

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	SANITARY AND ENVIRONMENTAL ENGINEERING		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	CIV026		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	UGIV	Semester of Delivery	
Administering Department	CV101	College	Civil Engineering College
Module Leader	Dr. Ahmed Rahomi Rajab	e-mail	Ahmed.rahomi2@uoanabr.edu.iq
Module Leader's Acad. Title	Instructor	Module Leader's Qualification	Ph.D.
Module Tutor	Dr. Ahmed Rahomi Rajab	e-mail	Ahmed.rahomi2@uoanabr.edu.iq
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	Chemistry, And Fluid Mechanics	Semester	1, and 4
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 Aims of this course are to enable students to: <ol style="list-style-type: none"> 1. Understand the water resources 2. Quantify the water demands in urban cities and population forecasting, 3. Identify the types and sources of water pollution, and 4. make them familiar with the processes used for treating water by figuring out and designing the units that have been used for purifying the raw water.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of successful completion of this course, the student will be able to: <ol style="list-style-type: none"> 1. To study the various sources and characteristics of water. 2. To quantify water demand and population forecasting. 3. To study the types and sources of water pollution. 4. To understand the properties and the design criteria of the conventional water treatment plant (WTP).
Indicative Contents المحتويات الإرشادية	Sanitary and environmental engineering course was designed to help students understand the water resources, the water demands in urban zones, the types and sources of water pollution, and to make them familiar with the processes used for treating water by figuring out and designing the units that have been used for purifying the raw water.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Sanitary and environmental engineering course requires effective learning and teaching strategies to ensure students develop a strong understanding of complex concepts and their practical applications. The range of strategies that can enhance the learning experience for students in Sanitary and environmental engineering are; lecture-based teaching, practical applications, problem-solving assignments, group work and discussions, assessments and feedback, continuous learning, and encouraging self-directed learning.
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Student Workload (SWL)

الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6.0
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	5.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	8% (8)	5, 9	LO # 1 and 2, 3 and 4
	Assignments	2	5% (5)	6, 11	LO # 1 and 2, 3 and 4
	Projects / Lab.		10% (10)		
	Report / activity	1	3% (3)	15	
Summative assessment	Midterm Exam	2 hr	24% (24)	7	LO # 1-4
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction - water resources
Week 2	Water demand and Population forecasting.
Week 3	Water pollution
Week 4	Introduction to WTP
Week 5	Water-intakes design criteria
Week 6	Pumping station
Week 7	Flash-mixer units design
Week 8	Mid-term Exam
Week 9	flocculation units design
Week 10	flocculation units design
Week 11	Sedimentation tank design
Week 12	Filtration unit design
Week 13	Filtration unit design
Week 14	Disinfection and storage tank design
Week 15	Disinfection and storage tank design
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Measurement of solids (TDS, SS, and TVS ... etc)
Week 3	Measurement of Conductivity, pH,
Week 5	Estimation of Alkalinity
Week 7	Estimation of Hardness by EDTA method
Week 10	Estimation of Residual Chlorine.
Week 13	Estimation of Optimum Coagulant Dose by Jar Test
Week 15	Estimation of Ammonia Nitrogen

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Lecture Notes	Yes
Recommended Texts	<ul style="list-style-type: none"> Warren Viessman Jr., Mark J. Hammer, Elizabeth M. Perez, Paul A. Chadik, Water Supply & Pollution Control, Prentice Hall, 8th ed., 2009. Water and wastewater engineering, by Davis, 2010, Mc. Graw-Hill 	Yes
Websites	https://www.uoanbar.edu.iq/Bank-Section.php	

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.