



Ministry of Higher Education and Scientific Research
Scientific Supervision and Evaluation Authority
Quality Assurance and Academic Accreditation
Department



Academic Program Description
University of Hilla
College of Engineering Technologies
Department of Mechatronics Engineering
Technologies

2025-2026

University Name: University of Hilla

College / Institute: College of Engineering Technologies

Academic Department: Mechatronics Engineering

Academic or Professional Program Name: Bachelor of Engineering in Mechatronics Technology

Final Degree Awarded: Bachelor of Engineering in Mechatronics Technology

Study System: Semester-Based – Bologna Process

Program Description Prepared On: 21/3/2026

File Completed On: 26/3/2026

Reviewed by Quality Assurance and University Performance Division

Name of Quality Assurance and University Performance Officer: Ali Hussein Ghalta

Date: 31/3/2026

:Signature 



Approved by the Dean

Professor: **Haroun Abaul Kadhim Shahad**



1. Vision

The academic staff of the Mechatronics Department at the University of Hilla aims to provide high-quality technical knowledge that makes the expected outcomes of the educational process more efficient and distinguished by developing technical skills, critical thinking abilities, social and personal skills, and work values in a constantly changing environment in electrical and mechanical engineering and alternating current engineering. The collaboration and teamwork among the department's academic, technical, and administrative staff enhance students' understanding of the program and improve their practical skills in a highly competitive, high-tech global environment.

2. Program mission

To prepare distinguished technical engineering cadres in the fields of mechatronics engineering through advanced scientific curricula, modern applied laboratories, and practical research that serves the labor market and keeps pace with the latest developments, while enhancing local, regional, and international partnerships to achieve sustainable development.

3. Program Objectives

1. Prepare technical engineers with advanced knowledge and practical skills in diagnosing faults, operating, and maintaining various types of Mechatronics systems.
2. Enable graduates to keep pace with rapid developments in Mechatronic systems, with the ability to employ modern technologies to enhance performance efficiency.
3. Qualify students to design, implement, and manage Mechatronics systems used in residential buildings, commercial and industrial systems, , and developing factories.
4. Develop students' abilities to sustain, maintain, and calibrate Mechatronics systems, ensuring their continuous operation at the highest levels of efficiency and reliability.
5. Enhance graduates' skills in researching innovative alternatives and solutions for technical components, contributing to cost reduction and performance improvement.
6. Prepare personnel capable of planning and executing preventive and periodic maintenance using modern maintenance management methods.
7. Raise students' awareness of the importance of occupational safety, energy efficiency, and environmental protection when designing and operating Mechatronics systems.

4. Program Accreditation

The program does not have any accreditation

5. External Influences

Monitoring the latest developments in **Mechatronics**, aligning curricula to meet labor market needs, and utilizing international educational resources.

6. Program Structure

Program Structure	Number of Courses	Credit Hours	Percentage%	Notes
Institutional Requirements				Core

College Requirements				Core
Department Requirements				Core
Summer Training				
Others				

Academic Program Objectives:

1. Prepare graduates to work as technical engineers in the field of Mechatronics engineering.
2. Provide graduates with the scientific and technical knowledge necessary to enter the workforce.
3. Equip graduates with sufficient knowledge to continue in academia and pursue higher degrees.
4. Provide graduates with the practical training required to work in the maintenance of all types of Mechatronic systems through summer training courses during their studies.
5. Prepare graduates to work as installation and operation engineers for various Mechatronic systems.
6. Qualify graduates to practice their profession with integrity and transparency, applying professional ethics through courses on related laws, such as labor law and the Engineers' Syndicate law, among others.

A. Cognitive Objectives

- Ability to analyze and break down the components of Mechatronic systems.
- Ability to diagnose faults and operational problems in various Mechatronic systems (residential, industrial, and commercial).
- Ability to find suitable technical and engineering solutions to faults and improve system efficiency.
- Ability to develop and implement preventive and corrective maintenance plans for Mechatronic systems to ensure continuous operation and minimize failures.
- Ability to design and study the technical conditions and standards for installing and operating Mechatronic systems in compliance with safety, quality, and energy efficiency standards.



A. Program Qualification Objectives:

- Prepare graduates capable of operating, maintaining, and diagnosing faults in various Mechatronic systems.
- Enable graduates to design and implement Mechatronic systems in accordance with environmental requirements, safety standards, and energy efficiency.
- Prepare qualified personnel to work in factories, residential and commercial buildings through the management and operation of Mechatronic systems.

- Equip graduates with the ability to use modern instruments and measurement and control tools specific to Mechatronic systems.
- Qualify students to use modern engineering and technical software for thermal performance analysis and system design.
- Develop communication skills and the ability to work within a team on field projects or technical workshops.
- Prepare graduates to keep up with technological developments in Mechatronic, and energy-efficient smart systems.

Teaching and Learning Methods:

Lectures, practical laboratories, scientific seminars, training courses, and specialized exhibitions in Mechatronic systems.

Assessment Methods:

Daily quizzes, semester exams, attendance, laboratory reports, and annual evaluations.

B. Affective and Value Objectives:

1. Design, maintain, and supervise the installation of Mechatronic systems.
2. Provide scientific and practical consultancy.

C. Personal Development Planning:

- Organize field visits to building projects, factories, central cooling stations, and specialized Mechatronic laboratories.
- Participate in specialized exhibitions and conferences in Mechatronics.
- Conduct training courses and applied workshops in collaboration with global and local manufacturers of Mechatronic systems.
- Encourage students to engage in summer training within institutions and companies to enhance practical skills and link theoretical knowledge with application.

D. Admission Criteria:

- Graduates of the General Secondary Education – Science branch.
- Students graduating from technical and vocational institutes.
- Students graduating from industrial vocational preparatory schools.





