	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa Engineering Department Refrigeration and Air Conditioning Techniques Engineering	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Workshops			**Module Delivery**	
Module Type	C			☐ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	MPAC102				
ECTS Credits	8				
SWL (hr/sem)	٢٠٠				
Module Level	1		**Semester of Delivery**	1	
Administering Department	**BSc-MPAC**		**College**	**Engineering**	
Module Leader	Mohammed hassan		**e-mail**	mohammed.hassan@mtu.edu.iq	
Module Leader's Acad. Title	Prof. Dr.		**Module Leader's Qualification**	PHD	
Module Tutor	Name (if available)		**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	31/08/2025		**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 main object of this unit is to identify the students on the gain of the manual skills by preceding the operations and manufacturing processes, and doing the maintenance by using different manual tools and measuring instruments		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the engineering mechanics module, students should be able to: preceding the operations and manufacturing processes, and doing the maintenance by using different manual tools and measuring instruments		
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1. Foundry workshop: 2. Casting of metals and their importance - Purpose of using castings in industry - Contents of the foundry unit - Industrial safety reserves in the foundry - Forming a sand mold for a one-piece model - Sands of molds and hearts: types, sources and properties - Additives, mixing processes and adjusting ingredients - Use of sand mixer - Handling of improvised sand - Sand handling devices - forming sand molds by manual method for a one-piece model - forming a sand mold. 3. Sand mold for a one-piece model with defining the estuaries and elevators - Metal smelting and pouring into the mold - Extracting and cleaning the castings - Forming a mold using the pulp box and drying it in the drying oven - Forming a sand mold for a simple two-piece model with a dog. 4. Forming a sandy mold like the previous one with melting the metal and pouring it into a mold and taking out the casting and cleaning it - Metal melting furnaces: types, qualities, uses (rotary kiln, stirrers and stationary) - Reviewing and examining the castings - Determining the apparent defects and their causes - Reviewing the dimensions of the castings and ensuring that they conform to the required dimensions. 5. Furnaces: types, methods of measurement, how a Vernier works to read altimeters with depths - the process of marking (shenk) - base surfaces - the number used - backing materials - marking thorns - just vertebrae - mens of guilt and guilt notation - right angle - pointing flowers - scale heights and depths 6. Files and the cold process: types and specifications of files - mechanized and their types - methods of attaching artifacts to them - uses of files - the method of cleaning the initiator - the cold process - an exercise on the process of marking and simple filings. 7. Saw cutting: hand saw, saw weapon, saw weapon installation, conditions to be met in the sawing process - an exercise on the sawing process. 8. Lathe: specifications, use, accessories and installation methods - forming the lathe - types of lathe pens and the use of measuring tools.		

	9. Turning operations: flat turning, straightening, simple graded work with the use of measuring tools. 10. Lathe the internal and external loot in different ways with an explanation of the laws of each method - doing an exercise for the external loot and another for the internal loot. 11. Welding workshop: 12. Occupational safety and security needs - gas welding - equipment used and how to install and control it - other auxiliary tools - used gases and their specifications - welding safety, types and measurements - other auxiliary materials - welding equipment - types of flames, method of ignition and control of the required flame - works - rinsing and cleaning the basins to be welded. 13. Practical exercises for welding opposite surfaces, perpendicular surfaces, inclined surfaces and circuit welding, longitudinal and transverse cutting - cutting: circle, irregular shapes - electric arc welding - equipment used. 14. Welding equipment - Practical training on the use of electric arc welding of different surfaces - Point and tape welding - Equipment used in each type - Types of electrodes and their installation method - Practical training on the use of each type. 15. Welding using argon gas - doing welding exercises using argon gas. 16. Gas cutting operations - equipment used - precautions to be provided. 17. Assembly exercises using various different cutting and welding equipment.

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, and hand-in assignments while at the same time refining and expanding their critical thinking skills through the written exam, Case studies, Quizzes, seminars, Practical testing, and Online testing. and this will be achieved through classes and interactive tutorials.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	١١٦	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	٨
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	١٢٤	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	٨
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	٢٤٠		

Module Evaluation
تقييم المادة الدراسية

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome

Formative assessment	**Quizzes**	٦	٤٠% (40)	3,6,9,12	LO #1,2,…..10
	Report/Lab	14	60% (60)	All	LO # 8
	Seminar				
Summative assessment	**Midterm Exam**				
	Final Exam				
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي العملي

	Material Covered
Week 1	Casting of metals and their importance - Purpose of using castings in industry - Contents of the foundry unit - Industrial safety reserves in the foundry - Forming a sand mold for a one-piece model - Sands of molds and hearts: types, sources and properties - Additives, mixing processes and adjusting ingredients - Use of sand mixer - Handling of improvised sand - Sand handling devices - forming sand molds by manual method for a one-piece model - forming a sand mold.
Week 2	Sand mold for a one-piece model with defining the estuaries and elevators - Metal smelting and pouring into the mold - Extracting and cleaning the castings - Forming a mold using the pulp box and drying it in the drying oven - Forming a sand mold for a simple two-piece model with a dog.
Week 3	Forming a sandy mold like the previous one with melting the metal and pouring it into a mold and taking out the casting and cleaning it - Metal melting furnaces: types, qualities, uses (rotary kiln, stirrers and stationary) - Reviewing and examining the castings - Determining the apparent defects and their causes - Reviewing the dimensions of the castings and ensuring that they conform to the required dimensions.
Week 4	Files and the cold process: types and specifications of files - mechanized and their types - methods of attaching artifacts to them - uses of files - the method of cleaning the initiator - the cold process - an exercise on the process of marking and simple filings.
Week 5	Saw cutting: hand saw, saw weapon, saw weapon installation, conditions to be met in the sawing process - an exercise on the sawing process.
Week 6	Lathe: specifications, use, accessories and installation methods - forming the lathe - types of lathe pens and the use of measuring tools.
Week 7	Turning operations: flat turning, straightening, simple graded work with the use of measuring tools.
Week 8	Lathe the internal and external loot in different ways with an explanation of the laws of each method - doing an exercise for the external loot and another for the internal loot.
Week 9	Occupational safety and security needs - gas welding - equipment used and how to install and control it - other auxiliary tools - used gases and their specifications - welding safety, types and measurements - other auxiliary materials - welding equipment - types of flames, method of ignition and control of the required flame - works - rinsing and cleaning the basins to be welded.
Week 10	Practical exercises for welding opposite surfaces, perpendicular surfaces, inclined surfaces and circuit welding, longitudinal and transverse cutting - cutting: circle, irregular shapes - electric arc welding - equipment used.

Week 11	Welding equipment - Practical training on the use of electric arc welding of different surfaces - Point and tape welding - Equipment used in each type - Types of electrodes and their installation method - Practical training on the use of each type.
Week 12	Welding using argon gas - doing welding exercises using argon gas.
Week 13	Gas cutting operations - equipment used - precautions to be provided.
Week 14	Assembly exercises using various different cutting and welding equipment.

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

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.

رئيس القسم

ا.م.د محمد حسن عبود

التاريخ: ٣١-٠٨-٢٠٢٥

استاذ المادة

التاريخ : ٣١-٠٨-٢٠٢٥