

Detailed Course Description - Course Plan Development and Updating Procedures/ ..... Department	QF01/0408-3.0E
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Faculty	Science & Information Technology	Department	Mathematics
Course number	0101104	Course title	Calculus 2 for Engineering
Number of credit hours	3	Pre-requisite/co-requisite	Calculus 1(0120121)

### Brief course description

Inverse functions, Exponential, Logarithmic, Trigonometric functions and Inverse Trigonometric Hyperbolic and Inverse Hyperbolic Functions (Their Derivatives And Integrations), Methods Of Integration, Improper Integrals, Applications Of Integrals (Area, Volume, Arc Length, Surface Area), Introduction to sequence And Series

Course goals and learning outcomes	
<b>Goal 1</b>	Manipulate, differentiate and integrate exponential, logarithmic, inverse trigonometric and hyperbolic functions.
Learning outcomes	1.1 Students will be able to find inverse functions and their derivatives. 1.2 Students will be able to knowledge basic properties of integrate.
<b>Goal 2</b>	use integration by parts, trigonometric substitution ,partial fractions to integrate functions.
Learning outcomes	2.1 Students will be able to define integrate by parts. 2.2 Students will be able to define integrate substitution. 2.3 Students will be able to define integrate by partial fractions.
<b>Goal 3</b>	know improper integrals and compute their values when they are convergent.
Learning outcomes	3.1 Students will be able to apply definitions in an improper integrals. 3.2 Students will be able to knowledge improper integral for convergence or divergence
<b>Goal 4</b>	Test a series for convergence or divergence
Learning outcomes	4.1 Test a series for convergence or divergence, using the integral, ratio, root, and comparison tests. 4.2 Test an alternating series for absolute convergence, conditional convergence, or divergence. 4.3 Determine the radius and interval of convergence of a power series.
<b>Textbook</b>	Calculus ,9th edition By Howard Anton , Irl Bivens and Stephen Davis
<b>Supplementary</b>	1.- CALCULUS "Second Edition,, Finney and Thomas.

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references	2.- "Calculus: One and Several Variables" Salas: John Wiley, 4th Edition (1982). 3.- "Vector Calculus" Susan Colley. Pearson Prentice Hall, 3rd Edition (2006).
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Course timeline				
Week	Number of hours	Course topics	Pages (textbook)	Notes
01	1	Review of Indefinite and Definite Integrals.	302 – 324	
	1	Inverse Functions and their derivatives.	51 – 89	
	1	Exponential and Logarithmic Functions.	447 – 453	
02	1	L'Hopital's Rule	467 – 476	
	1			
	1			
03	1	Inverse Trigonometric Functions. Derivatives and Integrals Involving Inverse Trigonometric Functions	488 – 498	
	1			
	1			
04	1	Hyperbolic Functions, Derivatives of Hyperbolic Functions.	498 – 509	
	1			
	1			
05	1	Inverse Hyperbolic Functions and Their Derivatives. Inverse Hyperbolic Functions In Terms of Integrals.	509 – 514	
	1			
	1			
06	1	Integration by Parts	514 – 526	
	1			
	1			
07	1	Solving exercises. <b>First Exam: 20%</b>		
	1			
	1			
08	1	Trigonometric Integrals	526 – 534	
	1			
	1			
09	1	Integration by Trigonometric Substitutions	534 – 541	
	1			
	1			
10	1	Integration by Partial Fractions	541 – 549	
	1			
	1			
11	1	Improper Integrals Volumes of solids of Revolution	573 – 586 388 – 403	
	1			
	1			
12	1	Examples on solids by revolving lines parallel to x-axis or y-axis. <b>Second Exam: 20%</b>	388 – 403	
	1			
	1			
13	1	Arc Length. Area of a Surface of Revolution	403 – 409	
	1			
	1			

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14	1 1 1	Integral test. Ratio and root test. Comparison Test. Limit comparison test.	647 – 670	
15	1 1 1	Power series. Taylor and Maclaurin series.	679 – 698	
16	1 1 1	<b>Final Exam: 50%</b>		

<b>Theoretical course evaluation methods and weight</b>	Participation = 10% First exam 20% Second exam 20% Final exam 50%	<b>Practical (clinical) course evaluation methods</b>	Semester students' work = 50% (Reports, research, quizzes, etc.) Final exam = 50%
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Approved by head of department		Date of approval	
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Extra information (to be updated every semester by corresponding faculty member)

Name of teacher	Waseem Al-Masha'leh	Office Number	126
Phone number (extension)	368	Email	<a href="mailto:w.almasha'leh@zuj.edu.jo">w.almasha'leh@zuj.edu.jo</a>
Office hours			