Course Description Form

1. Course Name: Engineering Mathematics I
2. Course Code: ENG013
3. Semester / Year: First semester/2025
4. Description Preparation Date: 4/09/2025
5. Available Attendance Forms: Bologna system attendance form
6. Number of Credit Hours (Total) / Number of Units (Total): SSWL 63 + USSWL 62; ECTS 5
7. Course administrator's name (mention all, if more than one name)
Name: Kawthar Diaa Yassin Email: kawther.dhiya@uowa.edu.iq
8. Course Objectives

Course Objectives	- Introduce students to fundamental concepts of matrices and determinants. Develop the ability to solve systems of linear equations using different methods. - Provide knowledge of vector algebra and analytic geometry applications. - Understand the concept of functions and their role in engineering applications. - Introduce differentiation techniques and their applications in civil engineering problems. - Introduce integration techniques and applications in geometry and physics-related problems. - Strengthen problem-solving skills required for advanced engineering courses

9. Teaching and Learning Strategies

Strategy	This course offers different teaching and learning strategies: Teaching methodologies: - Lectures presented with PowerPoint slides. - Oral discussions to encourage student participation. - Monthly handouts for additional exercises. - Short reviews at the beginning of classes and summaries at the end. Learning methodologies: - Solving exercises from textbooks and assignments. - Group work and peer discussions. - Writing short technical reports on applications of mathematics in civil engineering.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	1	Introduction, review of ba	Lectures	NA
2	3	1	algebra Understand matrices a	Lectures	Quizzes
3	3	1	operations Understand determinants a	Lectures Lectures	and HWs
4	3	1	properties Solve systems of line	Lectures Lectures	Quizzes and
5	3	1	equations Apply Cramer's rule and mat	Lectures	HWs
6	3	1	inverse	Lectures	
7	3	1	Vector algebra basics		HW
8	3	1	Analytic geometry: lines, plan	Lectures	Quizzes
9	3	1	Mid-term Exam	Lectures	and
10	3	1	Functions: types and properti Limits and continuity	Lectures Lectures	HW Quizzes
11	3	1	Differentiation rules	Lectures	and
12	3	1	Applications of differentiation	Lectures	HW
13	3	1	Integration techniques		
14	3	1	Applications of integration		
15	3	1	Engineering applications		
16	3	1	Final Exam		

11. Course Evaluation	
Mid-term exam 10% HWs 10% Quizzes 10% Technical reports 10% Attendance sheet 10% Final Exam 50%	
12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	1- Advanced Engineering Mathematics, Er Kreyszig, 10th Edition, Wiley, 2011 2- Engineering Mathematics, K.A. Stroud, 7th Edit Palgrave Macmillan, 2013
Main references (sources)	1- Advanced Engineering Mathematics, Erwin Kreyszig, Wiley. 2- Engineering Mathematics, Stroud & Booth, Palgrave Macmillan.
Recommended books and references	- MIT OpenCourseWare: Mathematics for Engineers - Khan Academy: Calculus and Linear Algebra
Electronic References, Websites	

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