

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Manufacturing Processes		Module Delivery
Module Type	S		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☒ Seminar
Module Code	ATU12035		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	ATU12	College	PMTE
Module Leader		e-mail	
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Mr.
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	NO	Semester	
Co-requisites module	NO	Semester	

Module Aims, Learning Outcomes and Indicative Contents اهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Objectives أهداف المادة الدراسية	1. the course aims to introduce students to various advanced manufacturing and production processes. 2. students acquire the skills required to work on production machines, metal welding and various plumbing operations. 3. Introducing students to different traditional machines and comparing them with programmed ones and how to prepare different operating programs. 4. ability to communicate with scientific and engineering developments.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	What is the knowledge and skills expected to be attained by the student upon completion of the course (should be measurable)? The student will be able to: 1. To provide a good understanding of the manufacturing processes for different materials. 2. to teach the theory of yield criteria 3. calculate yield stress and force in bulk deformation processes types. 4. learn basics of computer numerical controlled machining and part programming (G codes). 5. To learn Fundamentals includes Casting and form casting processes, mold castings, powder metallurgy.
Indicative Contents المحتويات الارشادية	Indicative content includes the following. 1. Mechanical Properties of Materials - True Stress and Strain Curves - Engineering Stress and Strain - Volume Constancy - Type of Stress – Strain Curves - Effects of Temperature - Effects of Strain Rate - Residual Stresses - Effects of Residual Stresses - Triaxial Stresses and Yield Criteria - Yield Criteria - Effective Stress and Strain - Determining The Flow Stress - Work of Deformation 2. overview of metal forming - friction effects - bulk deformation processes- extrusion - extrusion dies and press - wire and bar drawing – rolling - forging. 3. classification of sheet metalworking processes - shearing – bending – deep drawing - sheet-metal operations not performed on presses - HERF - explosive forming. 4. Expendable - pattern casting- sand casting - shell molding- investment casting (lost wax casting) - permanent mold casting processes - die casting - centrifugal casting - semi-centrifugal casting - casting nomenclature - heating and pouring- fluidity - directional solidification 5. overview of machining- types of cutting- cutting conditions- cutting force components- chip formation- chip control- turning- operations in turning- cutting tools:- tool wear and tool life- surface finish- roughness control- milling- drilling- 6. 7.

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. Each student must present seminar about one of the subjects of manufacturing processes.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Basic theory of metalworking
Week 2	Bulk deformation processes
Week 3	Bulk deformation processes
Week 4	Bulk deformation processes
Week 5	Sheet Metal Forming
Week 6	Sheet Metal Forming
Week 7	Modern Casting Processes
Week 8	Modern Casting Processes
Week 9	Powder metallurgy
Week 10	Powder metallurgy
Week 11	Metal Removal Processes
Week 12	Metal Removal Processes
Week 13	Cutting Tool Development
Week 14	Joining Processes
Week 15	Joining Processes
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1 & 2	Lab 1: fundamentals of casting processes
Week 3 & 4	Lab 2: CNC Machines
Week 5 & 6	Lab 3: write program in CAD/CAM
Week 7 & 8	Lab 4: G-code
Week 9 & 10	Lab 5: M-code
Week 11 & 12	Lab 6: write program by G-code & M-code

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Manufacturing Processes for Engineering Material Serope Kalpakjian, Steven Shind, Fifth Edition	Yes
Recommended Texts	Fundamentals of Modern Manufacturing Materials, Processes, and Systems, Mikell P. Groover, 4th Edition	No
Websites	https://www.youtube.com/channel/UCpK8-cACsOUNkTIUVtEq8iw	

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.				