



مركز الاعتماد
وإضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER



The University of Jordan

Accreditation & Quality Assurance Center

Course Syllabus

Course Name:
Methods of Applied Mathematics

1	Course title	Methods of Applied Mathematics
2	Course number	301901
3	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	3
4	Prerequisites/corequisites	
5	Program title	
6	Program code	
7	Awarding institution	
8	Faculty	Science
9	Department	mathematics
10	Level of course	Ph.D
11	Year of study and semester (s)	
12	Final Qualification	
13	Other department (s) involved in teaching the course	
14	Language of Instruction	English
15	Date of production/revision	

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.

18. Course Description:

As stated in the approved study plan.

Boundary value problems for ordinary and partial differential equations; integral transforms, volterra and fredholm equations; variational methods, asymptotic methods, distribution theory.

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1. 19. Course aims and outcomes:
- 2.

A- **Aims: 1-** provide the students with a new advanced method and techniques to solve problems involving differential equation (ordinary of partial) and integral equations

2-prepare the students for research in areas of applied mathematics.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to ...

- 1- To discuss the solvability of boundary value problems for ordinary and partial Differential equations.
- 2- To solve different type of BVP using advanced techniques such as eigenfunctions expansion method and Integral transforms method.
- 3- To define and construct Green's function for different type of BVP.
- 4- To Solve integral equations of Fredholm and Volterra types
- 5- To understand and apply Fredholm alternative to deal with the problem of the existence of solutions.
- 6- To handle nonlinear problems in applied mathematics using advanced techniques of approximation such as Perturbation and Variational methods.
- 7- Define and perform the basic operations of distributions.

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
BVP for ODE	4				
BVP for PDE	4				
Integral Transforms	1				
Integral Equation	2				
Perturbation methods	2				
Variational methods	1				
Distribution theory	1				

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

22. Evaluation Methods and Course Requirements:

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

23. Course Policies:

A- Attendance policies:

B- Absences from exams and handing in assignments on time:

C- Health and safety procedures:

D- Honesty policy regarding cheating, plagiarism, misbehavior:

E- Grading policy:

F- Available university services that support achievement in the course:

24. Required equipment:

25. References:

- **Required book (s), assigned reading and audio-visuals:**
- E.Zaudrere: Partial differential equations of applied mathematics.
- Myint: Partial differential equations
- R.P. Kanwal: Linear Integral euations.

- **Recommended books, materials, and media:**
- Carrier and pearson: Partial differential equations, Theory and Technique.
- James P. Keeneer Principles of applied mathematics.
- R.Haberman: Elementary partial differential equations.
- Stakgold: Green's functions and boundary value problems.
- R.P. Kanwal: Generalized functions theory and Technique.

26. Additional information:

Name of Course Coordinator: -----Signature: ----- Date: -----

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----

Copy to:
 Head of Department
 Assistant Dean for Quality Assurance
 Course File