السيد رئيس قسم هندسة تقنيات التبريد والتكييف

م/ وصف المقررات الدراسية

تحية طيبة....

نرفق لكم ربطاً وصف المقررات الدراسية للمواد الدراسية في القسم للتفضل بالمصادقة عليها.

مع فائق الاحترام والتقدير.....

السيد رئيس اللجنة العلمية المحترم

تدقيقه، لوصف .. مع التقدير.

٢٠/٣/٢٠٢٤

رئيس القسم

م.م. ولاء ناصر عباس

مسؤول ضمان الجودة في الكلية

19/3/2024

السيد رئيس القسم المحترم .

السلام عليكم

تم مناقشة الامر في اللجنة العلمية

وحصل الاتفاق على مصادقة نموذج

وصف المقررات والتصميم على لجنة المواد .

مع التقدير

Course Description Form

1. Course Name:
Fluid Mechanics/ 2nd
2. Course Code:
MPAC202
3. Semester / Year:
(Annual System) (2023-2024)
4. Description Preparation Date:
1/10/2023
5. Available Attendance Forms:
Theoretical and Practical Classes
6. Number of Credit Hours (Total) / Number of Units (Total)
90 hrs. (theoretical) + 30 hrs. (practical) /8 units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Ahmed Oleiwi Email: ahmed.ol@uowa.edu.iq
8. Course Objectives

Course Objectives	a) Understand the behavior of fluids when at rest or flowing through a system (statics and dynamics of fluids). b) Understand the physical properties of fluids including liquids and gases. c) Understand the pressure caused by fluids while at rest or in motion. d) Understand the forces exerted by a liquid on submerged surfaces. e) Understand Buoyancy and buoyant force exerted by a fluid that opposes the weight of a partially or fully immersed object. f) Understand and derive the equations that govern fluid in motion for laminar and turbulent flow.

9. Teaching and Learning Strategies	
Strategy	1- Lectures and illustrations: Data Show 2- Practical tests using laboratory equipment 3- Multimedia using the e-learning system 4- Delivering a lecture, answering students' questions, and discussing with them.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3 theoretical + 2 practical	The student understands: 1. Types of fluids 2. Types of fluid flow 3. Applications of Fluid Mechanics	Introduction	A theoretical and a practical lecture	Weekly exams

2-3	3 theoretical + 2 practical	The student understands: 1. Density 2. Viscosity 3. Specific Weight 4. Specific Volume 5. Specific Gravity	Physical Properties of Fluids	A theoretical and a practical lecture	Weekly exams, pre and post questions
4-6	3 theoretical + 2 practical	The student understands: 1. Pressure at a point 2. Pressure direction 3. Pressure at any point in a fluid is the same in all directions. 4. Pressure variation with depth	Fluid Statics	A theoretical and a practical lecture	Weekly exams, and post questions
7-8	3 theoretical + 2 practical	The student understands: 1. Barometer 2. Manometer 3. Bourdon tube 4. Pressure transducers 5. Strain-gage pressure transducers	Pressure Measurement Devices	A theoretical and a practical lecture	Weekly exams, and post questions
9-11	3 theoretical + 2 practical	The student understands: 1. Hydrostatic forces on submerged plane surfaces (horizontal, vertical, inclined) 2. Hydrostatic forces on submerged curved surfac	Hydrostatic Force Calculation	A theoretical and a practical lecture	Weekly exams, and post questions
12	3 theoretical + 2 practical	The student understands: 1. Real and Ideal flow 2. Compressible and Incompressible flow 3. Steady and Unsteady flow 4. Viscous and Inviscid flow	Fluid Dynamics (Introduction)	A theoretical and a practical lecture	Weekly exams, and post questions
13-14	3 theoretical + 2 practical	The student understands: 1. Flow velocity 2. Pressure changes with velocity	Kinematics of Fluid Motion	A theoretical and a practical lecture	Weekly exams, and post questions
15	3 theoretical + 2 practical	The student understands: 1. Derivation of the equation	Continuity Equation	A theoretical and a practical lecture	Weekly exams, and post questions
16-17	3 theoretical + 2 practical	The student understands: 1. Pipes of different cross-sectional areas 2. Ducts of different cross sectional areas	Applications of Continuity Equation	A theoretical and a practical lecture	Weekly exams, and post questions

18-21	3 theoretical + 2 practical	The student understands: 1. Derivation of the equation 2. Applying the equation on pumps 3. Applying the equation on turbines 5. Applying the equation on nozzle 6. Applying the equation on large tanks 7. Pitot Tube	Bernoulli Equation and applications	A theoretical and a practical lecture	Weekly exams, and post questions
22-23	3 theoretical + 2 practical	The student understands: 1. Major losses in pipes 2. Minor losses in pipes 3. Losses due to change in direction and cross-sectional area 4. Losses due elevation	Losses During Fluid Flow	A theoretical and a practical lecture	Weekly exams, and post questions
24-25	3 theoretical + 2 practical	The student understands: 1. Types of pumps 2. Connection methods 3. Operational point of pump	Pumps	A theoretical and a practical lecture	Weekly exams, and post questions
26-28	3 theoretical + 2 practical	The student understands: 1. Derivation of the equation 2.Impact-momentum fluid flow 3. Impact-momentum on blade 4. Impact-momentum on pipes	Momentum Equation	A theoretical and a practical lecture	Weekly exams, and post questions
29-30	3 theoretical + 2 practical	The student understands: 1. Major losses 2. Minor losses 3. Applications of Dimensional Analysis	Dimensional Analysis	A theoretical and a practical lecture	Weekly exams, and post questions

11. Course Evaluation

1. Daily oral questions.
2. Discussion and dialogue with students
3. Attendance
4. Bi-monthly oral exams.
5. Monthly written tests.
6. Semester exam (first semester + second semester)
7. Final annual exam.

12. Learning and Teaching Resources	
Required textbooks (curricular book, any)	Frank M. White, "Fluid mechanics" 4th edition, University of Rh Island, McGraw-Hill, 2013
Main references (sources)	- Bruce R. Munson, and Donald F. Young, "Fundamentals of f mechanics," , 4th edition, John & Wiley Sons, Inc. 2012
Recommended books and references (scientific journals, reports…)	1.Fluid Mechanics by Streeter 2. Elementary Fluid mechanics by Vennard
Electronic References, Websites	