Applications Third Edition, Edited By Muhammad H. Rashid, Ph.D.
B-Electronic references, Internet sites…	
12. The development of the curriculum plan	
1. Introduce a foundational overview of the basic concepts of electronic circuit components. 2. Provide technical devices and components for students to train on. 3. Update practical experiments to align with advancements in the field of medical device systems.	

Name and Signature

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, demonstrating whether he has made the most of the available learning opportunities. It must be linked to the description of the program.

1. Teaching Institution	Hilla college, Al-hila University
2. University Department/Centre	Medical device technology engineering
3. Course title/code	Medical Electronic Systems
4. Modes of Attendance offered	Weekly (practical + theoretical)
5. Semester/Year	2024-2025
6. Number of hours tuition (total)	120 hours
7. Date of production/revision of this specification	20/2/2025
8. Aims of the Course	
Introduce the student to electronic circuits, their work and uses in the field of medical devices and the mechanism of building different medical systems. Learn about the applications of electronic circuits in the field of medical devices Informing and training students on the latest developments in the field of medical electronics.	

9· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals
A1. Electronic circuit analysis.
A2. Design simple and complex electronic circuits.
A3. The ability to give appropriate solutions to the resulting malfunctions in electronic circuits.
A1- Identify the components of basic electronic circuits and medical devices.

B - the skill objectives of the course.
B1 - Familiarize yourself with the electrical sign drawings.
B2 - Designing digital medical electronic systems with high efficiency and economic cost.
B 3 - Providing scientific and practical advice in the field of maintaining medical electronic circuits.

Teaching and Learning Methods

Theoretical lectures and practical labs. Weekly Reports - Seminars

Assessment methods

Daily exams, quarterly exams - laboratory reports, annual exams, scientific activities

C- Emotional and value goals
A- The student listens carefully to the teacher’s explanation
C2 - That the student be acquainted with the impact of electronic systems in the field of medical devices.
C 3- Introducing the student to the components of electronic circuits.
C4 - Developing curricula and laboratories in line with the labor market.

Teaching and Learning Methods

Theoretical lectures and practical labs. Weekly Reports - Seminars

Assessment methods

Daily exams, quarterly exams - laboratory reports, annual exams, scientific activities

D - Transferred general and qualifying skills (other skills related to employability and personal development).
1- Design and maintenance of various electronic systems of all kinds.
2- Scheduling and programming periodic maintenance work for various medical electronics systems.
3- Contributing and supervising the maintenance and calibration procedure.

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	The student understands the lesson	Regulated power supplied	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
2	4	The student understands the lesson	Monolithic regulators	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
3	4	The student understands the lesson	Switching regulators	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
4,5	8	The student understands the lesson	Additional switching regulator to pologies	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
6	4	The student understands the lesson	Active filters	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
7,8	8	The student understands the lesson	Butter worth filter practical realization	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
9,10	8	The student understands the lesson	Band pass filter, band reject filter	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
11	8	The student understands the lesson	Active resonant and band pass filter	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
12, 13	8	The student understands the lesson	Active RC band pass filter	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
14,15	12	The student understands the lesson	Digital to analogue converters (DAC)	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
16,17	12	The student understands the lesson	A ladder – type DAC , multiplying DAC	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
18, 19	8	The student understands the lesson	The counting ADC , successive approximation ADC	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
20	8	The student understands the lesson	The parallel – comparator ADC , dual – slope or radiometric ADC	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
21 ,22	8	The student	Medical data	theoretical and	Before and after

		understands the lesson	acquisition system	practical lecture	questions and weekly and quarterly tests
23, 24	8	The student understands the lesson	Microcomputer based system	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
25 ,26	8	The student understands the lesson	Monitoring	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
27, 28	8	The student understands the lesson	Control	theoretical and practical lecture	Before and after questions and weekly and quarterly tests
29 ,30	8	The student understands the lesson	Other medical electronic systems	theoretical and practical lecture	Before and after questions and weekly and quarterly tests

11. Infrastructure	
1. Books Required reading:	Electronic deviced and circuit theory
2. Main references (sources)	Design of microcomputer based medical instrumentation
A- Recommended books and references (scientific journals, reports…).	
B-Electronic references, Internet sites…	
12. The development of the curriculum plan	

Name and Signature
Ruqaya Alaa

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, demonstrating whether he has made the most of the available learning opportunities. It must be linked to the description of the program.

1. Teaching Institution	University of Hilla
2. University Department/Centre	Medical device technology engineering
3. Course title/code	**Digital Signal Processing**
4. Modes of Attendance offered	Weekly (practical + theoretical)
5. Semester/Year	2024-2025
6. Number of hours tuition (total)	120 hours
7. Date of production/revision of this specification	1/7/2024
8. Aims of the Course	
Teaching the student the basic topics of digital signal processing and its uses in sound and image processors.	

9· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals
A1- Understand the nature of the signs.
A2- Learn how to convert the signal from time to frequency
A3- Learn how to design digital filters

B - the skill objectives of the course.
B1 - Learn about digital signal processing
B2 - Learn about signal analysis using different programs.
B3 - Learn how to design digital filters

Teaching and Learning Methods

Theoretical and practical lectures, scientific films, paper and electronic books

Assessment methods

Daily and weekly tests, daily attendance, monthly and quarterly tests, weekly reports

C- Emotional and value goals
C1 - Introducing the student to the various medical indications and methods of dealing with them
C2- Introduce the student to the use of computers to analyze signals
C3- To develop the applied skills of the student

Teaching and Learning Methods

Theoretical and practical lectures, scientific films, paper and electronic books

Assessment methods

Daily and weekly tests, daily attendance, monthly and quarterly tests, weekly reports

D - Transferred general and qualifying skills (other skills related to employability and personal development).
D1- Adding applied skills to a student
D2- Increasing the student's ability to use the computer in analyzing the signal of its various types
D 3- The student's ability to do scientific research

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st, 2nd, 3th	**12**	The student understands the lesson	Introduction to signal processing	theoretical and practical lecture	Daily and weekly test
4th, 5th, 6th	10	The student understands the lesson	Convolution and sampled data system	theoretical and practical lecture	Daily and weekly test
7th, 8th, 9th	10	The student understands the lesson	Fourier series and Fourier transform	theoretical and practical lecture	Daily and weekly test
10th, 11th, 12th	5	The student understands the lesson	Z – transform.	theoretical and practical lecture	Daily and weekly test
13th, 14th,	10	The student understands the lesson	Discrete Fourier transform (DRT)	theoretical and practical lecture	Daily and weekly test
15th, 16th,	10	The student understands the lesson	Fast Fourier transform (FFT).	theoretical and practical lecture	Daily and weekly test
17th, 18th, 19th	10	The student understands the lesson	Digital filtering.	theoretical and practical lecture	Daily and weekly test

20th, 21th, 22th	10	The student understands the lesson	IIR digital filters.	theoretical and practical lecture	Daily and weekly test
23th, 24th,	10	The student understands the lesson	FIR digital filters.	theoretical and practical lecture	Daily and weekly test
25th, 26th, 27th	10	The student understands the lesson	Speech processing.	theoretical and practical lecture	Daily and weekly test
28th, 29th, 30th	15	The student understands the lesson	Image processing.	theoretical and practical lecture	Daily and weekly test

11. Infrastructure	
1. Books Required reading:	Digital Signal Processing; Principles, Algorithms and Applications John G. Proakis , Dimitris G. Manolakis
2. Main references (sources)	Digital Signal Processing Fundamentals and Applications Li Tan
A- Recommended books and references (scientific journals, reports…).	
B-Electronic references, Internet sites…	
12. The development of the curriculum plan	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	Al-Hila University
2. University Department/Centre	Medical device technology engineering
3. Course title/code	Microprocessor
4. Modes of Attendance offered	Weekly (practical + theoretical)
5. Semester/Year	2024 - 2025
6. Number of hours tuition (total)	150 hours
7. Date of production/revision of this specification	1-3-2025
8. Aims of the Course	
1- Teaching the student on the basis of the logical circuits used in computers and electronic medical devices and how they work	
2- Logic circuits and identifying microcomputers, their parts, programming or applying them	

9· Learning Outcomes, Teaching ,Learning and Assessment Method

A- Cognitive goals
A1- Introduce the student to microprocessors and computers
A2- Understand the different types of computer memory
A3- Understand the computer architecture

B - The skill objectives of the course.
B1 - Learn about digital treatments and their application in medical money
B2 - Identify the types of temporary and permanent computer memories
B3 - Understand how to execute commands in microcomputers

Teaching and Learning Methods

Theoretical lectures and practical laboratories. Weekly reports on the various communication systems - seminars

Assessment methods

Daily exam before and after. Weekly tests - quarterly tests - annual tests scientific activities

. C- Emotional and value goals
C1 Introduce the student to the types of digital processors
C2- Know how to execute computer commands
C3- To develop the applied skills of the student

Teaching and Learning Methods

Seminars - Guidance and Education

Assessment methods

Discussion and dialogues of the professor with the student and discussion and dialogues of the student with another student

D - Transferred general and qualifying skills (other skills related to employability
D1- Adding applied skills to the student
D 2- Increasing the student's ability to use the computer
D 3- The student's ability to research scientific research

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1,2,3	12	The student understands the lesson	Introduction to the Microprocessor and Computer	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
4,5,6	12	The student understands the lesson	Semiconductor memories (ROM&RAM)	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
7,8,9	12	The student understands the lesson	Microprocessor architecture	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
10,11,12	12	The student understands the lesson	Bus signal timing &i/o timing	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
13,14,15	12	The student understands the lesson	Instruction ste and addressing mode	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
16,17,18	12	The student understands the lesson	Hardware specification	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
19,20,21	12	The student understands the lesson	Microprocessor interface	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
22,23	8	The student understands the lesson	Digital I/O(parallel &series)	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
24,25,26	12	The student understands the lesson	Analogue I/O	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

27,28	8	The student understands the lesson	Slandered buses	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
29,30	8	The student understands the lesson	Some practical microprocessor	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

11. Infrastructure	
1- Required textbooks	Microprocessors and Microcontrollers (N. Senthil Kumar, M. Saravanan, S. Jeevananthan)
2- Main references (sources)	المعالجات الدقيقة البرمجة والمواجهة والتطبيق، محمد إبراهيم العدوي
A- Recommended books and references (scientific journals, reports, etc.)	The Manga Guide to Microprocessors
B- Electronic references, Internet sites....	1.https://youtube.com/playlist?list=PLBlnK6fEyqRgyFCCgqdcBowmSp_BTKs4F&si=ATK6IukoeLpya0Kn 2. https://www.edx.org/learn/computer-architecture/arm-education-introduction-to-microprocessors 3. https://www.coursera.org/learn/arm-education-introduction-to-microprocessor

12. Curriculum Development Plan
1- Work on the 8085 simulation program in the computer lab. 2- Update practical experiments to keep pace with the development in the field of medical devices. 3- Provide the board for the 8085 processor to train students on it.

Name and Signature:
Issraa H. Hashim

المرحلة الرابعة

UGIV

وصف المقرر لمادة

Information Module معلومات المادة الدراسية					
Title Module	**Engineering of Radiation Instruments**			**Delivery Module**	
Type Module				☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒**Tutorial** ☐ **Practical** ☐ **Seminar**	
Code Module					
Credits ECTS					
(hr/sem) SWL					
Level Module			**Delivery of Semester**		
Department Administering			**College**		
Leader Module	Khalil Brahim		**mail-e**		
Title .Acad Leader's Module	Dr		**Qualification Leader's Module**		
Tutor Module			**mail-e**		
Name Reviewer Peer			**mail-e**		
Committee Scientific Approval Date			**Number Version**		

Modules other with Relation العالقة مع المواد الدراسية ألخرى			
module Prerequisite	None	Semester	
module requisites-Co	None	Semester	

Contents Indicative and Outcomes Learning ,Aims Module أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Aims Module أهداف المادة الدراسية	Study of the structure of the atom, atomic and nuclear radiation, their effect on the human body, and their uses in medical devices.
Learning Module Outcomes مخرجات التعلم للمادة الدراسية	**1. Understanding the Basics of Radiation** • **Physics of Radiation: Learners are expected to understand the basic physics of how radiation produces energy and interacts with matter** • **Types and Sources of Radiation: Modules often cover the different types of radiation, their sources, and how they are used in medical applications** . **2. Radiation Protection and Safety** • **Radiation Protection**: Training includes how to protect patients and healthcare professionals from unnecessary radiation exposure. • **Emergency Response**: Some modules focus on medical responses to nuclear or radiological emergencies, including managing affected individuals. **3. Clinical Applications in Radiation Therapy** • **Treatment Planning**: Learners are trained in evaluating and designing radiation therapy treatment plans using simulation-based tools. • **Competency in Radiotherapy**: Modules aim to develop competencies in using advanced radiotherapy technologies and techniques. **4. Outcome Analysis and Research** • **Evaluating Radiation Outcomes**: Training includes analyzing the outcomes of radiation therapy, such as its impact on locoregional control and overall survival . • **Integration of Machine Learning**: Some modules explore the application of machine learning in radiation oncology to improve treatment planning and outcomes **5. Self-Directed and Experiential Learning** • **Learning Approaches**: Modules often encourage a mix of experiential learning, formal teaching, and self-directed study to help trainees achieve the required competencies .

Contents Indicative المحتويات الإرشادية	**1. Types of Medical Radiation** • **Ionizing Radiation: This is the primary type of radiation used in medical imaging and treatments. It includes X-rays, gamma rays, and radioactive isotopes. These forms of radiation have enough energy to remove tightly bound electrons from atoms, creating ions** • **Radioactive Isotopes: Radioactive iodine, for example, is commonly used in medical applications, such as treating thyroid conditions** **2. Common Medical Applications** • **Diagnostic Imaging: X-rays, CT scans, and fluoroscopy use ionizing radiation to create detailed images of the body's internal structures.** • **Therapeutic Uses: Radiation therapy employs high doses of ionizing radiation to target and destroy cancer cells while minimizing damage to surrounding healthy tissue.** • **Nuclear Medicine: Techniques like PET scans involve the use of radioactive tracers to diagnose and monitor diseases.** **3. Radiation Doses and Safety** • **Dose Measurements: The amount of radiation exposure varies depending on the procedure. For example, a pelvic CT scan involves a relatively high dose compared to other diagnostic procedures** • **Safety Considerations: It is crucial to assess risks, especially for vulnerable populations such as pregnant patients, to avoid unnecessary exposure to the fetus.** • **Oncogenic Risks: Prolonged or excessive exposure to ionizing radiation is associated with an increased risk of cancer, as observed in populations exposed to nuclear events or occupational hazards.** **4. Benefits and Risks** • **Benefits: Medical radiation is indispensable for diagnosing diseases, guiding surgical procedures, and treating conditions like cancer.** • **Risks: While beneficial, ionizing radiation carries risks such as potential tissue damage and long-term effects like carcinogenesis.** **5. Natural Background Radiation** **It is worth noting that humans are also exposed to natural sources of radiation, such as cosmic rays and terrestrial radiation, which contribute to the overall radiation dose absorbed by the body .**

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

(SWL) Workload Student الحمل الدراسي للطالب			
(h/sem) SWL Structured الحمل الدراسي المنتظم للطالب خلال الفصل	79	(h/w) SWL Structured الحمل الدراسي المنتظم للطالب أسبوعيا	5
(h/sem) SWL Unstructured الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	(h/w) SWL Unstructured الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
(h/sem) SWL Total الحمل الدراسي الكلي للطالب خلال الفصل	150		

Evaluation Module تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Due Week	Learning Relevant Outcome
Formative assessment	Quizzes	2	(10) %10	10 ,5	11 and 10 #LO ,2 ,1# LO
	Online Assignments	2	(10) %10	12 ,2	7 ,LO# 6 ,4 ,3 # LO
	Projects	1	(6) %6	Continuous	12-1 #LO
	lab	10	(10) %10	Continuous	12-1 #LO
	Report	1	(4) %4	13	12 ,9 ,8 ,5 # LO
Summative assessment	Exam Midterm	hr 3	(10) %10	7	7-1 # LO
	Exam Final	hr4	(50) %50	16	All
assessment Total			100) %100 (Marks)		

(Syllabus Weekly) Plan Delivery المنهاج االسبوعي النظري	
	Covered Material
1st , 2nd	Atomic structure and atomic radiation .
3rd , 4th	The nuclear and nuclear radiation .
5th , 6th	Interaction of radiation with matter .
7 th , 8th ,9th	Radiation detection & engineering of radiation detectors .
10th , 11th , 12th	Engineering of radiation dosimetry and dosimeters .
13th , 14th	Radiation protection .
15th , 16th	Engineering of body scanners .
17th , 18th	Production of X – rays .
19th , 20th	Clinical radiation generators
21th , 22th	Dose distribution and scatter analysis .
23th , 24th	A system of dosimetric calculations .
25th , 26th	Treatment planning .
27th , 28th	Engineering of electron beam therapy .
29th , 30th	Brachy therapy .

(Syllabus .Lab Weekly) Plan Delivery المنهاج الاسبوعي للمختبر	
1 Week	
2 Week	
3 Week	
5-4 Weeks	
7-6 Weeks	
9-8 Weeks	
10 Week	
11 Week	
12 Week	
14-13 Weeks	
15 Week	

Learning and Teaching Resources

مصادر التعلم والتدريس

1-The physics of radiation therapy / Faiz M. Khan, John P. Gibbons. — Fifth edition.2010.

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	Text	the in Available Library?
Texts Required		
Texts Recommended		
Websites		

Scheme Grading مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Group Success (50- 100)	Excellent - A	امتياز	100 - 90	Performance Outstanding
	Good Very - B	جيد جدا	89 - 80	errors some with average Above
	Good - C	جيد	79 - 70	errors notable with work Sound
	Satisfactory - D	متوسط	69 - 60	shortcomings major with but Fair
	Sufficient - E	مقبول	59 - 50	criteria minimum meets Work
Group Fail (0 – 49)	Fail – FX	راسب (قيد المعالجة)	(49-45)	awarded credit but required work More
	Fail – F	راسب	(44-0)	required work of amount Considerable
mark a example for) mark full lower or higher the to rounded be will 0.5 below or above places Decimal Marks :Note 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 adjustment to marks awarded by the original marker(s) will be the automatic pass fails" so the only-condone "near .rounding outlined above				

TEMPLATE FOR COURSE SPECIFICATION

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1. Teaching Institution	University of Hilla
2. University Department/Centre	Medical device technology engineering
3. Course title/code	Medical instrumentation III
4. Modes of Attendance offered	Weekly (2practical + 3theoretical)
5. Semester/Year	Annual
6. Number of hours tuition (total)	150 hours
7. Date of production/revision of this specification	1/7/2024
8. Aims of the Course	
Qualifying students to be application engineers familiar with modern applications in the field of various medical devices.	
Providing students with a scientific skill that enables them to diagnose and treat malfunctions in medical devices.	
Informing and training students on the latest developments in the field of medical devices.	
Designing medical devices with high efficiency and appropriate economic cost.	
Developing medical devices through conducting developmental research in this field	

9· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals
1-a - The ability to segment and analyze the parts of the medical device and the function of each part
2-a- The ability to diagnose malfunctions resulting in medical devices.
3-a- The ability to give appropriate solutions to the resulting malfunctions in medical devices.
4-a- The ability to create and study the appropriate conditions for each device.

B - the skill objectives of the course.
B1 - Design and development of engineering cadres to operate and maintain medical devices.
B2 - Designing medical devices with high efficiency and economical cost.
B 3 - Providing scientific and practical advice in the field of various medical devices.

Teaching and Learning Methods

Theoretical lectures and practical laboratories. Laboratory Experiments concern medical instruments - Seminars

Assessment methods

Daily exam before and after. Weekly tests - quarterly tests - annual tests scientific activities

. C- Emotional and value goals
C1- The student listens attentively to the teacher’s explanation
C2- That the student knows the impact of medical devices on life
C3- Developing curricula and laboratories in line with the development in the field of medical devices.
C4- Developing curricula and laboratories in line with the labor market.

Teaching and Learning Methods

Seminars - Guidance and Education

Assessment methods

Discussion and dialogues of the professor with the student and discussion and dialogues of the student with another student

D - Transferred general and qualifying skills (other skills related to employability and personal development).
1- Installing and operating various medical and electronic devices of all kinds.
2- Scheduling and programming periodic maintenance work
3- Contributing and supervising the maintenance and calibration of various medical devices.