Mechatronics Engineering

First stage

UGI

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	حقوق الانسان والديمقراطية	Module Delivery	
Module Type	Basic	☒ Theory ☒ Lecture Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	MECT 100		
ECTS Credits	2		
SWL (hr/sem)	60		
Module Level	UGx1 1	Semester of Delivery	
Administering Department	قسم الميكاترونيك	College	
Module Leader	م.م عمار حسين	e-mail	
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Master in Law
Module Tutor	م.م عمار حسين	e-mail	E-mail
Peer Reviewer 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	Introducing students to the democratic system and its fundamentals. Introducing students to their rights and responsibilities under a democratic political system. Introducing students to all their human rights and how to preserve, defend, and protect them. Introducing students to the democratic political system in Iraq and the 2003 Iraqi Constitution.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	a) Knowledge and understanding: through theoretical classroom lectures. b) Assigning students to read a specific book. c) Assigning students homework to prepare a report on a specific topic. d) Oral examinations.
Indicative Contents المحتويات الإرشادية	The course consists of two parts. The first part introduces human rights and the most important topics through which students learn about their rights. The second part includes an introduction to democracy, the nature of democratic systems, how governance works within a democratic system, and an overview of the democratic system in Iraq.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Written lectures – Questions and answers – Access to specific sources
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل		Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل			



Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي العملي

weeks	Material Covered
1	Human rights. Definition of it. Its goals Human rights in ancient civilizations and in divine laws
2	Human Rights in Contemporary and Modern History: Recognition of Human Rights since World War I and the League of Nations Regional Recognition of Human Rights European Convention on Human Rights 1950 American Convention on Human Rights 1969 African Charter on Human Rights 1981 Arab Charter on Human Rights 1994
3	Non-governmental organizations and human rights (1- International Committee of the Red Cross, 2- Amnesty International Human Rights Watch, National Human Rights Organizations Human Rights in the Iraqi Constitution (Rights and Freedoms in the Constitution of the Republic of Iraq of 2005
4	The relationship between human rights and fundamental freedoms in the Universal Declaration of Human Rights In the Universal Declaration of Human Rights In regional charters and national constitutions Economic, social, environmental, cultural, and developmental human rights, and civil and political human rights.
5	Modern human rights (the right to development, the right to a clean environment, the right to solidarity, the right to religion) Guarantees of respect and protection of human rights at the national level. Guarantees in the Constitution and laws

	Guarantees in the principle of the rule of law, guarantees in constitutional oversight, and guarantees in freedom of the press Public opinion and the role of non-governmental organizations in respecting and protecting human rights
6	Guarantees of respect and protection of human rights at the international level The role of the United Nations and its competent agencies in providing guarantees The role of regional organizations (the Arab League, the European Union, the African Union, the Organization of American States) The role of international, regional non-governmental organizations and public opinion in respecting and protecting human rights The general theory of freedoms, the origin of rights and freedoms, the position of Sharia on declared rights and freedoms, the use of the term public freedoms.
7	The state of law and the guarantees of the state of law Regulation of public freedoms by public authorities
8	Equality: The historical development of the concept of equality The modern development of the concept of equality Gender equality Equality between individuals according to their beliefs and race
9	Democracy: Definition and Types
10	Foundations and obstacles of democracy
11	The democratic system in the 2003 Iraqi constitution – elections – political parties
12	Fundamental freedoms, intellectual freedoms, economic and social freedoms, the concept of freedoms and classification of public freedoms.
13	Scientific and technical progress and public freedoms The future of public freedoms
14	The general concept of awareness (definition of environmental awareness and water awareness and the need to study it) The concept of environmental awareness Means of achieving environmental awareness Dimensions of water awareness The challenges facing water security in Iraq Proposed measures to solve the fresh water shortage crisis
15	Definition of genocide, United Nations Genocide Convention Genocide operations, genocide courts, genocide crimes, crimes against humanity Crimes of the Baath Socialist Party Rights of people with disabilities



Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	ملزمة حقوق الانسان والديمقراطية الجامعة التقنية الوسطى	No
Recommended Texts	د. فاروق السامرائي ، حقوق الانسان في القرآن الكريم ، مركز دراسات الوحدة العربية ، بيروت ، 2002 رعد ناجي الجدة واخرون ، حقوق الانسان والطفل والديمقراطية ، 2009 .	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.				



عميد الكلية : أ.د. هارون عبد الكاظم شهد
التاريخ : 2026 / 3 / 31

رئيس القسم : أ.د. حسين فاضل حمدان
التاريخ : 2026 / 3 / 31

Ammar Hussain

اسم التدريسي: م.م. عمار حسين
التاريخ : 2026 / 3 / 31

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Mathematics		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MECT 110		
ECTS Credits	6		
SWL (hr/sem)	180		
Module Level	UGx11 1	Semester of Delivery	1
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	م.م رقية علاء	e-mail	
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	MSc
Module Tutor	م.م رقية علاء	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2025	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	Teaching the student the basic and advanced principles of calculus and its applications to develop the students mental abilities to solve problems and make use of available information in the other scientific materials.

Module Learning Outcomes مخرجات التعلم للمادة الدراسية	To apply the knowledge of mathematics, science and engineering fundamentals.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	101	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	79	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	180		



Module Evaluation تقييم المادة الدراسية					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (15)	5, 10	LO #1, 2, 7 and 9
	Assignments	4	10% (15)	2, 8	LO # 3, 4, 5 and 6
	Projects / Lab.	0	0	0	

	Report	2	10% (10)	7,14	LO # 5, 6 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Determinants, properties, Grammar's rule, application of determinant
Week 2	Vectors, vectors in space, unit vector, Scalar product, vector product
Week 3	Trigonometric functions & relation, Graphing of functions, Trigonometric equations
Week 4	Function of limits, Algebraic limit, Trigonometric limit, Infinity as limit
Week 5	Derivative rule, Algebraic & Trigonometric derivative, Chain rule, velocity & acceleration
Week 6	Inverse trigonometric functions & its derivative, Logarithm & Exponential functions & its derivative
Week 7	Hyperbolic functions & its derivative, Inverse hyperbolic functions & its derivative
Week 8	Integration, integrals of trigonometric & inverse functions, Integrals of logarithm & Exponential functions
Week 9	Integrals of logarithm & Exponential functions, Integrals of hyperbolic functions & its derivative, L'Hopital's rules
Week 10	Integration methods; Integration by parts, Integration by partial fraction
Week 11	Integration by trigonometric substitution, Integration of $ax^2 + bx + c$
Week 12	Application of Integration, Area under the curve & between two curves
Week 13	Surface area generated, Length of the curve
Week 14	Volume generated by rotation of curve, Simple differential equations
Week 15	Simpson rule for area, Trapezoidal rule for area, applications
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	

Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 - 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
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التاريخ : 2026 / 3 / 31

اسم التدريسي : م.م رقية علاء
التاريخ : 2026 / 3 / 31

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Mechanics		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	MECT 102		
ECTS Credits	8		
SWL (hr/sem)	240		
Module Level	UGx11 1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	م.م رقية نصر	e-mail	E-mail
Module Leader's Acad. Title		Module Leader's Qualification	M.Sc
Module Tutor	م.م رقية نصر	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2025	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	Through this module, students will develop the necessary skills to analyze and solve engineering problems involving forces, motion, and equilibrium.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the engineering mechanics module, students should be able to: - Understand and apply the principles of statics and dynamics in engineering systems. - Analyze and solve problems related to forces, moments, equilibrium, and motion of particles. - Apply vector mathematics and coordinate systems to engineering mechanics problems.

