

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

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Fluid Mechanics		Module Delivery
Module Type	C		☐ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	MPAC202		
ECTS Credits	6		
SWL (hr/sem)	116		
Module Level	2	Semester of Delivery	
Administering Department	BSc-MPAC	College	Engineering
Module Leader	Mohammad Wahab	e-mail	dr.mohammad.wahab@uokerbala.edu.iq
Module Leader's Acad. Title	Prof.Dr	Module Leader's Qualification	PhD
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	31 / 08/2025	Version Number	

Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module		Semester	2
Co-requisites module		Semester	1

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. This module fluid mechanics is intended to develop a deeper understanding of the relationship between design and analysis processing as this module discusses various fluid systems.. 2. The student will be able to analyze simplified fluid problems with the aim of reduction of energy losses and manpower. The student will be able to identify/control the appropriate process parameters, and possible defects of processes malfunctions so as to remove them. 3. For each fluid process, the aspects covered include: aesthetics, principles, choices of materials, choice of processes, properties of materials, advantages and disadvantages, process economics. Examples are drawn from practical processes mainly used in aerospace, automotive and air-conditioning industries. 4. To introduce the theory and practice of fluid machines parts and assemblies using a wide range of technologies. 5. To allow processes to be chosen appropriately for any given application with any given fluid material. 6. To develop group working, research and writing skills. 7. To provide knowledge on the influence of thermal and mechanical parameters on system structure.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Examine fluid processes to describe the system properties of fluid devices. 2. Calculate and measure the fluid behavior in thermal processes. 3. Define the characteristics of various fluid operations. 4. Choose appropriate processes for different parts. 5. Design parts such that they are suitable for energy utilization using appropriate techniques. 6. Graduates from this module will be skilled in the methods of scientific investigation. 7. They will be able to think as a fluid engineer, critically evaluating scientific information and solving scientific problems. 8. will be able to effectively communicate scientific information.
Indicative Contents المحتويات الإرشادية	1) Introduction to Fluid Mechanics. 1. Fluid Properties. 2. density. 3. viscosity. 4. pressure. 5. Shear stress. 2) Fluid Statics.

	a) Pressure Distribution. b) Forces. c) Buoyancy. d) Manometers. 3) Fluid Dynamics a) Momentum b) Control Volume c) Energy d) Continuity 4) Fluid machines and hydraulics	
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Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	1. Quizzes and tests throughout the semester to check understanding and knowledge 2. Examinations, both written and practical, that assess learners' understanding of concepts, principles, and theories related to Fluid Processes 3. Observation of learners' practical skills in laboratory and workshop based or simulated settings. 4. Peer evaluation and feedback tools used as part of group projects or reciprocal feedback assignments. 5. Assignments and essays used to assess learners' comprehension of theoretical concepts. 6. Presentation and demonstration of acquired knowledge in real-world scenarios.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	116	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	34	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	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	10%	5, 10	
	Assignments	1	5%	9	
	Projects / Lab.	1	10%	continuous	
	Report	1	5%	12	
Summative assessment	Midterm Exam	2hr	10%	7	
	Final Exam	3hr	60%	15	All
Total assessment			100%		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Fluid Properties
Week 2	Deriving Pressure equation in fluids
Week 3	Manometry and pressure measurements.
Week 4	fluid forces on vertical surfaces
Week 5	Force on inclined surfaces and center of pressure
Week 6	fluid forces on curved surfaces
Week 7	Buoyancy and metastable center
Week 8	Fluid dynamics applications
Week 9	Control volume concept
Week 10	Continuity
Week 11	Momentum of fixed control volume
Week 12	momentum of moving control volume and inertial systems
Week 13	Energy equation as applied to fluid systems
Week 14	Fluid machinery and hydraulics.



Week 15	Final exam			
Delivery Plan (Weekly Lab. Syllabus)				
المنهاج الاسبوعي للمختبر				
	Material Covered			
Week 1	Fluid properties (density)			
Week 2	Fluid properties (viscosity)			
Week 3	Pressure distribution			
Week 4	Vertical gates			
Week 5	inclined gates			
Week 6	fluid forces on different types of surfaces			
Week 7	improving metastable center			
Week 8	Introduction fluid dynamics (laminar flow)			
Week 9	Introduction fluid dynamics (turbulent flow)			
Week 10	Continuity			
Week 11	fixed turbomachines blades			
Week 12	moving turbomachines blades			
Week 13	Report			
Week 14	Final exam			
Learning and Teaching Resources				
مصادر التعلم والتدريس				
	Text	Available in the Library?		
Required Texts	1. Streeter, Mikell P. Fluid Mechanics. 2. Fox, Fluid Mechanics. 3. F. White, Elementary Fluid Mechanics.	yes		
Recommended Texts	None			
Websites	None			
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.

استاذ المادة: م.د محمد وهاب
التاريخ: 2025-08-31

رئيس القسم
ا.م.د محمد حسن عبود
التاريخ: 2025-08-31

