

EBA 3202 Differential Equations

COURSE INFORMATION

Prerequisites	Academic Year & Level		Teaching Methods			Credit Hrs.
	Year	Semester	Lecture	Tutorial	Laboratory	
EBA 1204	3	5	2	2	0	3

COURSE AIM

- Use the Laplace transform and the theorems (first shift theorem, transform of differentiation and integration, etc...) in solving differential and integral equations.
- Understand the Fourier analysis which includes the Fourier series and Fourier transform.
- Know the concept of linear programming in order to solve system of linear inequalities using the Simplex method
- Learn some useful algorithms for linear systems
- Realize the wide applicability of linear programming

COURSE WEEKLY CONTENTS

1	First order D.E. (i) Separation of variables.
2	First order D.E. (ii) Homogeneous equation.
3	First order D.E. (iii) Exact equation.
4	First order D.E. (iv) Linear equations , (v) Bernoulli's equation – Revision on First order D.E. Second order D.E. with constant coeff. (Homogeneous equations)-
5	Method of undermined coefficients. Second order D.E. with constant coeff. (Non-homogeneous equations).
6	Method of variation of parameters.
7	Laplace transform.
8	Laplace transform: Basic definition – First shifting theorem.
9	Laplace transform: Transform differentiation- Transform integration.
10	Unit step function- Second shifting theorem.
11	Inverse Laplace transforms.
12	Inverse Laplace transforms.
13	Solution of D.E. and integral equations using Laplace transform- Application: Solve R-L circuit using Laplace transform.
14	Linear programming and simplex method.
15	General Revision

STUDENT GRADING & ASSESSMENT

Weeks	Exams	Assign.	Quizzes	Reports	Present.	Lab.	Total
1 to 7	←		3 0	MARKS		→	30
8 to 12	←		2 0	MARKS		→	20
1 to 15	←		1 0	MARKS		→	10
16 or 17	40	Final					40

REFERENCES

Textbook	Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley and Sons Inc.
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