	4. Identify and analyze different types of supports in structures and machines. 5. Interpret and draw free body diagrams to represent the forces acting on a system. 6. Utilize computational tools for solving engineering mechanics problems.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Introduction to Engineering Mechanics - Overview of mechanics and its applications in engineering - Fundamental concepts and principles 2. Statics - Forces and vectors - Equilibrium of particles and rigid bodies - Moment of a force and its applications - Friction and its effects - Center of Mass and Centroid 3. Dynamics - Motion of particles: kinematics and kinetics - Newton's laws of motion - Work, energy, and power - Impulse and momentum 4. Problem-Solving and Applications - Engineering problem-solving techniques - Case studies and practical examples

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

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	181	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	13
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	59	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	240		



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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	Fundamental Concepts, Vectors Quantities and Forces Analysis
Week 2	Moment
Week 3	Force Resultants
Week 4	Equilibrium of the Forces System
Week 5	Equilibrium of Bodies
Week 6	Friction
Week 7	Center of Mass and Centroid
Week 8	Mid-term Exam
Week 9	The Moment of Inertia
Week 10	Introduction to Dynamics
Week 11	Kinematics of a Particle: Rectilinear Motion
Week 12	Kinematics of a Particle: Curvilinear Motion
Week 13	Kinetics of a Particle: Force and Acceleration
Week 14	Kinetics of a Particle: Work and Energy
Week 15	Kinetics of a Particle: Impulse and momentum
Week 16	Preparatory week before the final Exam



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	ENGINEERING MECHANICS, STATIC, FOURTEENTH EDITION, R. C. HIBBELER ENGINEERING MECHANICS, DYNAMICS, FOURTEENTH EDITION, R. C. HIBBELER	
Recommended Texts	J.L. MERIAM, L.G. KRAIGE and J. N . BOLTON, ENGINEERING MECHANICS STATICS, EIGHTH EDITION	
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
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التاريخ : 2026 / 3 / 31

اسم التدريسي: م.م رقية نصر
التاريخ : 2026 / 3 / 31

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Drawing with AutoCAD		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	MECT 103		
ECTS Credits	8		
SWL (hr/sem)	240		
Module Level	UGx11 1	Semester of Delivery	1
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	م.م علي توفيق	e-mail	
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	MSc
Module Tutor	م.م علي توفيق	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2025	Version Number	1.0

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



Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The AutoCAD for Beginners book provides a learn-by-doing approach for users to learn AutoCAD. It is written for students and engineers who are interested to learn Auto CAD for creating designs and drawing of components or anyone who communicates through technical drawings as part of their work .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Engineering and assemblies to learn about their components, parts, mechanics and principle. Organizing the student's thought to develop a specific and sequential strategy for drawing and compiling, And dismantling engineering projects and parts of machinery and equipment. Provide the student with the skill of drawing lines, Geometric shapes, perspective objects, and projections.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	157	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	11
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	83	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	240		



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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	Define the Engineering Drawing the Tool used in Engineering drawing-Types of drawing Sheets, types of lines
Week 2	Geometric Construction, types of lines and arc-Geometric Construction , types of regular polygons, Quadrilateral-Geometric Construction, types of circles and ellipse
Week 3	Isometric Views
Week 4	Dimensions - Exercises-Center translation
Week 5	Theory of Projection
Week 6	Drawing the three projection views
Week 7	Theory of Section
Week 8	Screw drawing
Week 9	Nuts drawing
Week 10	Assembly drawing
Week 11	Disassembly drawing
Week 12	Bearing drawing
Week 13	Gears drawing
Week 14	Cam and Rollers drawing
Week 15	Full parts assembly drawing-Full parts projection
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Define the Engineering Drawing the Tool used in Engineering drawing-Types of drawing Sheets, types of lines
Week 2	Geometric Construction, types of lines and arc-Geometric Construction , types of regular polygons, Quadrilateral-Geometric Construction, types of circles and ellipse
Week 3	Isometric Views
Week 4	Dimensions - Exercises-Center translation
Week 5	Theory of Projection
Week 6	Drawing the three projection views
Week 7	Theory of Section
Week 8	Screw drawing
Week 9	Nuts drawing
Week 10	Assembly drawing
Week 11	Disassembly drawing
Week 12	Bearing drawing
Week 13	Gears drawing
Week 14	Cam and Rollers drawing
Week 15	Full parts assembly drawing-Full parts projection

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Modern Control Engineering - Ogata - E4	yes
Recommended Texts	Modern Control Engineering - Ogata - E4	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.



