MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Engineering Drawing (CAD Draw)			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**ATU24025**				
ECTS Credits	**6**				
SWL (hr/sem)	150				
Module Level		UGI	**Semester of Delivery**		2
Administering Department		PME	**College**	TCM	
Module Leader	Waleed Abdul Hamza Asker		**e-mail**	Waleedali824 @gmail.com	
Module Leader's Acad. Title		Professor	**Module Leader's Qualification**		Ph.D.
Module Tutor	Shaymaa abd alrasool		**e-mail**	Shayma.rasol1977@gmail.com	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		10/06/2023	**Version Number**		1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	ATU24016	**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- Enabling students to obtain knowledge and understanding in the subject of engineering drawing and using the computer through the AutoCAD program 2- Understanding and teaching students the basics of computer engineering drawing 3- Knowing the correct methods of engineering drawing using the computer and how to apply them in the AutoCAD 2007 program in engineering fields. 4- Increasing the student's experience in identifying drawing and designing engineering shapes and mechanical parts.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Cognitive goals 1- Giving the student sufficient knowledge in the AutoCAD program to employ it in design by developing the students' practical, theoretical and creative abilities in computer design techniques of various types. 2- Developing perception skills and knowing the technique of implementing design using the computer to enrich the students' experience through the use of the various techniques of the AutoCAD program to complete the required design plans. 3- That the student be able to make any design scheme on the program through which he can fully clarify the idea. 4- Providing the student with the skill of computer design easily and easily through the use of samples from the student's reality and applying them directly. 5- It is possible to use some exercises or projects to be completed in other subjects, such as designing mechanical parts. 6- Developing the student's imagination skill to feel the difference between the AutoCAD program environment and the realistic building space and different spaces
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. A computer equipped with AutoCAD 2007, a data show data display device, the use of information and its practical applications

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	87	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	63	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	4	20% (10)	Continuous	All
	Report	0	0% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	3hr	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

	Material Covered
Week 1-2	The use of CAD in engineering drawing description of menu Bar and toolbars
Week 3-6	drawing orders
Week 7-10	drawing Ellipse, Rectangle, line, Ray, Circle, point , Arc, Polygon , Rectangle , Donut ---------- etc.
Week 11	Editing commands: copy, cut, paste, erase, move,
Week 12	selecting objects
Week 13	Add texts

Week 14	Technical terms
Week 15	orthogonal projection, ISO drawing.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	• AutoCAD Beginning and Intermediate	Yes
Recommended Texts	• AutoCAD from zero to hero	yes
Websites	• Any other materials available on the web	

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	**Electricity Fundamentals**			**Module Delivery**	
Module Type	**S**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**ATU24026**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		UGI	**Semester of Delivery**		2
Administering Department		PEM	**College**	TCM	
Module Leader	Ammer auid Abdullah		**e-mail**	Ammar.o.abdallh@atu.edu.iq	
Module Leader's Acad. Title		Asst.lecturer	**Module Leader's Qualification**		MSC
Module Tutor	Ammer auid Abdullah		**e-mail**	Ammar.o.abdallh@atu.edu.iq	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Teaching the student, 1. The principles of electrical technology 2. To develop problem solving skills and understanding of circuit theory through the application of techniques. 3. To understand Ohms law, series connection, parallel connections, compound connection 4. To understand voltage, current and power from a given circuit. 5. This is the basic subject for all electrical and electronic circuits. 6. To understand Kirchhoff's current and voltage Laws problems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Recognize how electricity works in electrical circuits. 2. List the various terms associated with electrical circuits. 3. Summarize what is meant by a basic electric circuit. 4. Discuss the reaction and involvement of atoms in electric circuits. 5. Describe electrical power, charge, and current. 6. Define Ohm's law. 7. Identify the basic circuit elements and their applications. 8. Discuss the operations of sinusoid and phasors in an electric circuit. 9. Discuss the various properties of resistors, capacitors, and inductors. 10. Explain the two Kirchoff's laws used in circuit analysis. 11. Identify the capacitor and inductor phasor relationship with respect to voltage and current.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Circuit Theory

