



Course Weekly Outline

Name	Diala Saadalla Alkamouh				
E-mail address	Dialaka99@gmail.com				
Course name	Calculus				
Course objective	• Providing students with the necessary mathematical foundations such as algebra, integration, and differentiation. • Developing students' mathematical thinking and problem-solving skills. • Linking mathematical concepts to practical issues related to the petroleum and gas industry. • Increasing students' awareness of the importance of mathematics as a fundamental tool in analysis, design, and decision-making. • Enabling students to use computational and programming tools such as scientific calculators and engineering software.				
Course description	• Understanding the general principles of mathematics (equations, differentiation, and integration). • Understanding and solving engineering problem.				
References	• Thomas' Calculus • George B. Thomas Jr., Maurice D. Weir, Joel R. Hass – Official course textbook – Covers Calculus I & II – Limits, differentiation, integration, applications, and introductory multivariable calculus.				
External sources	• Calculus: Early Transcendentals – James Stewart • Advanced Engineering Mathematics – Erwin Kreyszig • Schaum's Outline of Calculus – Frank Ayres				
Course assessment	Homework	Project	Quizzes and assessment	Mid-term exam	Final exam
	10	10	20	10	50
General notes					



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Week No.	Theoretical	Experimental	Aims
1	Review of previous material		This unit covers a set of mathematical topics in order to present the fundamentals of knowledge and established principles applied in solving various engineering problems.
2	Sets, equations, inequalities		
3	Functions		
4	Limits		
5	Continuity		
6	Differentiation (introduction, rules)		
7	Implicit differentiation – tangent and normal lines		
8	Applications of derivatives		
9	Introduction to integration		
10	Applications of definite integrals – calculation of areas		
11	Integration – calculation of volumes of solids of revolution		
12	Integration – surface area of solids of revolution		
13	Techniques of integration		
14	Integration using trigonometric identities		
15	Integration of rational functions		