عميد الكلية : أ.د. هارون عبد الكاظم شهد
التاريخ : 2026 / 3 / 31

رئيس القسم : أ.د. حسين فاضل حمدان
التاريخ : 2026 / 3 / 31

Ali Tawfeeq

اسم التدريسي: م.م علي توفيق
التاريخ : 2026 / 3 / 31



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electrical Fundamentals		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MECT 105		
ECTS Credits	6		
SWL (hr/sem)	180		
Module Level	UGx11 1	Semester of Delivery	1
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	م.م مرتضى عباس	e-mail	
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	MSc
Module Tutor	م.م مرتضى عباس	e-mail	E-mail
Peer Reviewer Name	Abduallah Adil Nassif	e-mail	aa@mtu.edu.iq
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

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

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

Module Aims أهداف المادة الدراسية	1. Introduce fundamental principles of circuit theory commonly used in engineering science applications. 2. To understand voltage, current, resistance, impedance. 3. To understanding Techniques and principles of electrical circuit analysis including basic concepts like Ohm's law. 4. This course deals with the basic electric circuit analysis techniques, resistive circuits, circuits with DC and sinusoidal sources, energy and power. 5. This is the basic subject for all electrical and electronic circuits. 6. To understand Kirchhoff's current and voltage Laws problems. 7. To perform mesh and Nodal analysis and superposition theorem.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. To develop problem solving skills and understanding of circuit theory through the application of techniques and principles of electrical circuit analysis to common circuit problems. 2. To develop an understanding of the fundamental laws and elements of electric circuits. 3. To learn the energy properties of electric elements and the techniques to measure voltage and current. 4. To be able to understand basic electrical properties as well as understand waveforms, signals and RLC circuits. 5. To develop the ability to apply circuit analysis to DC and AC circuits.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The primary approach to be employed in teaching this module aims to promote active engagement of students in the exercises, while also enhancing their ability to think critically. This objective will be accomplished through a combination of interactive classes, tutorials, and the inclusion of captivating sampling activities that pique the students' interest.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	107	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	73	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5

Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	180
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Module Evaluation تقييم المادة الدراسية					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	Systems of Units, Charge and Current, Voltage, Power and Energy, The Resistance, Ohm's law, Effect of Temperature on Resistance, Conductance and Conductivity
Week 2	Reading Resistor Colour Code, Nodes, Branches, Loops, and Kirchhoff's Current Law (KCL)
Week 3	Kirchhoff's Voltage Law (KVL), Series Resistors and Voltage Division, and Parallel Resistors and Current Division
Week 4	Wye-Delta Transformations: Delta to Wye Conversion; Wye to Delta Conversion
Week 5	Methods of Analysis: Nodal Analysis; Nodal Analysis with Voltage Sources
Week 6	Methods of Analysis: Mesh Analysis; Mesh Analysis with Current Sources, supposition theorem
Week 7	Source Transformation; Thevenin's Theorem
Week 8	Norton's Theorem; Maximum Power Transfer
Week 9	Capacitors and Inductors: Capacitors; Capacitors in series; Capacitors in Parallel

Week 10	Capacitors and Inductors: Inductors; Inductors in series; Inductors in Parallel
Week 11	Sinusoids and Phasors
Week 12	Phasor Relationships for Circuit Elements (Resistance, Inductance and Capacitor)
Week 13	Impedance and Admittance; Impedance Combinations (Series and Parallel)
Week 14	AC Power Analysis: Instantaneous and Average Power; Maximum Average Power Transfer
Week 15	AC Power Analysis: Apparent Power and Power Factor; Complex Power; Power Factor Correction
Week 16	Preparatory week before the final Exam



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Introduction to Electrical Laboratory: Lab Safety, Tools, DC Sources, Metering, Resistors Color Code, Groups Arrangement and Report Preparing
Week 2	Ohm's Law
Week 3	Resistance connected in series
Week 4	Resistance connected in parallel
Week 5	Resistance connected in series and parallel
Week 6	Kirchhoff's Current Law
Week 7	Kirchhoff's Voltage Law
Week 8	Current Divider Rule and Voltage Divider Rule
Week 9	Nodal Analysis
Week 10	Mid Semester Lab. Exam
Week 11	Thevenin's Theorem
Week 12	Norton's Theorem
Week 13	RLC in series
Week 14	RLC in Paralell
Week 15	Final Semester Lab. Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Introductory Circuit Analysis by Robert L. Boylestad.	yes
Recommended Texts	Fundamentals of Electric Circuits by Charles K. Alexander, A Textbook of Electrical Technology by B.L. Theraja	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد 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.



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رئيس القسم : أ.د. حسين فاضل حمدان
التاريخ : 2026 / 3 / 31

اسم التدريسي: م.م. مرتضى عباس
التاريخ : 2026 / 3 / 31



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Measurements and Instrumentations		Module Delivery
Module Type	Elective		☐ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	MECT 104		
ECTS Credits	6.00		
SWL (hr/sem)	180		
Module Level	UGx1 1	Semester of Delivery	
Administering Department	Mechatronics	College	Technical Engineering college
Module Leader	م.م اسراء حيدر	e-mail	
Module Leader's Acad. Title	Asst. Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	م.م اسراء حيدر	e-mail	E-mail
Peer Reviewer Name	Oday isam wadeea	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	1. Introduce students to measurements, instruments, and Lab devices. 2. Students become familiar with various types of instruments and perform various experiments according to a particular procedure. 3. Topics include measurement methods of resistance, inductance, capacitance, frequency and voltage, current, and power. 4. Understand the identification, classification, construction, components, working principle and application of various meters used for measuring.
Module Learning Outcomes	Upon completion of the course, students should be able to: 6. In-depth knowledge and understanding of the characteristics of the measuring instruments and ability to choose the most suitable instrument to perform the required measurement. 7. Understand the relationship between analytical predictions and experimental results. 8. Ability to use Lab. devices: major components, different meters, function generator, oscilloscopes, and etc. 9. Understand the utilization of most necessary Lab meters.
Indicative Contents	Indicative content includes the following.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing and Online testing.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem)		Structured SWL (h/w)	
Unstructured SWL (h/sem)		Unstructured SWL (h/w)	
Total SWL (h/sem)			



Module Evaluation					
تقييم المادة الدراسية					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	3 hr	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 محتوى كل اسبوع يجب ان يغطي الوقت المحدد	
Week	Material Covered
Week 1	Standard of measurements and description of measurement devices
Week 2	Types of Measuring Instrumentation and Classification of Secondary Instruments
Week 3	Errors in Measurement: Types of errors and Statistical Analysis
Week 4	Moving coil instruments (PMMC): DC Ammeter
Week 5	Moving coil instruments (PMMC): DC Voltmeter
Week 6	AC Measuring Instrument: Review on alternating signals, root mean square value, Dynamometer and clamp on meters
Week 7	Bridge Circuits and Their Applications
Week 8	DC Bridge: Wheatstone bridge, Kelvin bridge and Kelvin double bridge
Week 9	AC Bridge: Comparison Bridge and Maxwell Bridge
Week 10	AC Bridge: Hay Bridge, Schering Bridge, and Wien Bridge
Week 11	Electronic Measuring Instruments: Amplifier, Half wave rectifier, and Full wave rectifier
Week 12	Electronic Measuring Instruments: Basic Rectifier Type Voltmeter, AC Voltmeter with full wave rectifier, and Electronic Multimeter
Week 13	Oscilloscopes: CRT deflection, probes and functions
Week 14	Oscilloscopes: Measurement Techniques and Types
Week 15	Energy and Power: Power measurement in DC-DC circuits. Measuring power in AC-AC circuits. Measuring power in three-phase circuits.