	Current and voltage definitions, Passive sign convention and circuit elements, Combining resistive elements in series and parallel. Kirchhoff's laws and Ohm's law. Anatomy of a circuit, Network reduction, Introduction to mesh and nodal analysis. -Thevenins theorem, maximum power, Norton theorem ,Nodal method ,Maxwells loop current method, superposition Part B - Fundamentals Parallel A.C circuit, R,L,C Parallel A.C circuit Addmittance, power factor, phasor diagram -phase circuit, star and delta connection , Active, reactive, apparent power in A.C circuit ,Transfarmer /1 ,Transfarmer/2, Voltage rectification, half wave rectifier

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem)	57	**Unstructured SWL (h/w)**	4

الحمل الدراسي غير المنتظم للطالب خلال الفصل		الحمل الدراسي غير المنتظم للطالب أسبوعيا	
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 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Resistance, conductance, effect of temp. on the resistance value

Week 2	Ohms law, series connection, parallel connections, compound connection
Week 3	Kirchhoffs current law, kirchhoffs voltage law-Star-delta conversion, voltage and current source conversion
Week 4	Thevenins theorem, maximum power
Week 5	Norton theorem - Nodal method
Week 6	Maxwells loop current method, superposition
Week 7	Electromagnetic-Alternating voltage and current
Week 8	Frequency, period, instantaneous value of voltage and current
Week 9	Series A.C circuit, R,L,C
Week 10	Impedance, phase angle, resonance, phasor diagram 22 Parallel A.C circuit, R,L,C
Week 11	Addmittance, power factor, phasor diagram
Week 12	3-phase circuit, star and delta connection
Week 13	Active, reactive, apparent power in A.C circuit
Week 14	Transfarmer/1 , Transfarmer/2
Week 15	Voltage rectification, half wave rectifier-Voltage rectification, full-wave rectifier
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Using measurement devices
Week 2	Lab 2: Ohms law
Week 3	Lab 3: Kirchhoffs current law- kirchhoffs voltage law

Week 4	Lab 4: Thevenins theorem
Week 5	Lab 5 Series A.C circuit
Week 6	Lab 6: Parallel A.C circuit
Week 7	Lab 7: half wave rectifier- full-wave rectifier

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	DC Electrical Circuit Analysis: A Practical Approach Copyright Year: 2020, dissidents.	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	Human Right & Democracy			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐**Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**ATU24021**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level		UGI	**Semester of Delivery**		2
Administering Department		PME	**College**		TCM
Module Leader	Raida Hussein Hamid		**e-mail**	com.rad@atu.edu.iq	
Module Leader's Acad. Title		Assit.prof	**Module Leader's Qualification**		M.sc
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name		Name	**e-mail**	Nona	
Scientific Committee Approval Date		01/06/2023	**Version Number**		1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	١. **الدفاع عن كرامة الإنسان.** ٢. **المساهمة في تغيير حياة الإنسان إلى الأفضل بشأن: التغيير في القيم والمشاعر – والتغيير في السلوك.** ٣. **ترجمة المعارف والخبرات والقيم وأنماط السلوك إلى عمل دائم ونشاط مستمر من أجل الدفاع عنها في الواقع المعاش وتعزيز الجهود الكفيلة بمعالجة قضايا حقوق الإنسان.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	١. **تعزيز الربط بين الفرد والجماعة والدولة ومؤسساتها.** ٢. **تعزيز مشاعر التضامن مع الآخرين.** ٣. **تنمية مهارات رصد الانتهاكات والتعامل مع المنتهكين.** ٤. **دعم مهارات فهم قضايا حقوق الإنسان.** ٥. **تعزيز سبل التعليم التفاعلي.** ٦. **تعزيز سبل المشاركة في الشأن العام – المواطنة.** ٧. **تعرف المبادئ الرئيسة لأبرز حقوق الإنسان ومصادرها وأنواعها والآليات المستخدمة لحمايتها.** 8. **تعرف القيم والاتجاهات وأنماط السلوك التي تُعلي من شأن حقوق الإنسان**

