جـامعة الـزيتونـة الأردنيـة
Al–Zaytoonah University of Jordan
كلية العلوم وتكنولوجيا المعلومات
Faculty of Science and information Technology

" عراقة وجودة"
"Tradition and Quality"

QF01/0408-4.0E	**Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Mathematics Department**

Study plan No.	2021/2022	University Specialization		**Bachelor of Mathematics**	
Course No.	0101102	**Course name**		**Calculus (2)**	
Credit Hours	3	**Prerequisite/ Co-requisite**		**Calculus** (1) **(0101101)**	
Course type	☐ MANDATORY UNIVERSITY REQUIREMENT	☐ UNIVERSITY ELECTIVE REQUIREMENTS	☐ FACULTY MANDATORY REQUIREMENT	☐ Support course family requirements	✓ **Mandatory requirements**	☐ Elective requirements
Teaching style	☐ **Full online learning**		☐ **Blended learning**		✓**Traditional learning**	
Teaching model	☐ **1 Synchronous: 1 asynchronous**		☐ **1 face to face : 1 asynchronous**		✓**2 Traditional**	

Faculty member and study divisions' information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-mail	
Division number	**Time**	**Place**	**Number of students**	**Teaching style**	**Approved model**

Brief description

Inverse functions, Inverse trigonometric functions, Hyperbolic and inverse hyperbolic functions, L'Hopital rule, Methods of integration, Improper integrals, Applications of integrals (Area, Volume, Arc length, Surface area), Introduction to sequences and series.

Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	Calculus, 10th edition By Howard Anton, Irl Bivens and Stephen Davis.
Supportive learning resources (Books, databases, periodicals, software, applications, others)	1-CALCULUS, 10th Edition, by Finney and Thomas. 2-Calculus: One and Several Variables, Salas, John Wiley, 10th Edition (2006) 3-Vector Calculus" Susan Colley. Pearson Prentice Hall, 3rd Edition (2006)
Supporting websites	• Calculus at S.O.S. Mathematics • http://www.sosmath.com/calculus/calculus.html • Visual Calculus; tutorials and demos • http://archives.math.utk.edu/visual.calculus/index.html • Calculus online • http://www.ugrad.math.ubc.ca/coursedoc/math100/index.html • Online tutorials and quizzes • http://www.math.hmc.edu/calculus/tutorials/
The physical environment for teaching	✓Class room	☐ labs	☐ Virtual educational platform	☐ Others

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Necessary equipment and software	
Supporting people with special needs	
For technical support	

Course learning outcomes (S= *Skills, C= Competences K= Knowledge,*)

No.	Course learning outcomes	The associated program learning output code
Knowledge		
K1	Define exponential, logarithmic, inverse trigonometric and hyperbolic functions.	MK 1
K2	Apply the rules of differentiation to find the derivative of exponential, logarithmic, inverse trigonometric and hyperbolic functions.	MK 2
K3	Evaluate the integration of functions involving exponential, logarithmic, inverse trigonometric and hyperbolic functions.	MK 3
K4	Identify improper integrals and compute their values when they are convergent.	MK 1
K5	Define the sequences and the series.	MK 2
K6	Evaluate the sum of series if its convergent.	Mk 3
Skills		
S1	Specify the type of integration which can be used to find the integration of functions involving exponential, logarithmic, inverse trigonometric and hyperbolic functions.	MS 4
S2	Test a series for convergence or divergence	MS 4
S3	Classify the type of a series.	MS 3
Competences		
C1	Cooperate to work effectively in the group assignments.	MC 1
C2	Develop the individual's ability to communicate and interact with other mathematical courses.	MC 2

Mechanisms for direct evaluation of learning outcomes

Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
Mid Exam	30%	30%	**30%**	30%
Participation / practical applications	0	0	**20%**	30%
Asynchronous interactive activities	30%	30%	**0**	0
Final exam	40%	40%	**50%**	40%

Schedule of simultaneous / face-to-face encounters and their topics

Week	Subject	learning style	Reference
1	Review of Indefinite and Definite Integrals. Inverse Functions and their derivatives. Exponentialand	Lecture 1+2	302 – 324 51 – 89

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	Logarithmic Functions.		447 – 453
2	L'Hopital's Rule	Lecture 3 +4	467 – 476
3	Inverse Trigonometric Functions. Derivatives and Integrals Involving Inverse Trigonometric Functions	Lecture 5+6	488 – 498
4	Hyperbolic Functions, Derivatives of Hyperbolic Functions.	Lecture 7+8	498 – 509
5	Inverse Hyperbolic Functions and Their Derivatives. Inverse Hyperbolic Functions In Terms of Integrals.	Lecture 9 +10	509 – 514
6	Integration by Parts	Lecture 11 +12	514 – 526
7	Solving exercises.	Lecture 13+14	
8	Trigonometric Integrals **Mid Exam**	Lecture 15+16	526 – 534
9	Integration by Trigonometric Substitutions	Lecture 17+18	534 – 541
10	Integration by Partial Fractions	Lecture 19+20	541 – 549
11	Improper Integrals Volumes of solids of Revolution	Lecture 21+22	573 – 586 388 – 403
12	Examples on solids by revolving lines parallel to x-axis or y-axis. Arc Length. Area of a Surface of Revolution	Lecture 23+24	388 –403
13	Arc Length. Area of a Surface of Revolution Integral test. Ratio and root test. Comparison Test. Limit comparison test.	Lecture 25+26	403 – 409
14	Power series. Taylor and Maclaurin series.	Lecture 27+28	647 – 670
15	Power series. Taylor and Maclaurin series.	Lecture 29+30	679 – 698
16	**Final Exam**		