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	Introduction to Measurements devices, devices operation, errors, accuracy definition and report preparing
Week 2	Multimeters and the Loading effect on voltmeters
Week 3	Measurement of large and small value of resistance by AV method
Week 4	Galvanometers and their sensitivity
Week 5	Measurement of Medium Resistance by Wheatstone Bridge
Week 6	Exam 1
Week 7	Oscilloscope device: Measuring voltage and frequency
Week 8	Oscilloscope device: Measuring phase shift using Lissajous Figures
Week 9	AC Meters Using Half and Full-Wave Rectifier
Week 10	Exam 2
Week 11	Measurement of Capacitance using Schering Bridge
Week 12	Measurement of Inductance using Maxwell Bridge
Week 13	Measurement of Frequency using Wein Bridge
Week 14	Measuring Power and energy
Week 15	Final Exam



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	➤ Electronic Instrumentation and Measurement Techniques by W. D. Cooper ➤ Electronic Measurements and Instrumentation by R. S. Sedha, ➤ Electronic Instrumentation by H.S. Kalsi	No

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



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التاريخ : 2026 / 3 / 31

اسم التدريسي: م.م اسراء حيدر
التاريخ : 2026 / 3 / 31



First Stage/ Second Semester

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Digital Logic Design I		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☒ Seminar
Module Code	MECT 106		
ECTS Credits	6.00		
SWL (hr/sem)	150		
Module Level	UGx1 1	Semester of Delivery	
Administering Department	Mechatronics	College	Technical Engineering college
Module Leader	Hussein Fadhil	e-mail	
Module Leader's Acad. Title	Prof. Dr.	Module Leader's Qualification	PhD
Module Tutor	Hussein Fadhil	e-mail	E-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2025	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	1. To teach various number systems, binary codes and their applications 2. To familiarize the students the importance of error detection and error correction codes. 3. To inculcate concepts of K-MAP to simplify a Boolean expression 4. To facilitate students in designing a logic gate circuit.
Module Learning Outcomes	Upon completion of the course, students should be able to: 10. Use number systems and complements 11. Identify the importance of minimization of Boolean formulas in general and digital circuits. 12. Minimize functions using any type of minimizing algorithms. 13. Student should be able to analyze Digital Circuits using Boolean Algebra, K-maps, and Binary Number systems. 14. Analyze the design procedures of logic gate circuits.
Indicative Contents	Indicative content includes the following. 1. Binary Systems – Five Lectures ○ Introduction ○ Number Systems and Conversions ○ Arithmetic with number systems ○ Signed and unsigned number systems and their arithmetic ○ Binary Codes 2. Boolean Algebra & Logic Gates – Five Lectures ○ Boolean Postulates & Theorems ○ Boolean Functions and their Complements ○ Sum of Product Terms & Product of Sum Terms ○ Standard forms & Canonical Forms ○ Digital logic gates 3. Gate level Minimization – Five Lectures ○ Karnaugh maps ○ Multi-variable (2,3,4,5) K-maps ○ Don't care conditions ○ Digital Circuits using Basic and Universal Gates



Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing and Online testing.
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Student Workload (SWL)

الحمل الدراسي للطلاب

Structured SWL (h/sem)		Structured SWL (h/w)	
Unstructured SWL (h/sem)		Unstructured SWL (h/w)	
Total SWL (h/sem)			

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (20)		
	Assignments	2	10% (10)		
	Seminar	1	10% (10)		
Summative assessment	Midterm Exam	2 hr	10% (10)		
	Final Exam	3hr	50% (50)		
Total assessment			100% (100 Marks)		



Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

Week	Material Covered
Week 1	Introduction
Week 2	Number Systems and Conversions
Week 3	Arithmetic with number systems
Week 4	Signed and unsigned number systems and their arithmetic
Week 5	Binary Codes
Week 6	Boolean Postulates & Theorems
Week 7	Boolean Functions and their Complements

Week 8	Sum of Product Terms & Product of Sum Terms
Week 9	Standard forms & Canonical Forms
Week 10	Digital logic gates
Week 11	MID EXAM
Week 12	Karnaugh maps
Week 13	Multi-variable (2,3,4,5) K-maps
Week 14	Don't care conditions
Week 15	Digital Circuits using Basic and Universal Gates

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week	Material Covered
Week 1	Instructions to Logic design Lab, devices, groups, report preparing
Week 2	Introduction to logic gates and different digital ICs
Week 3	NOT, AND, OR Gates
Week 4	NAND, NOR Gates
Week 5	XOR gate
Week 6	Exam 1
Week 7	Truth tables and simplification using Boolean algebra
Week 8	Truth tables and K-maps
Week 9	Construction of adders, subtractors, magnitude comparators using basic gates
Week 10	Construction of BCD adder and Adder/Subtractor circuit Objective
Week 11	Exam 2
Week 12	Multiplexers
Week 13	Decoders
Week 14	Preparing to Final Exam
Week 15	Final EXAM



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	➤ Recommended Text Books: Mano, M Morris; Digital Design 5th Ed, Dorling Kindesley Pearson Education, 2016, ISBN: 9789332535763	
Reference Books:	➤ Digital Systems; Principles and Applications. Tocci, Widmer & Moss. 10th Edition ➤ Jain, R.P.; Logic Design ➤ Digital Principles, 3rd Ed, Roger L Tokheim; Shaum's Outlines Series	

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.



