

Ministry of Higher Education and Scientific Research
Supervision and Scientific Evaluation Authority
Department of Quality Assurance and Academic Accreditation

Academic Program Description Form for Colleges and Institutes Academic Year

University: Shatt Al-Arab
College/Institute: Engineering
Scientific Department: Civil
Date of Form Completion: 01/09/2025



Signature

Name of Head of Department:

Lecturer Nabeel Najm Abdullah



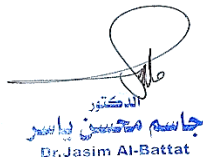
Signature

Name of Scientific Assistant

Dr. Jawad Kadhim

Reviewed by:
Quality Assurance and University Performance Division
Name of Division Director: Dr. Jasem Mohsen Yasser

Signature:



الدكتور
جاسم محمد باقر
Dr. Jasim Al-Battat



أ.م.د. احسان قاسم محمد
عميد كلية الهندسة

Dean's Approval

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Sanitary engineering		Module Delivery
Module Type	Core		☐ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CE416		
ECTS Credits	8		
SWL (hr/sem)	200		
Module Level		4	
Administering Department		Type Dept. Code	College
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	
Module Tutor		e-mail	
Peer Reviewer Name		Name	e-mail
Scientific Committee Approval Date		1\9\2025	Version Number
			1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Concrete design, Mathematics, Survey	Semester	
Co-requisites module	None	Semester	

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Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	The aim of this module is to learn the students how to; 1. compute the quantity of potable water, 2. recognize the materials used in piping works, 3. design water pumping stations, 4. design water treatment systems, 5. assess the environmental impact of untreated sewage discharge, 6. compute the quantity of sanitary sewage, 7. compute the quantity of storm water, 8. design sewer systems, 9. design sewage treatment systems, and 10. design sludge treatment systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On successful completion of this module, students will be able to; 1. compute the quantity of potable water for a specific city, 2. select the appropriate piping material, 3. analyze and design water networks, 4. design water pumping stations, 5. design water treatment systems. 6. compute the quantity of sanitary sewage for a specific city, 7. compute the quantity of storm water, 8. design sanitary sewer system, 9. design storm sewer system, 10. design sewage treatment systems. 11. design sludge treatment systems
Indicative Contents المحتويات الإرشادية	Water use, variations of water consumption rates, design period, population estimate, fire demand, ductile iron pipes, PVC pipes, steel pipes, concrete pipes, HDPE pipes, GRP pipes, flow in water pipelines, analysis of water networks using Hardy-Cross method, design of water networks, types of water pumping stations, types of pumps, power of pumping, system head curve, pump characteristics curves, pumps connection, pumps selection, water treatment, rapid mix unit, coagulation process, flocculation unit, sedimentation unit, filtration unit, disinfection unit (56 hours) .

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	This module will be adopted through different strategies like; in-class lectures and interactive tutorials, field data collection for nearby water and sewage projects, in- lab experiments, and photo and video presentations for existing water and sewage treatment equipment and systems.

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	142	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	108	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	250		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3 , 7	All
	Assignments	2	10% (10)	2,4,6,8,10,12	All
	Class activity	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	1 hr	10% (10)	10	1-5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الأسبوعي النظري	
	Material Covered
Week 1	Quantity of water: Water use; variations in rates of water consumption; design period; population estimate; fire demand.
Week 2	Piping materials: Ductile iron piping works; PVC piping works; steel piping works; concrete piping works; HDPE piping works; GRP piping works; valves.
Week 3	Water distribution systems: Description of water distribution systems; analysis and design of water distribution systems.
Week 4	Water pumping stations: Types of pumping stations; types of pumps; pumps power; system head curve; pump characteristics curves; pumps connection; pumps selection.
Week 5	Water treatment: Aim of water treatment; description and design of Intake structure; description and design of rapid mix unit; coagulation process
Week 6	Water treatment: description and design of flocculation unit; sedimentation process; description and design of sedimentation unit

Week 7	Water treatment: description and design of filtration systems; description and design of disinfection systems.
Week 8	Mid-term Exam; Quantity of sanitary sewage and storm water
Week 9	Flow in sewers; Design of sewer systems
Week 10	Treatment of sanitary sewage: General introduction, flowsheet of a conventional sanitary sewage plant, description and design of screening unit
Week 11	Treatment of sanitary sewage: description and design of grit removal unit
Week 12	Treatment of sanitary sewage: description and design of primary sedimentation unit
Week 13	Treatment of sanitary sewage: description and design of biological treatment systems; description and design of secondary sedimentation unit
Week 14	Sludge treatment: Design and description of gravity thickening unit; design and description of anaerobic digestion unit; design and description of dewatering unit.
Week 15	A preparatory week before the final exam
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الأسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	McGhee, T.J., "Water Supply and Sewage", 6 th Ed., McGraw Hill, Tokyo, 1991.	Yes
Recommended Texts	Viessman, W., Hammer, M.J., Perez, E.M., Chdik, P.A., Water supply and pollution control, 6 th Ed., Pearson Education Limited 2014.	No
Websites		

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.				