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 Engineering
Date of Form Completion: 01/09/2025

Signature	**Signature**
Name of Head of Department:	**Name of Scientific Assistant**
Asst. 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	**Numerical Analysis**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE311**				
ECTS Credits	**8**				
SWL (hr/sem)	**200**				
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	1/09/2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الاخرى			
Prerequisite module	Numerical Analysis	**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	The course aims to identify the following: 1- Numerical solution of algebraic equations. 2- Taylor series 3- Differentiation and integration by numerical methods 4- Numerical solution of differential equations 5- Finding the mathematical model for a set of points, interpolation and induction
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge and Understanding A1-Preparing applied engineers in the field of civil engineering who are distinguished by a high level of knowledge and analytical creativity in line with the solid standards adopted globally in ensuring quality and academic accreditation of corresponding engineering programs while adhering to the ethics of the engineering profession. A2- Enabling knowledge and understanding of practical applications according to the course objectives. A3- The ability to build a mathematical model to represent various engineering processes.A3- B. Subject-specific skills B1 - The ability to know and understand the mathematical model of the problem through the differential equation and its solution B2 - The ability to think about solving any problem. B3 - The ability to solve problems using analytical methods for differential equations. B4 - The ability to gain experience in dealing with initial problems and boundary conditions.
Indicative Contents المحتويات الارشادية	• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it
	• Direct questions in a manner (how and why) for the subject during the lecture. • short exams during the theoretical lecture. • Midterm exam.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.
	• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	140	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

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	Numerical solution of algebraic equations
Week 2	Numerical solution of algebraic equations
Week 3	Numerical solution of algebraic equations
Week 4	Numerical solution of algebraic equations
Week 5	Numerical solution of algebraic equations
Week 6	Numerical solution of algebraic equations
Week 7	Taylor Series
Week 8	Numerical Derivation and Integration
Week 9	Numerical Derivation and Integration
Week 10	Numerical Derivation and Integration
Week 11	Numerical Solution of Differential Equations
Week 12	Numerical Solution of Differential Equations
Week 13	Numerical Solution of Differential Equations
Week 14	Finding the Mathematical Model for a Set of Points, Interpolation and Induction
Week 15	Finding the Mathematical Model for a Set of Points, Interpolation and Induction
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	MATHEMATICS, NINTH EDITION, JOHN WILEY & SONS, INC., 2006	Yes
Recommended Texts	Reputable websites.	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.