	وتعمل على التمسك بها
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. None

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	18	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	32	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem)	**50**		

الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	20% (10)	3,5,10 and 12	LO #1, #2 and #10, #11
	Assignments	0	0% (10)	5,7, 9and 13	LO #3, #4 and #6, #7
	Projects / Lab.	0	10% (10)	-----	----
	Report	2	20% (10)	4 and 13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

الاسبوع	الموضوع **Week**

1	التعرف على الحرية والديمقراطية في المجتمعات المتعددة وعلى مر العصور وأنواعها وكيف تحولت -لحرية والديمقراطية الحرية ليست فكرة مطلقة بل هي نسبية متغيرة من حيث الزمان والمكان -أنظمة بعض الدول من آخرنلنسبية في معنى الحرية والسلطة والمذهب السياسي
2	ضمانات الحريات العامة- للحرية ضمانات قانونية وسياسية تقسيم الحريات العامة- تتضمن الحريات الطبيعية والخاصة والحريات الفكرية والجماعية والحريات الاقتصادية
3	الحريات الفردية -تتضمن حرية الرأي والتعبير والصحافة والنشر والاجتماع والتظاهر السلمي وحرية الفكر والضمير والعقيدة والالتزام بالأحوال الشخصية والتنقل والسكن وحرية الاتصالات وسريتها
4	الديمقراطية والأنظمة السياسية - نبذة عن الديمقراطية وتاريخها- ا نواع الديمقراطية - الديمقراطية المباشرة والغير المباشرة
5	مفاهيم عن الديمقراطية -تشمل المعنى التقليدي (الواسع)والمعنى الحديث(المعاصر)
6	الديمقراطية في الحضارة الإغريقية ومقارنتها بالديمقراطية الحديثة - أزمة المعاصرة للديمقراطية -حيث واجهت الديمقراطية صعوبات اقتصادية واجتماعية وثقافية وسياسية
7	امتحان الفصلي
8	حقوق الإنسان في التاريخ والتراث الإنساني -يتناول حقوق الإنسان خلال فترة العصور القديمة كحضارة وادي الرافدين والنيل والحضارة اليونانية والرومانية
9	حقوق في الأديان السماوية -حقوق الإنسان في الديانة المسيحية وفي القران الكريم والسنة النبوية الشريفة
10	مفهوم حقوق الإنسان وخصائصها وفئاتها- الاعتراف الدولي بحقوق الانسان- الاعتراف الإقليمي بحقوق الانسان -المصادر القانونية الدولية لحقوق الإنسان من خلال المواثيق العالمية والإقليمية
11	المنظمات غير الحكومية ودورها في الدفاع عن الإنسان- حقوق المرآة - حقوق المرآة في العصر الإسلامي
12	حقوق الطفل- اهم حقو الأطفال لدى الحضارات القديمة والشرائع السماوية وكذلك حقوقهة في الاتفاقية الدولية لعام ١٩٨٩
13	الانتخابات وحقوق الإنسان -سانحقوق مبدأ منالإن مبادئ الانتخابات الحرة النزيهة
14	مصادر حقوق الإنسان في العراق -القواعد التي تتضمن حقوق الإنسان في العراق من خلال دستور جمهورية العراق لعام ٢٠٠٥

15	الحقوق المدنية -تتضمن حق المساواة والحياة والحرية الشخصية وحرمة المساكن والخصوصية الشخصية والحق بجنسية- الحقوق السياسية والاقتصادية -تتضمن حق الانتخاب وحق انتقاد الحكومة وحق اللجوء السياسي أيضاوتتضمن حق العمل وحق الملكية وقانونية فرض الضرائب والرسوم. الحقوق الاجتماعية والثقافية
16	الامتحان النهائي

