



Form: Course Syllabus	Form Number	EXC-01-02-02A
	Issue Number and Date	2/3/24/2022/2963 05/12/2022
	Number and Date of Revision or Modification	
	Deans Council Approval Decision Number	2/3/24/2023
	The Date of the Deans Council Approval Decision	23/01/2023
	Number of Pages	07

1.	Course Title	Engineering Mathematics-II
2.	Course Number	0331302
3.	Credit Hours (Theory, Practical)	3
	Contact Hours (Theory, Practical)	3
4.	Prerequisites/ Corequisites	0301202
5.	Program Title	B.S.c.
6.	Program Code	
7.	School/ Center	Science
8.	Department	Mathematics
9.	Course Level	Mandatory College requirement
10.	Year of Study and Semester (s)	2 nd year, all semesters
11.	Other Department(s) Involved in Teaching the Course	
12.	Main Learning Language	
13.	Learning Types	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online
14.	Online Platforms(s)	<input type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams
15.	Issuing Date	30/10/2024
16.	Revision Date	30/10/2024

17. Course Coordinator:

Name: Mohammed Al-Horani	Contact hours: Sun, Tue, (10-11) Mon, Wed (11:30-12:30)
Office number: 206	Phone number: 22094
Email: horani@ju.edu.jo	



18. Other Instructors:

Name: Shaher Al-Momani
Office number: 212
Phone number:
Email: s.momani@ju.edu.jo
Contact hours:
Name:
Office number:
Phone number:
Email:
Contact hours:

19. Course Description:

Vector differential calculus, line and surface integrals, integral theorems, Fourier series, Fourier integrals, Fourier transforms, partial differential equations.

20. Program Student Outcomes (SO's):

(To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

- 1- Identify, formulate, and solve broadly-defined technical or scientific problems by applying knowledge of Mathematics and Science and/or technical topics to areas relevant to the discipline.
- 2- Formulate or design a system, process, procedure or program to meet desired needs.
- 5- Reflect the impact of technical and/or scientific solutions in economic, environmental, and societal contexts.



21. Course Intended Learning Outcomes (CLO's):

(Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

- 1- Evaluate line and surface integrals and apply Green's, Stokes's and Divergence Theorems.
- 2- Find the Fourier series, Fourier integrals, and Fourier transforms for some functions, and discuss their convergence.
- 3- Solve PDEs by using the Fourier series, Fourier integrals, and Fourier transforms.

Course CLOs	The learning levels to be achieved					
	Remembering	Understanding	Applying	Analysing	evaluating	Creating
1	√	√	√	√	√	
2	√	√	√	√		
3		√	√			

22. The matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program:

Course CLO's	Program SO's							
	SO (1)	SO (2)	SO (3)	SO (4)	SO (5)	SO (6)	SO (7)	SO (8)
Evaluate line and surface integrals and apply Green's, Stokes's and Divergence Theorems.	•	•			•			
Find the Fourier series, Fourier integrals, and Fourier transforms for some functions, and discuss their convergence.	•	•						
Solve PDEs by using the Fourier series, Fourier integrals, and Fourier transforms.	•	•			•			