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st , 2nd	10	The student understands the lesson	Part 1: general systems and specialized tools in general surgery.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
3rd, 4th, 5th	15	The student understands the lesson	Part 2 : specialized systems and Inst .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
6th, 7th	10	The student understands the lesson	Ophthalmic microsurgical Inst .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
8th, 9th	10	The student understands the lesson	Open heart & cardiovascular .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
10th	5	The student understands the lesson	Heart–lung machine	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
11th , 12th	10	The student understands the lesson	Kidney machine	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
13th , 14th	10	The student understands the	Surgical diathermy	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

		lesson			
15th , 16th , 17th	15	The student understands the lesson	Artificial organs – internal & external .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
18th , 19th , 20th	15	The student understands the lesson	Dental system	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
21st , 22nd ,	10	The student understands the lesson	Gynecology Inst .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
23rd , 24th	10	The student understands the lesson	Ultrasonic assisting device .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
25th , 26th	10	The student understands the lesson	Audio logical surgical units .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
27th , 28th	10	The student understands the lesson	Anesthetic units.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
29th , 30th	10	The student understands the lesson	**Intensive care units**	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

11. Infrastructure	
1. Books Required reading:	Biomedical Engineering Handbook - J.D.Bronzino

2. Main references (sources)	A text book of medical instrument, By: S. Ananthi
A- Recommended books and references (scientific journals, reports…).	The Biomedical Engineering Handbook - BrainMaster
B-Electronic references, Internet sites…	http://www.frankshospitalworkshop.com/equipment/centrifuges_equipment.html

12. The development of the curriculum plan
1- Adding an introduction to the basic concepts of the components of medical devices. 2- Providing some medical and laboratory equipment for students to train on. 3- Updating practical experiences in line with the development in the field of medical devices.

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COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Hilla
2. University Department/Centre	Department of Medical instrumentations Technologies Engineering
3. Course title/code	Project Management
4. Modes of Attendance offered	weekly
5. Semester/Year	annual
6. Number of hours tuition (total)	60 hours
7. Date of production/revision of this specification	01.07.2025
8. Aims of the Course	
This course introduces students to concepts related to the administrative activities practiced by organizations and their applications, focusing on the principles and elements of project management strategies, including planning, scheduling, and controlling activities. It provides a concise overview of the course's key characteristics and expected learning outcomes, emphasizing the importance of linking these outcomes to the opportunities offered by the program and assessing whether students have maximized their benefit from these opportunities. The course also aims to enable students to understand project management concepts, learn methods for drawing network diagrams, and grasp inventory management techniques, including how to determine the break-even point for production.	

9· Learning Outcomes, Teaching ,Learning and Assessment Methode

A- Cognitive goals .

A1- The student acquires concepts related to administrative activities A2- Understand the principles and elements of management A3- Understanding and knowledge of quality control methods.
A-4 Knowledge of methods for drawing project network diagrams.
A-5 Knowledge of determining the critical path of the project, total project float, early start, late start, early finish, and late finish of project activities.
A-6 Understanding and knowledge of resource allocation problems in projects.

B. The skills goals special to the course.

B1 - Learn how to develop a project plan

.B2 - Familiarity with data analysis and management programs B3 - Learn how to schedule projects

Drawing the project network diagram using the Critical Path Method (CPM).

Teaching and Learning Methods

Academic Lectures: These provide a solid foundation upon which students can build and expand their knowledge base. **Practical Labs**: These offer students the necessary hands-on experience to develop practical skills and reinforce the essential principles required for the proper execution of projects using Microsoft Project.

Assessment methods

Interactive Assessment: This provides a basis for evaluating students by observing their level of interaction and participation during lectures.
Written Exams, Midterm Exams , Final Exams

Affective and Value-Based Objectives:

C-1 Learning how to create project timelines and schedules.
C-2 Understanding the principles and elements of management.
C-3 Developing students' applied skills.
C-4 Fostering creativity among students and encouraging them to develop innovative solutions to various problems.
C-5 Enhancing students' ability to work effectively in teams to achieve outstanding results.
C-6 Cultivating values of diligence and perseverance to complete tasks and achieve satisfactory outcomes.
C-7 Developing a sense of responsibility among students and preparing them psychologically to handle the responsibilities assigned to them.

Teaching and Learning Methods

Discussion and dialogues of the professor with the student and discussion and dialogues of the student with another student

Transferred general and qualification skills (other skills related to employability and personal development).

D1- Adding the applied skills of the student
D2 - Increasing the student's ability to schedule time and effort
D 3- The student's ability to do scientific research

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	**The student understands the lesson**	**Introduction to project management abjectives and trade off .cost-schedule-performance**	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
2	3	**The student understands the lesson**	**Planning and control in projects: planning ,scheduling , controlling**	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
3	3	**The student understands the lesson**	Scheduling methods	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
4	3	**The student understands the lesson**	Gant chart	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
5	3	**The student understands the lesson**	Networks methods	**Theoretical practical& lecture +online + PDF lectures**	
6	3	**The student understands the lesson**	Constant – time network	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
7	3	**The student understands the lesson**	Pert network	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
8	3	**The student understands the lesson**	Critical path method	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
9	3	**The student understands the lesson**	Precedence diagramming method	**Theoretical practical& lecture +online + PDF lectures**	
10	3	**The student understands**	Project	**Theoretical**	Exams, reports

		the lesson	phases :choice of project location	**practical& lecture +online + PDF lectures**	and discussion
11	3	**The student understands the lesson**	Process design	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
12	3	**The student understands the lesson**	Choice of technology	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
13	3	**The student understands the lesson**	Financial analysis , Purchse of new machine replacement . layout of facilities	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
14	3	**The student understands the lesson**	Managing the work force in a project , who manages the work force . principles in demission of work – force management	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
15	3	**The student understands the lesson**	Japans work – force management	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
16	3	**The student understands the lesson**	New approach to evaluation performance	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion

17	3	**The student understands the lesson**	Materials handling	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
18	3	**The student understands the lesson**	Concepts of MRP system elements of MRP system	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
19	3	**The student understands the lesson**	MRP versus order – point system . MRP versus just in time system	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
20	3	**The student understands the lesson**	Activities in project :coordination of project activities . activities breakdown	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
21	3	**The student understands the lesson**	Measuring project process tools . purpose of work measurement	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
22	3	**The student understands the lesson**	Methods study	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
23	3	**The student understands the lesson**	Types of work measurement	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
24	3	**The student understands the lesson**	Time study	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion

25	3	**The student understands the lesson**	Time management	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
26	3	**The student understands the lesson**	**Introduction to project management abjectives and trade off .cost-schedule-performance**	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
27	3	**The student understands the lesson**	**Planning and control in projects: planning ,scheduling , controlling**	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
28	3	**The student understands the lesson**	Scheduling methods	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
29	3	**The student understands the lesson**	Gant chart	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion
30	3	**The student understands the lesson**	Networks methods	**Theoretical practical& lecture +online + PDF lectures**	Exams, reports and discussion

11. Infrastructure	
1. Books Required reading:	Principles of project management ,NPC publication S. Choudhury "project management ",Tata MC Graw hill-2003
2. Main references (sources)	Books +internet Project Management" Clifford F Gray & Erik W. Larson
A- Recommended books and references (scientific journals, reports…).	Project Management In Manufacturing And High Technology Operation" by Adedeji Bodunde Badiru
B-Electronic references, Internet sites…	

12. The development of the curriculum plan
1- Visiting educational laboratories 2- Visiting educational workshops for electronic devices

3- work on MS project program

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1. Teaching Institution	UOH
2. University Department/Centre	Medical device technology engineering
3. Course title/code	Computer Applications
4. Modes of Attendance offered	Weekly (2practical +1 theoretical)
5. Semester/Year	annual
6. Number of hours tuition (total)	120 hours
7. Date of production/revision of this specification	2024/7/1
8. Aims of the Course	
1. PowerPoint program: the concept of the program and its benefits, its operation, the components of the main screen, the concept of presentations and its benefits. 2. Familiarity with CAD/CAM, its concept and applications.	

10. Course outcomes and methods of teaching, learning and assessment
A- Cognitive goals: 1. Get to know PowerPoint. 2. Learn about the practical applications of CAD/CAM programs. 3. Learn about calculator applications
B- Skills objectives of the course: 1- Learn how to create presentations. 2- Learn how to use these programs and their use in the medical field. 3- Strengthening the student's programming ability.
Teaching and learning methods
Theoretical lectures and practical laboratories. Laboratory experiments are carried out using the PowerPoint program - Seminars
Evaluation methods
Daily pre and post-tests. Weekly tests - quarterly tests - annual tests scientific activities.
C- Emotional and value goals: 1- The student listens carefully to the teacher’s explanation 2- Learn how to deal with the computer and its applications. 3- To develop the applied skills of the student 4- That the student cares about calm and the order of the class
Teaching and learning methods
Seminars - Guidance and Educational Education
Evaluation methods
Discussion and dialogues of the professor with the student and discussion and dialogues of the student with another student

D- Transferred general and qualifying skills (other skills related to employability and personal development). 1- The student's ability to do scientific research 2- The student's ability to participate in extra-curricular activities 3- Library skills and via the Internet, the Internet outside the scientific material

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st, 6th	30n+30p	The student understands the lesson	- Getting to know the PowerPoint program: the concept of the program and its benefits, its operation, the components of the main screen, the concept of presentations and its benefits. - Planning to build the presentation, inserting a new slide, whether it contains text (text) or an image (graphic), entering notes, entering headlines. The headers or footers of the slide. - Learn how to add drawings through the available drawing	Theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

			tools, modify the text and control its format, styling and change its font, controlling the colors and background of the slide. - Adding (clip arts) and the way to control it, such as zooming in or out or cropping, adding natural images and tools to control them, adding charts from Excel, or a data page from access databases. - Dealing with different display commands such as Timings, switching between one slide and its methods, animation methods, and setting sound effects for the slide.		
16th and 30th	30n+30p	The student understands the lesson	Advanced Specialized Applications - CAD/CAM	Theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