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	حقوق الانسان والديمقراطية تاليف الاستاذ المساعد الدكتور عبدالله لفتة البديري-كتاب حقوق الانسان في الاسلام النظرية العامة – تاليف جمال الدين عطية	Yes
Recommended Texts	كتاب حقوق الانسان والحريات العامة تاليف الدكتور رامز محمد عمار	No
Websites	None	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Mathematics -II			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lecture** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**ATU24022**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		1	**Semester of Delivery**		2
Administering Department		PME	**College**		TCM
Module Leader	Fadhil Abid Elaiwi		**e-mail**		fadhil.alrubaiy@atu.edu.iq
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D.
Module Tutor	Name (if available)		**e-mail**		E-mail
Peer Reviewer Name		Name	**e-mail**		E-mail
Scientific Committee Approval Date		01/06/2023	**Version Number**		1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	ATU24O13	**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 mathematics, engineering, and the natural sciences through the application of algebra and trigonometry concepts. 2. To understand functions, their plots and properties and plots. 3. This course deals with the basic concept of derivation of functions. 4. This is the basic subject for all method of integration methods. 5. To understand special types of trigonometry functions such as hyperbolic functions with their related Laws.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	9. Recognize different types of functions and their behavior in science topics. 10. List the various lows associated with limits of function. 11. Summarize what is meant by a basic electric circuit. 12. Discuss the domain and range of many types of functions. 13. Describe logarithmic, exponential, and trigonometric functions. 14. Identify the basic definition of derivatives and their applications. 15. Discuss the various methods of integration process to traditional and special types of functions.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A – functions:</u> **-Functions,** with their types, properties, graphing, and available application in different fields.

	- Revision problem for homework and assessment tests. Part B – Limits And Continuity Continuity clarifying the continuity and limits definitions by confining the term "endpoints" to intervals instead of more general domains, and we moved the subsection on continuous extension of a function to the end of the continuity section. - Revision problem for homework and assessment tests. Part C – Derivatives Derivatives clarified the meaning of differentiability for functions of several variables, and added a result on the Chain Rule for functions defined along a path. Brief geometric insight justifying l'Hôpital's Rule. Some examples for derivative applications. - Revision problem for homework and assessment tests. Part D – Integrals Integrals view basic integration formulas and the Substitution Rule, using them in combination with algebraic and trigonometric identities, before presenting other techniques of integration - Revision problem for homework and assessment tests.

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

	interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2.4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	20% (10)	3,5,10 and 12	LO #1, #2 and #10, #11
	Assignments	4	20% (10)	5,7, 9and 13	LO #3, #4 and #6, #7
	Projects / Lab.	0	0% (10)	-----	----
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All

Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Integrals of hyperbolic functions& its derivative
Week 2	L'Hopitals's rules
Week 3	Integration methods; Integration by parts
Week 4	Integration by partial fraction
Week 5	Integration by trigonometric substitution
Week 6	Integration of ax+ bx + c 2
Week 7	Application of Integration
Week 8	Area under the curve& between two curves
Week 9	Surface area generated
Week 10	Length of the curve
Week 11	Volume generated by rotation of curve
Week 12	Simple differential equations
Week 13	Simpson rule for area

Week 14	Trapezoidal rule for area
Week 15	Integrals of hyperbolic functions& its derivative
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Thomas' Calculus Thirteenth Edition, George B. Thomas, Jr. Cenveo® Publisher Services.2013	Yes
Recommended Texts	Higher Engineering Mathematics, Fifth Edition John Bird, BSc(Hons), by Published by Elsevier Ltd.2006	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	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
(0 – 49)	**F –** Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Engineering Materials**			**Module Delivery**	
Module Type	**Suport**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**ATU24023**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	PME		**College**	TCM	
Module Leader	Awham Jumah Salman		**e-mail**	awhamj@aty.edu.iq	
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	

Scientific Committee Approval Date	01/06/2023	**Version Number**	1.0

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. This course deals with the basic concept of engineering materials. 2. To understand the type of material 3. To know the properties, advantage, disadvantage of each type of materials 4. To know the application of each type of materials.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Recognize the types and properties of engineering materials 2- Summarize what is meant crystalline structures and imperfections in crystals. 3- Discuss the types of thermal equilibrium diagrams 4- Describe thenano materials 5- Recognize the Non-destructive testing and Macro- and Micro-examination 6- Summarize what is meant materials selection
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A – concept of engineering materials</u>