23. Topic Outline and Schedule:

Week	Lecture	Topic	CLO/s Linked to the Topic	Learning Types Face to Face (FF) Blended (BL) Fully Online (FO)	Platform Used	Synchronous (S) Asynchronous (A)	Evaluation Methods	Learning Resources
1	9.3	Vector Product	1	FF	Teams	S	Exams	Text Book
	9.5	Curves: Circle, Ellipse, Straight Line, Helix, Plane Curves. Tangent to a Curve	1	FF	Teams	S	Exams	Text Book
2	9.7	Gradient of a Scalar Field	1	FF	Teams	S	Exams	Text Book
	9.8	Divergence of a Vector Field	1	FF	Teams	S	Exams	Text Book
	9.9	Curl of a Vector Field	1	FF	Teams	S	Exams	Text Book
3	10.1	Line Integrals	1	FF	Teams	S	Exams	Text Book
	10.2	Path Independence of Line Integrals	1	FF	Teams	S	Exams	Text Book
4	10.3	Double Integrals	1	FF	Teams	S	Exams	Text Book
	10.4	Green's Theorem in the Plane	1	FF	Teams	S	Exams	Text Book
5	10.5	Surfaces for Surface Integrals	1	FF	Teams	S	Exams	Text Book
	10.6	Surface Integrals	1	FF	Teams	S	Exams	Text Book
6	10.7	Triple Integrals. Divergence Theorem of Gauss	1	FF	Teams	S	Exams	Text Book
7	10.9	Stokes's Theorem	1	FF	Teams	S	Exams	Text Book
8	11.1	Fourier Series	2	FF	Teams	S	Exams	Text Book
9	11.2	Arbitrary Period. Even and Odd Functions. Half-Range Expansions	2	FF	Teams	S	Exams	Text Book
10	11.7	Fourier Integral	2	FF	Teams	S	Exams	Text Book
11	11.8	Fourier Cosine and Sine Transforms	2	FF	Teams	S	Exams	Text Book
12	11.9	Fourier Transform	2	FF	Teams	S	Exams	Text Book
	11.10	Tables of Transforms	2	FF	Teams	S	Exams	Text Book



Week	Lecture	Topic	CLO/s Linked to the Topic	Learning Types Face to Face (FF) Blended (BL) Fully Online (FO)	Platform Used	Synchronous (S) Asynchronous (A)	Evaluation Methods	Learning Resources
13	12.1	Basic Concepts of PDEs	3	FF	Teams	S	Exams	Text Book
	12.2	Modeling: Vibrating String, Wave Equation	3	FF	Teams	S	Exams	Text Book
14	12.3	Solution by Separating Variables. Use of Fourier Series	3	FF	Teams	S	Exams	Text Book
	12.6	Heat Equation: Solution by Fourier Series. Steady Two-Dimensional Heat Problems. Dirichlet Problem	3	FF	Teams	S	Exams	Text Book
15	12.7 12.10	Heat Equation: Modeling Very Long Bars. Solution by Fourier Integrals and TransformsLaplace equation in Polar Coordinate	3	FF	Teams	S	Exams	Text Book

24. Evaluation Methods:

Opportunities to demonstrate achievement of the CLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	CLO/s Linked to the Evaluation activity	Period (Week)	Platform
First Exam	20	Chap 9	1,2,7,8	6 th weak	On campus
Mid Term	30	Chap 10	1,2,5	11 th weak	On campus
Final Exam	50	Chap 9-12	1,2,5,7,8	16 th weak	On campus



25. Course Requirements:

Each student must have:

- Computer
- Account on Microsoft Teams

26. Course Policies:

Class attendance of students at the beginning of the lecture is recoded.

Assignment is given to the students at regular intervals for them to solve and submit.

Late or no submission of assignments carries penalties or loss of grade points.

Absences recorded in each lecture with making excuses, if any.

Exiting during the lecture since Formal justification or excuse forces.

Mobile phone use in the classroom is Forbidden.

27. References:

A- Required book (s), assigned reading and audio-visuals:

Advanced Engineering Mathematics, E. Kreyszig, 10th edition.

B- Recommended books, materials, and media:

1) Advanced Engineering Mathematics, Dennis G. Zill and Warren S. Wright, 5th edition.

2) Advanced Engineering Mathematics, K. A. Stroud and Dexter J. Booth, 5th edition



28. Additional information:

--

Name of the Instructor or the Course Coordinator: Prof. Mohammed Al-Horani	Signature:	Date: 03-10-2024
Name of the Head of Quality Assurance Committee/ Department: Prof. Manal Ghanem	Signature:	Date:
Name of the Head of Department: Prof. Baha Alzalg	Signature:	Date:
Name of the Head of Quality Assurance Committee/ School of Science: Prof. Emad A. Abuosba	Signature:	Date:
Name of the Dean or the Director: Prof. Mahmoud I. Jaghoub	Signature:	Date: