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	**Signature**
Name of Head of Department:	**Name of Scientific Assistant**
Lecturer Nabeel Najm Abdullah	Dr. Jawad Kadhim

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

Signature:

الدكتور
جاسم محسن ياسر
Dr.Jasim Al-Battat

جامعة شط العرب
كلية الهندسة
العمادة
SHATT AL-ARAB UNIVERSITY

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	**Engineering Hydrology**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE418**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	4		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	1\9\2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية	
Module Aims أهداف المادة الدراسية	1. Preparing and qualifying specialized engineers to meet the requirements of the labor market in the private and public sectors in civil engineering through diversification of methods of learning and education and training students to apply the acquired knowledge and skills to solve real problems. 2. Providing distinguished academic programs in the field of civil engineering, both theoretical and practical, that comply with international standards of academic quality and meet the needs of the labor market.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Outline the physical processes in the context of hydrology, including the hydrological cycle in general. 2- Define and understand key concepts related to hydrology, such as relative and cumulative frequency, the use of statistical data distributions, time of concentration, runoff and rainfall hydrographs, catchment storage, flood routing. 3- Apply a range of common techniques, such as flood frequency analysis, probabilistic rational, to estimate design peak flows. 4- Apply runoff-routing methods, rainfall hyetograph estimation to estimate flood hydrographs. 5- Compare and evaluate a number of methods for determining peak flows and flood hydrographs for urban and rural areas, including flood frequency analysis, the rational methods, the regional method and runoff routing methods. 6- Apply and evaluate stochastic modelling techniques and water storage behavior analysis to estimate the yield of a small rural water supply system. 7- Define and describe processes groundwater systems. Application the Darcy's law to determine groundwater.
Indicative Contents المحتويات الارشادية	This course serves as an introduction to the field of engineering hydrology. It covers fundamentals such as the hydrological cycle, catchment, hyetographs, losses, and hydrographs. Design topics covered will be selected from: flood frequency analysis, determination of design rainfall intensity and hyetographs, peak flow estimation, design hydrograph estimation, and groundwater process.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, and interactive tutorials.

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 الاسبوعي النظري	
	Material Covered
Week 1	Introduction and Hydrologic Cycle
Week 2	Precipitations: Forms of Precipitations, Rainfall intensity, Measurement of Precipitation
Week 3	Precipitations: Mean Areal Depth of Precipitation, Frequency of Point Rainfall
Week 4	Losses: Evaporation
Week 5	Losses: Infiltration:
Week 6	Runoff: Methods of estimation of runoff

Week 7	Flow Measurement: Water Stage Measurement, Measurements of Discharge
Week 8	Flow Measurement: Stage-Discharge rating curve, Reservoir mass curve and storage
Week 9	Hydrographs: components of a hydrograph, factors affecting hydrograph, hydrograph separation
Week 10	Hydrographs: unit hydrograph, the average unit-hydrograph, the unit-hydrograph from multi-period storms
Week 11	Hydrographs: The Conversion of U-H Duration, Synthetic UH
Week 12	Flood Routing: Hydrologic Storage Routing
Week 13	Flood Routing: Hydrologic Channel Routing
Week 14	An introduction to Groundwater Hydrology
Week 15	An introduction to Groundwater Hydrology
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي 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	Engineering hydrology / E. M. Wilson	Yes
Recommended Texts	Engineering hydrology/ Subramanya	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.