	Type, bond type on structure, crystalline structures, imperfections in crystals, dislocations and plasticity in metals slip, dislocations and plastic deformation, Defects. Part B- Thermal equilibrium diagrams Type of thermal diagrams, lever rule, Applications on binary phase diagrams, Phase Diagrams and Alloy Formation, Phase Transformations and Diffusion Part C- detailed explanation of type of materials Metals, ceramics, polymers , composite materials, nano materials Part D- testing and selection materials Non-destructive Testing, Macro- and Micro-examination, materials selection,

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

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	**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	20% (20)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	-Introduction; The range of materials; Properties of engineering materials; Cost and availability;Possibilities for the future -Atomic Structure and Bonding
Week 2	-Influence of Bond Type on Structure and Properties -Inter atomic Bonding, metallic, ionic, and covalent, van der Waals bonds
Week 3	-Crystalline Structures -Crystallographic Directions and Plans, -Coordination number and Atomic Packing Factor (APF)
Week 4	-Imperfections in crystals -Dislocations and Plasticity in Metals Slip, Dislocations and Plastic Deformation
Week 5	-Elastic Behaviour -Viscoelastic Behaviour
Week 6	-Thermal equilibrium diagrams -Lever rule
Week 7	-Applications on binary phase diagrams
Week 8	Metals
Week 9	Polymer -Thermoplastics -Thermosetting -Elastomers
Week 10	Ceramics and Glasses
Week 11	Composite materials

Week 12	-Electrical and Magnetic Properties -Optical, Thermal and Other Properties
Week 13	-Non-destructive Testing -Macro- and Micro-examination
Week 14	-Materials Selection
Week 15	-Nano materials
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	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	Materials Science and Engineering An Introduction William D. Callister, Jr. David G. Rethwisch, eight edition , 2007	No
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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Fundamentals of Engineering Mechanics-Dynamics**	**Module Delivery**	
Module Type	**Core learning activity**	☒ **Theory** ☐ **Lecture** ☐ **lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	ATU24024		
ECTS Credits	**6**		
SWL (hr/sem)	**150**		

Module Level	1	**Semester of Delivery**	2
Administering Department	PME	**College**	TCM
Module Leader	Doaa Fadhil Kareem	**e-mail**	doaa.fadhil.tcm@atu.edu.iq
Module Leader's Acad. Title	Assistant Lecher	**Module Leader's Qualification**	Msc
Module Tutor		**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	ATU24015	**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. Teaching the student, the fundamentals of engineering mechanics (Static's & Dynamics) in the engineering applications, the loads analysis, resultants. 2. Equilibrium in 2-D and 3-D, moments and couples. 3. First and second moment of inertia, motion of particles, and their theories.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Teaching the student, the fundamentals of engineering mechanics (Static's & 2. Dynamics) in the engineering applications, the loads analysis, resultants, 3. equilibrium in 2-D and 3-D, moments and couples. 4. first and second moment of inertia, motion of particles, and their theories. 5. Equipment and machinery design. 6. Inspection, installation, operation, maintenance and repair of all kinds of devices, turbocharged machines and equipment.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Introduction , Particles Motion, Absolute Motion, Force, Mass and Acceleration. Part B - Relative Motion: Translating and Angular, Rigid Bodies Motion, Work and Energy, Impulse and Momentum, Plaines of Bodies Motion

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining

	and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	102	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20% (20)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	-	-	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10

Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction
Week 2	Particles Motion
Week 3	Absolute Motion
Week 4	**Absolute Motion**
Week 5	**Force, Mass and Acceleration**
Week 6	**Force, Mass and Acceleration**
Week 7	Relative Motion: Translating and Angular
Week 8	**Relative Motion: Translating and Angular**
Week 9	Rigid Bodies Motion
Week 10	Work and Energy
Week 11	Work and Energy
Week 12	Impulse and Momentum
Week 13	Impulse and Momentum
Week 14	Plaines of Bodies Motion

Week 15	Plaines of Bodies Motion
Week 16	

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	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	**J. L. Meriam** **L. G. Kraige**	Yes
Recommended Texts	John Wiley & Sons, Inc	yes
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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