11. Infrastructure	1. Brief lectures, theoretical and practical

1. Books Required reading:	1. Microsoft PowerPoint 2016 Step by Step, 1st Edition, Joan Lambert. 2. CAD/CAM Computer-Aided Design and Manufacturing, M. Groover.
2. Main references (sources)	
A- Recommended books and references (scientific journals, reports…).	
B-Electronic references, Internet sites…	
12. The development of the curriculum plan	
1- Adding an introduction to the programming concepts so that the student can understand the subsequent topics 2- Providing hardware and software to further develop the student's skills. 3- See the latest software used in the world today.	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course a student might reasonably be expected to achieve and demonstrate if he/she takes full advanta provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Hilla
2. University Department/Centre	Medical device technology e
3. Course title/code	Control system
4. Modes of Attendance offered	Weekly (2practical + 2theor
5. Semester/Year	annaul
6. Number of hours tuition (total)	120 hours
7. Date of production/revision of this specification	1/7/2024
8. Aims of the Course	
1- Qualifying the student to reach application engineers who are familiar with modern applicati	
2- Providing students with a scientific skill that enables the diagnosis and treatment of malfunct	
3- Interviews are practical and applied research for the development of medical devices	
4- Training and development of engineering cadres on the maintenance of medical devices	
5- Informing and training students on the latest developments in the field of medical devices	
6- Development of medical devices	
7- Designing stable medical devices with high efficiency and economic cost	
1- Qualifying the student to reach application engineers who are familiar with modern applicati	

9· Learning Outcomes, Teaching ,Learning and Assessment Methode

Cognitive goals .

1- Qualifying the student to reach application engineers who are familiar with modern applications in the field of medical devices

2- Providing students with a scientific skill that enables the diagnosis and treatment of malfunctions in medical devices

3- Interviews are practical and applied research for the development of medical devices

4- Training and development of engineering cadres on the maintenance of medical devices

5- Informing and training students on the latest developments in the field of medical devices

6- Development of medical devices

7- Designing stable medical devices with high efficiency and economic cost

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B. The skills goals special to the course.

B1 - Training and development of the engineering staff on the operation and maintenance medical devices

B2 - Designing medical devices with high efficiency and economic cost

B3 - Providing practical and practical advice in the field of medical devices.

Teaching and Learning Methods

Theoretical lectures, scientific laboratories, training courses, exhibitions dedicated to the field of

Assessment methods

Daily exams, semester exams, daily attendance, laboratory reports, annual evaluation

C. Affective and value goals .

C1- Designing stable medical devices with high efficiency and economic cost

C2- Providing practical and practical advice in the field of medical devices

C3 - Developing curricula and laboratories in line with the development in the field of me

C4- Developing curricula and laboratories in line with the labor market

Teaching and Learning Methods

Daily exams, quarterly exams, daily attendance, laboratory reports, annual evaluation

Assessment methods

Theoretical lectures, scientific laboratories, training courses, exhibitions dedicated to the field of

D. General and rehabilitative transferred skills(other skills relevant to employability and perso
D1- Installing and operating various electronic and electromechanical medical devices in all
D 2- Design, development and attempt to find alternatives for some parts related to medical
D 3- Scheduling and programming periodic maintenance work
D 4- Contributing and supervising the maintenance and calibration of the various medical

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st	4	The student understands the lesson	Introduction to linear control engineering .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
2nd , 3rd	8	The student understands the lesson	Mathematical background ; laplace transform,complex variable , matrices .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
4th , 5th , 6th	12	The student understands the lesson	Transfer function	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
7th 8th 9th	12	The student understands the lesson	Time domain analysis , steady– state transient analysis .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
10th , 11th	8	The student understands the lesson	Stability analysis Nyquist .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
12th , 13th	8	The student understands the lesson	Root locus technique.	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
14th, 15th, 16th	12	The student understands the lesson	Frequency domain analysis , Eainmargin , phase margin and bode plot .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
17th , 18th	8	The student understands the lesson	Frequency domain synthesis , phase lead	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
19th , 20th	8	The student understands the lesson	Compensation phase– lag , compensation lag–	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly

			lead compensation .		tests
21st, 22nd, 23rd, 24th	16	The student understands the lesson	PID controllers design .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
25th, 26th	12	The student understands the lesson	State space representation and analysis .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
, 27th		The student understands the lesson	State diagram computer .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
28th , 29th	8	The student understands the lesson	Block diagram representation .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
1st	4	The student understands the lesson	Introduction to linear control engineering .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
2nd , 3rd	8	The student understands the lesson	Mathematical background ; laplace transform,complex variable , matrices .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

11. Infrastructure	
1. Books Required reading:	Modern control system By : OGATA
2. Main references (sources)	Linear control system By : KHANNA Publishers
A- Recommended books and references (scientific journals, reports…).	Control system Analysis and Design By : Aggarwal
B-Electronic references, Internet sites…	Modern control system By : OGATA

12. The development of the curriculum plan

المرحلة الرابعة

UGIV

وصف المقرر لمادة

Information Module معلومات المادة الدراسية					
Title Module	**Medical LASER Systems**			**Delivery Module**	
Type Module				☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒**Tutorial** ☐ **Practical** ☐ **Seminar**	
Code Module					
Credits ECTS					
(hr/sem) SWL					
Level Module			**Delivery of Semester**		
Department Administering			**College**		
Leader Module			**mail-e**		
Title .Acad Leader's Module		lecturer	**Qualification Leader's Module**		
Tutor Module	Dr Hayder Fadhil Abdulsada		**mail-e**		
Name Reviewer Peer			**mail-e**		
Committee Scientific Approval Date			**Number Version**		

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

Contents Indicative and Outcomes Learning ,Aims Module أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Aims Module أهداف المادة الدراسية	• Qualifying students to be applied engineers familiar with modern applications in the field of various medical • laser systems. • Providing students with a scientific skill that enables them to diagnose and treat malfunctions in laser devices. • Informing and training students on the latest developments in the field of medical laser systems. • Design laser systems with high efficiency and appropriate economic cost
Learning Module Outcomes مخرجات التعلم للمادة الدراسية	A- Cognitive goals A1. Learn about laser and its specifications A2. Learn about the methods and types of laser generation. A3. Learn about laser applications in the medical field. B - the skill objectives of the course. B1 - Develop engineering cadres to operate and maintain various laser devices. B2 - Designing laser devices with high efficiency and economical cost. B3 - Providing scientific and practical consultations in the field of various medical laser systems.
Contents Indicative المحتويات الارشادية	1. Potential Hazards of Laser Therapy • Eye Hazards (Retinal and Corneal Injuries(• Skin Hazards (Burns and Pigmentation Changes(• Thermal and Non-Thermal Tissue Damage • Photochemical Effects 2. Patient Safety Considerations • Pre-Treatment Risk Assessment • Screening for Contraindications • Proper Positioning and Shielding • Post-Treatment Monitoring 3. Incident Management and Emergency Procedures • Protocols for Accidental Exposure • First Aid Measures for Laser-Related Injuries • Reporting and Documentation 4. Training and Competency Requirements • Practitioner Training Programs • Certification in Laser Safety • Ongoing Education and Updates 5. Risk Assessment and Safety Audits • Routine Safety Inspections • Hazard Analysis • Implementation of Corrective Actions

Learning and Teaching Strategies استراتيجيات التعلم والتعليم			
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, and by considering types of simple experiments involving some sampling activities that are interesting to the students.		
الحمل الدراسي للطالب			
(h/sem) SWL Structured الحمل الدراسي المنتظم للطالب خلال الفصل	79	(h/w) SWL Structured الحمل الدراسي المنتظم للطالب أسبوعيا	5
(h/sem) SWL Unstructured الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	(h/w) SWL Unstructured الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
(h/sem) SWL Total الحمل الدراسي الكلي للطالب خلال الفصل	150		
Evaluation Module تقييم المادة الدراسية			

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1st , 2nd	8	The student understand the lesson	Laser generation	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
3^{rd}, 4^{th}	8	The student understand the lesson	Types of laser .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
5^{th} ,6^{th}, 7^{th}	12	The student understand the lesson	Light and light propagation in glass fiber	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
8th, 9^{th}, 10^{th}	12	The student understand the lesson	Optical fiber waveguide, bandwidth distance product, dispersion and pulse spreading maximum allowable data rate, fiber power losses .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
11^{th} , 12^{th}	8	The student understand the	Transmitter devices and circuits (communication LEDs	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests

13th , 14th	8	lesson	Injection lasers, modulators .	theoretical and practical lecture	Before and after questions, weekly, quarterly and yearly tests
15th , 16th	8	The student understand the lesson	Receiver devices and circuits detector photo diode light .	theoretical and practical lecture	Before and after questions, yearly and weekly, quarterly tests
17th	4	The student understand the lesson	PIN photo diodes , photo multiplier .	theoretical and practical lecture	,Before and after questions yearly and weekly, quarterly tests
18th , 19th ,	15	The student understand the lesson	Avalanche photo diode (APD) , receiver circuits	theoretical and practical lecture	Before and after questions, yearly and weekly, quarterly tests
20st , 21st	8	The student understand the lesson	Transmission technology , fiber technology , connectors .	theoretical and practical lecture	Before and after questions, yearly and weekly, quarterly tests
22nd , 23rd	8	The student understand the lesson	Splices , couplers .	theoretical and practical lecture	Before and after questions, yearly and weekly, quarterly tests
24th , 25th 26th , 27th	16	The student understand the lesson	types of medical applications of laser	theoretical and practical lecture	questions, Before and after yearly and weekly, quarterly tests
28th , 29th , 30th	12	The student understand the lesson	Laser hazards , the standard level for a safe working environment , lab–safety .	Theoretical and practical lecture	Before and after questions, yearly and quarterly ,weekly tests

(Syllabus .Lab Weekly) Plan Delivery المنهاج الاسبوعي للمختبر	
1 Week	
2 Week	
3 Week	
5-4 Weeks	
7-6 Weeks	
9-8 Weeks	
10 Week	
11 Week	
12 Week	
14-13 Weeks	
15 Week	
Learning and Teaching Resources مصادر التعلم والتدريس	

	Text	the in Available Library?
Texts Required		
Texts Recommended		
Websites		

Scheme Grading مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Group Success (50- 100)	Excellent - A	امتياز	100 - 90	Performance Outstanding
	Good Very - B	جيد جدا	89 - 80	errors some with average Above
	Good - C	جيد	79 - 70	errors notable with work Sound
	Satisfactory - D	متوسط	69 - 60	shortcomings major with but Fair
	Sufficient - E	مقبول	59 - 50	criteria minimum meets Work
Group Fail (0 – 49)	Fail – FX	راسب (قيد المعالجة)	(49-45)	awarded credit but required work More
	Fail – F	راسب	(44-0)	required work of amount Considerable
mark a example for) mark full lower or higher the to rounded be will 0.5 below or above places Decimal Marks :Note 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 the only adjustment to marks awarded by the original marker(s) will be the automatic pass fails" so-condone "near .rounding outlined above				