

Basic and Applied Science Courses (BA)

Basic and Applied Science Courses Group

BA 223 – Mathematics 3

COURSE INFORMATION

Course Title: Construction Engineering Drawings

Code: BA 223

Hours: Lecture – 2 Hrs. Tutorial – 2 Hrs. Credit –3.

Prerequisite: BA 124

GRADING

Class Performance/Attendance: 10%

Midterm # 1/Assignments – (7th Week): 30%

Midterm # 2/Assignments – (12th Week): 20%

Final Exam: 40%

COURSE DESCRIPTION

First order D.E. (i) Separation of variables (ii) Homogenous equation. First order D.E. (iii) Exact equation (iv) Linear Equations. First order D.E. (v) Bernoulli's equation – First order D.E. Second order D.E with constant coeff. (Homogenous equations) - Method of undetermined coefficients. Second order D.E. with constant coeff. (Non - homogenous equations)- Method of variation of parameters. Euler homogenous equation. Laplace Transform: Basic definition- First shift theorem. Laplace Transform: Transform differentiation & Transform integration. Unit step function – Second shifting theorem – Convolution theorem. Inverse Laplace Transform. Solution of D.E. and integral equations using Laplace transform- Application: Solve R-L circuit using Laplace transform. Fourier Series: Fourier series for functions of period $2P$. Fourier Series: Fourier series for even and odd functions. Fourier Series: Fourier series for harmonic functions.

TEXT BOOK & REFERENCES

Advanced Engineering Mathematics by Dennis G. Zill / Micheal R. Cullen.

COURSE AIM

To study methods of solving the differential equations which arise as mathematical modeling in many topics of engineering.

APPENDIX A-8

SPECIFIC OUTCOMES OF INSTRUCTION

- The students will be able to perform and solve differential equations, Laplace transform and Fourier analysis, that is of fundamental importance in modern

COURSE OUTLINE

<i>Week Number 1:</i>	First order D.E. (i) Separation of variables (ii) Homogenous equation
<i>Week Number 2:</i>	First order D.E. (iii) Exact equation (iv) Linear Equations
<i>Week Number 3:</i>	First order D.E. (v) Bernoulli's equation – Revision on First order D.E
<i>Week Number 4:</i>	Method of undetermined coefficients.
<i>Week Number 5:</i>	Homogenous equations - Method of undetermined coefficients. Second order D.E. with constant coeff.(Non - homogenous equations)- Method of variation of parameters
<i>Week Number 6:</i>	Continue method of variation of parameters- Euler homogenous equation
<i>Week Number 7:</i>	Laplace Transform: Basic definition- First shift theorem + 7th week Exam
<i>Week Number 8:</i>	Laplace Transform: Transform differentiation & Transform integration
<i>Week Number 9:</i>	Unit step function – Second shifting theorem – Convolution theorem
<i>Week Number 10:</i>	Inverse Laplace Transform
<i>Week Number 11:</i>	Solution of D.E. and integral equations using Laplace transform-
<i>Week Number 12:</i>	Application: Solve R-L circuit using Laplace transform
<i>Week Number 13:</i>	Fourier Series: Fourier series for functions of period 2P
<i>Week Number 14:</i>	Fourier Series: Fourier series for even and odd functions
<i>Week Number 15:</i>	Fourier Series: Fourier series for harmonic functions
<i>Week Number 16:</i>	Final Exam.

COURSE COORDINATOR AND DEMAND

Course Coordinator: Dr.Nehad Nashaat.

Course Demand: Required