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	**4**				
SWL (hr/sem)	**100**				
Module Level	2		**Semester of Delivery**	3	
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 الاخرى			
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 timerefining 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.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـــ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**200**		

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 Shimd, 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.