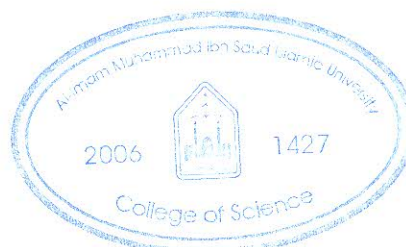




Syllabus for Mathematical Methods MAT 381

Instructor/coordinator	DR ABDELOUAHED EL KHALIL
Credits	4
Prerequisite:	MAT 381 (Selected topic 1) (old Mathematical Methods)
E-Mail:	alakhail@imamu.edu.sa
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Office Location:	Department of Mathematics & Statistics, College of Science, Office SR-89.
Course Site	Local intranet \\10.10.70.70\science share folders\Mathematics\Abdulwahed Khliil\From khliil External link: https://imamu.academia.edu/AbdelouahedElkhail
Class Times	<i>See Time Table</i>
Office Hours:	<i>See Time Table</i>
Textbook:	Title: <i>Elementary Differential Equations and Boundary Value Problems, 9th E</i> Authors: Boyce and Diprima,
Course goals:	<ul style="list-style-type: none">• Providing students with a good understanding of the mathematical methods described below in detail.• Developing a level of ability of the students for using these mathematical methods for solving differential equations.
Methods of assessment:	<ul style="list-style-type: none">• Questions in Lectures.• Home works, Short Quizzes and Exams.• Participation through Class work and Homework.
Proportion of assessment:	<ul style="list-style-type: none">• Mid Term 1: 20%• Mid Term 2: 20%• Quizzes, H. Works, Attendance, Class Participation: 20%• Final Examination: 40%

Notice: All students are invited to ask any questions concerning the course during the class and /or in the office hours.



Week 1	A quick review of Power Series, Power series solution about ordinary points.
Week 2	Power series solution about ordinary points. Regular & Irregular Singular points.
Week 3	Method of Fresenius, Power series solution about regular singular points.
Week 4	Method of Fresenius, Power series solution about regular singular points.
Week 5	Solution of the Bessel's equation, Special functions.
First Mid Term	
Week 6	Basic definitions and properties of Laplace Transforms, Some standard Laplace and Inverse Laplace transforms.
Week 7	Partial Fractions and their use in finding Laplace and inverse Laplace Transforms.
Week 8	First shifting theorem and its use for finding Laplace and inverse Laplace Transforms.
Week 9	Unit-Step function, Second shifting theorem and its use for finding the Laplace and inverse Laplace Transforms.
Week 10	Differentiation of Laplace Transforms., Dirac Delta function and use of Laplace Transforms for solving differential equations.
Week 11	Convolution.
Second Mid Term	
Week 12	Fourier Series, Convergence of Fourier Series.
Week 13	Even and Odd functions, Fourier Cosine and Sine Series and convergence.
Week 14	Fourier Integrals and their convergence, Complex Fourier series and Integrals.
Week 15	Fourier Transform, Inverse Fourier Transform, Time and frequency shifting.
Week 16	Fourier Cosine and Sine transforms.