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التاريخ : 2026 / 3 / 31

رئيس القسم : أ.د. حسين فاضل حمدان
التاريخ : 2026 / 3 / 31

اسم التدريسي : أ.د. حسين فاضل
التاريخ : 2026 / 3 / 31



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Applied mathematics		Module Delivery
Module Type	Supply		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar
Module Code	MECT 107		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGx11 1	Semester of Delivery	2
Administering Department	Mechatronics	College	Technical college
Module Leader	Ahmed Mohammed Ali	e-mail	
Module Leader's Acad. Title	Assistant prof.	Module Leader's Qualification	PhD
Module Tutor	Ahmed Mohammed Ali	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2025	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	Teaching the student the basic and applied principles of calculus and its applications to develop the students mental abilities to solve problems and make use of available information in the other scientific materials.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	To apply the knowledge of mathematics, science and engineering fundamentals.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	55	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation					
تقييم المادة الدراسية					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (15)	5, 10	LO #1, 2, 7 and 9
	Assignments	4	10% (15)	2, 8	LO # 3, 4, 5 and 6
	Projects / Lab.	0	0	0	
	Report	2	10% (10)	7,14	LO # 5, 6 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	definition of special function
Week 2	examples and application
Week 3	bessel polynomial
Week 4	examples and application
Week 5	legendre polynomial
Week 6	Hermite polynomial
Week 7	chebycheve polynomial
Week 8	lagurre polynomial
Week 9	gamma and beta functions
Week 10	mid exam
Week 11	fourier series
Week 12	examples and applications
Week 13	fourier transform
Week 14	examples and applications



Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Calculus	
Recommended Texts	Calculus	Calculus
Websites	Calculus	

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.



عميد الكلية : أ.د. هارون عبد الكاظم شهد
التاريخ : 2026 / 3 / 31

رئيس القسم : أ.د. حسين فاضل حمدان
التاريخ : 2026 / 3 / 31

اسم التدريسي: أ.م.د. أحمد محمد
علي التاريخ : 2026 / 3 / 31



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Electronic I		Module Delivery
Module Type	Core		☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MECT 108		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	UG1 1	Semester of Delivery	1
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	م.م حسين علي حسين	e-mail	
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	MSc
Module Tutor	م.م حسين علي حسين	e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	8. Course Objectives: 9. 1. This course aims to provide a good platform to Mechatronics students to understand, model and appreciate concept of electronic circuit. 10. 2. To prepare them to carry out experimental investigation and analysis at later 11. Stages of graduation.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	15. Course Outcomes: 16. 1. To apply the knowledge of mathematics, science and engineering fundamentals 17. to model the electronic circuits 18. 2. To identify and formulate electronic circuits on the fundamentals laws of electric engineering. 19. 3. To instill envisage appropriate experiments related to electronic circuits 20. 4. To investigate the effectiveness of electronic circuits for the benefit of mankind.
Indicative Contents المحتويات الإرشادية	-

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	-
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Student Workload (SWL)

الحمل الدراسي للطلاب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	59	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	66	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		



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

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	Semiconductor physics
Week 2	PN-junction
Week 3	Diodes
Week 4	Characteristics of different diodes
Week 5	Diodes applications
Week 6	Diodes applications
Week 7	Photo cell, Photo diode
Week 8	Light emitting diode
Week 9	Bipolar transistor
Week 10	Biasing of bipolar transistor
Week 11	Biasing of bipolar transistor
Week 12	Modeling and analysis of FET transistor
Week 13	Small signal model of transistor
Week 14	Small signal amplifier
Week 15	Input and output impedance
Week 16	Preparatory week before the final Exam



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	To obtain V-I characteristics of PN junction diode
Week 2	Half wave rectifier
Week 3	Half wave rectifier with filter
Week 4	Bridge rectifier with filter
Week 5	Clipping circuits
Week 6	Clamping circuits
Week 7	Zener diode characteristic
Week 8	Photo diode
Week 9	Common base Transistor
Week 10	Self-biasing
Week 11	Voltage divider biasing
Week 12	Finding H-parameter
Week 13	Finding input / output impedance
Week 14	Small signal amplifier
Week 15	FET characteristic

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Mechatronics – circuits analysis and design / by Donald A. Neamen	yes
Recommended Texts	-	-
Websites	-	-



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

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



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التاريخ : 2026 / 3 / 31

رئيس القسم : أ.د. حسين فاضل حمدان
التاريخ : 2026 / 3 / 31

Hussain Ali Hussain

اسم التدريسي: .م.م حسين علي حسين
التاريخ : 2026 / 3 / 31



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information				
معلومات المادة الدراسية				
Module Title	Workshops		Module Delivery	
Module Type	Basic		☐ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☐ Seminar	
Module Code	MECT 109			
ECTS Credits	4			
SWL (hr/sem)	100			
Module Level		UG1 1		Semester of Delivery
Administering Department		Type Dept. Code	College	Type College Code
Module Leader	م.م رقية نصر		e-mail	
Module Leader's Acad. Title	Assistant Lecturer		Module Leader's Qualification	MSc
Module Tutor	م.م رقية نصر		e-mail	E-mail
Peer Reviewer Name	Name		e-mail	E-mail
Scientific Committee Approval Date	01/06/2023		Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The student will be able of getting a hand intelligent by applying machining and industrial operations with using different kinds of hand tools and measuring tools.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	-
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	87	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	13	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		



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



Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	Foundry workshop: -
Week 2	Metal casting and its importance, purpose of using casts in industry, casting work shop equipment's, industrial safety regulation in works shop, making sand mold for one piece pattern and cores types, resources of sand and mold properties, additives materials, mixing processes and percentage of quality, using sand mixing, sand treatment and sand handling equipment's, making manual sand mold for one piece cast.
Week 3	Making sand mold for one piece cast with runner and risers, cast cleaning make core and baking it in baking furnace, make sand mold for two pieces pattern with core.
Week 4	Making sand mold with core, melting the metal, pouring the metal. take out the cast from the mold, cleaning the cast,
Week 5	Melting furnaces of metals: types, specifications, its uses (rotary, crucible) heat treatment and cat inspection, visual surface defects and its causes.
Week 6	Measuring cast dimension and insure equal to original dimension.
Week 7	Filing Workshop: -
Week 8	Vernier types, measuring methods , measuring height and depth, sketching process on sheet metal plate, tools used, scratching pointer, strip divider, bended edge divider, 90 degree square ruler,

	bended rulers,
Week 9	Files, files and filing process: filing types and its specifications, clamp vices types, processes of fixing work piece on it, the uses of different types of fillings, filing cleaning process, filling methods, exercises on scratching method and simple file.
Week 10	Saw cutting, hand saw, saw blade, fixing the saw blade, the saw blade condition available for sawing process, exercises for saw cutting process.
Week 11	Lath Workshop: -
Week 12	Lathe machine, specifications its uses, accessory lathe parts , lathe operation, lathe cutting tools types , uses of measuring instruments.
Week 13	Turning Processes: -
Week 14	Facing , simple steps, learning using measuring instruments.
Week 15	Internal and external taper turning, making exercises for both methods.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		yes
Recommended Texts	-	-
Websites		



Grading Scheme

مخطط الدرجات

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

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



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التاريخ : 2026 / 3 / 31

رئيس القسم : أ.د. حسين فاضل حمدان
التاريخ : 2026 / 3 / 31

اسم التدريسي: م.م رقية نصر
التاريخ : 2026 / 3 / 31

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Smart material technology		Module Delivery
Module Type	E		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	MECT 110		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGx1 UGII	Semester of Delivery	
Administering Department		College	
Module Leader	م.م رحاب فاضل	e-mail	
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	MSc
Module Tutor	م.م رحاب فاضل	e-mail	E-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	1/06/2025	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	1. This course aims to provide a good platform to mechatronics engineering students to understand, the formation of alloys and there classification then to deal with the manufacturing process for the alloys 2. To prepare them for the selection of the proper alloy and use it in application location.
Module Learning Outcomes	To apply the knowledge of materials engineering and the manufacturing processes due to the selection of materials for robot production
Indicative Contents	-

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing.
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Student Workload (SWL)

الحمل الدراسي للطلاب

Structured SWL (h/sem)	59	Structured SWL (h/w)	4
Unstructured SWL (h/sem)	41	Unstructured SWL (h/w)	3
Total SWL (h/sem)	100		



Module Evaluation					
تقييم المادة الدراسية					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (20)	3,5,6,10	LO #1,2,.....10
	Assignments	2	10% (10)	7, 8	LO # 8
	Seminar	1	10% (10)	11	LO # 11
Summative assessment	Midterm Exam	2 hr	10% (10)	12	LO # 1-12
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد	
Week	Material Covered
Week 1	Introduction to Materials Engineering, bonds and crystal structures of materials,
Week 2	theoretical density Crystal lattice, dislocation, point defect,
Week 3	solidification and dendrite (The microstructures of metals under microscope)
Week 4	Scanning electron microscope (microstructures of metals)
Week 5	The mechanical properties of materials (tensile, Impact, Hardness
Week 6	Phase diagrams of 2 metals (revers lever rule) Solubility of metals (Phase diagrams)
Week 7	Eutectic structures
Week 8	Iron- Carbon phase diagram ,Microstructure of steel and cast iron
Week 9	Classification of steel (steel, stainless steel)
Week 10	Heat treatment of steel (annealing, quenching, normalizing, tempering)
Week 11	Aluminum and it's alloys, copper and it's alloys
Week 12	Light alloys Mg Ti
Week 13	introduction to manufacturing processes,
Week 14	casting of metals (sand casting, centrifuge casting, die casting...etc)
Week 15	cutting of metals (lathe milling drilling ,broaching)



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Recommended Texts	➤ Materials_Science_and_Engineering_- _An_Introduction7th by William D. Callister, Jr.	yes



Grading Scheme

مخطط الدرجات

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

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



عميد الكلية : أ.د. هارون عبد الكاظم شهد
التاريخ : 2026 / 3 / 31



رئيس القسم : أ.د. حسين فاضل حمدان
التاريخ : 2026 / 3 / 31

RehabFadhil

اسم التدريسي: .م.م رحاب فاضل
التاريخ : 2026 / 3 / 31

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية



Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Material		Module Delivery
Module Type	E		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	MECT 111		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level		Semester of Delivery	
Administering Department		College	
Module Leader	م.م رحاب فاضل	e-mail	
Module Leader's Acad. Title	Assistant lecturer	Module Leader's Qualification	MSc
Module Tutor	م.م رحاب فاضل	e-mail	E-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	1/06/2025	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
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أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims	1. This course aims to provide a good platform to mechatronics engineering students to understand, the formation of alloys and there classification then to deal with the manufacturing process for the alloys 2. To prepare them for the selection of the proper alloy and use it in application location.
Module Learning Outcomes	To apply the knowledge of materials engineering and the manufacturing processes due to the selection of materials for robot production
Indicative Contents	-

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem)	59	Structured SWL (h/w)	4
Unstructured SWL (h/sem)	41	Unstructured SWL (h/w)	3
Total SWL (h/sem)	100		

Module Evaluation تقييم المادة الدراسية					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (20)	3,5,6,10	LO #1,2,.....10
	Assignments	2	10% (10)	7, 8	LO # 8
	Seminar	1	10% (10)	11	LO # 11
Summative assessment	Midterm Exam	2 hr	10% (10)	12	LO # 1-12
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		



Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري محتوى كل اسبوع يجب ان يغطي الوقت المحدد

Week	Material Covered
Week 1	Introduction to Materials Engineering, bonds and crystal structures of materials,
Week 2	theoretical density Crystal lattice, dislocation, point defect,
Week 3	solidification and dendrite (The microstructures of metals under microscope)
Week 4	Scanning electron microscope (microstructures of metals)
Week 5	The mechanical properties of materials (tensile, Impact, Hardness
Week 6	Phase diagrams of 2 metals (revers lever rule) Solubility of metals (Phase diagrams)
Week 7	Eutectic structures
Week 8	Iron- Carbon phase diagram ,Microstructure of steel and cast iron
Week 9	Classification of steel (steel, stainless steel)
Week 10	Heat treatment of steel (annealing, quenching, normalizing, tempering)
Week 11	Aluminum and it's alloys, copper and it's alloys
Week 12	Light alloys Mg Ti
Week 13	introduction to manufacturing processes,
Week 14	casting of metals (sand casting, centrifuge casting, die casting...etc)
Week 15	cutting of metals (lathe milling drilling ,broaching)



Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Week	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Recommended Texts	➤ Materials_Science_and_Engineering_- _An_Introduction 7th by William D. Callister, Jr.	yes

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



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التاريخ : 2026 / 3 / 31

رئيس القسم : أ.د. حسين فاضل حمدان
التاريخ : 2026 / 3 / 31

Rehab Fadhil

اسم التدريسي : م.م. رحاب فاضل
التاريخ : 2026 / 3 / 31

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية



Module Information			
معلومات المادة الدراسية			
Module Title	Computer Systems and Programming		Module Delivery
Module Type	Core		☐ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☒ Practical ☒ Seminar
Module Code	MECT 112		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	UGx11 UGII	Semester of Delivery	2
Administering Department	Mechatronics Dept.	College	Technical Engineering College
Module Leader	Dr. Hayder Kareem	e-mail	
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	PhD
Module Tutor	Dr. Hayder Kareem	e-mail	None
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2025	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The aim of this course is to provide students with knowledge about computer system and abilities to design system programs using modern methodologies and to implement their design using modern development tools.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. To apply the knowledge about computer system environment. 2. To enable students make programs in C++ Programming Language.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Assessment is based on hand-in assignments, written exam, Case study, Quizzes, seminars, Practical testing and Online testing.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	31	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	44	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		



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



Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	An Overview of Microcomputer Systems
Week 2	The System Unit
Week 3	Peripheral Devices
Week 4	Memory Fundamentals
Week 5	Types of Storage Devices
Week 6	Communication and Network Fundamentals
Week 7	Microprocessors Architecture
Week 8	High Level Language
Week 9	Introduction to C++ Programming Language
Week 10	Variables and Data Types
Week 11	Integers and Integer Representations
Week 12	Arrays in C++
Week 13	Compiler Basics
Week 14	Control Flow I
Week 15	Control Flow II

Week 16	Preparatory week before the final Exam
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Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
Week	Material Covered
Week 1	Lab 1: Introduction to C ++ Programming Language
Week 2	Lab 2: Condition Statements in C++
Week 3	Lab 3: Condition Statements in C++
Week 4	Lab 4: Control Flow Statements in C++
Week 5	Lab 5: Control Flow Statements in C++
Week 6	Lab 6: Arrays in C++
Week 7	Lab 7: Designing Projects



Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Recommended Texts	Starting Out with C++: From Control Structures through Objects, 8th Edition	No
Websites	https://www.shiksha.com/it-software/c-c-plus-plus-syllabus-chp	

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
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	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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التاريخ : 2026 / 3 / 31

رئيس القسم : أ.د. حسين فاضل حمدان
التاريخ : 2026 / 3 / 31

اسم التدريسي: م.د. حيدر كريم
التاريخ : 2026 / 3 / 31

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	Arabic		Module Delivery	
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
Module Code	MECT 202			
ECTS Credits	2			
SWL (hr/sem)	50			
Module Level	MECT 113	Semester of Delivery		1
Administering Department	Type Dept. Code	College	Type College Code	
Module Leader	أ.د. صباح عطوي		e-mail	E-mail
Module Leader's Acad. Title			Module Leader's Qualification	Doctor
Module Tutor	أ.د. صباح عطوي		e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail	
Scientific Committee Approval Date	01/06/2025	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	Teaching the student on the simple basics of Arabic languages
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	31	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	19	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

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

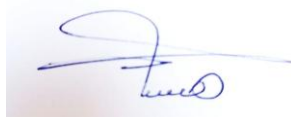
Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	مقدمة عن الأخطاء اللغوية التاء المربوطة والطويلة والتاء المفتوحة
Week 2	قواعد كتابة الالف الممدودة والمقصورة الحروف الشمسية والقمرية
Week 3	الضاد والطاء
Week 4	كتابة الهمزة
Week 5	علامات الترقيم
Week 6	الاسم والفعل والتفريق بينهم
Week 7	المفاعيل
Week 8	العدد
Week 9	تطبيقات الأخطاء اللغوية الشائعة
Week 10	النون والتتوين .. معاني حروف الجر
Week 11	الجوانب الشكلية للخطاب الإداري
Week 12	لغة الخطاب الإداري
Week 13	نماذج من المراسلات الإدارية
Week 14	مقدمة عن الأخطاء اللغوية التاء المربوطة والطويلة والتاء المفتوحة
Week 15	قواعد كتابة الالف الممدودة والمقصورة الحروف الشمسية والقمرية
Week 16	Preparatory week before the final Exam

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	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
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Sabah Attawi

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التاريخ : 2026 / 3 / 31

رئيس القسم : أ.د. حسين فاضل حمدان
التاريخ : 2026 / 3 / 31

اسم التدريسي : ا.د صباح عطوي
التاريخ : 2026 / 3 / 31



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	English I		Module Delivery
Module Type	B		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☒ Seminar
Module Code	MECT 114		
ECTS Credits	2		
SWL (hr/sem)	25		
Module Level	UGx11 1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	قمر ضياء	e-mail	E-mail
Module Leader's Acad. Title		Module Leader's Qualification	Master
Module Tutor	قمر ضياء	e-mail	E-mail

Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2025	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	To make student write reports with excellent grammer
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	31	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	19	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				
As	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome

Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
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Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	Unit one :hello, Am/are/is, my/your, This is with practice in work
Week 2	Unit two :your world, He/she/they, his/her, Questions
Week 3	Unit three: all about
Week 4	Unit four :family and friends, Possessive adjectives, Possessive's, Has/have, Adjective+ noun
Week 5	Unit Five :the way I live, Present simple I/you/we/they, A and an
Week 6	Adjective + noun
Week 7	Unit six : every day, Present simple he/she, Questions and negatives
Week 8	Adverbs of frequency
Week 9	Unit seven :my favorites, Question words, Pronouns, This and that
Week 10	Unit eight :where I live, There is /are..., Prepositions
Week 11	Unit nine :times past, Was /were born, Past simple -irregular verbs
Week 12	Unit ten: we had a great time!, Past simple -regular & irregular, Question, Negatives, Ago
Week 13	Unit eleven: I can do that!, Can /can't, Adverbs, Requests
Week 14	Unit twelve: please and thank you, I'd like.., Some and any, Like and would like
Week 15	Unit thirteen: here and now, Present continuous, Present simple & present continuous
Week 16	Preparatory week before the final Exam



Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	New headway plus beginner	yes

Recommended Texts	-	-
Websites	-	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
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التاريخ : 2026 / 3 / 31