Course Plan 2017 Dr. Mohamed Eid

Course Title: Engineering Mathematics 5 Code: EMP 301
Teaching Hours : 4 Lecture : 2 Tutorial : 2

## Contents

| Week | Topic | No. of Hours | |
|---|---|---|---|
| | | Lecture | Tutorials |
| 1 | **Introduction**<br>Data analysis. | 2 | 2 |
| 2 | Statistical measures, Arithmetic mean, Geometric mean, Mean deviation, Variance, Standard deviation. | 2 | 2 |
| 3 | **Probability theory**<br>Independent and dependent events, Conditional probability, Bayes theorem. | 2 | 2 |
| 4 | Random variable, Probability density function of one variable, Probability function, Expectation, Variance, Standard deviation. | 2 | 2 |
| 5 | Moments, Moment generating function. | 2 | 2 |
| 6 | Proportion, Non parametric tests. | 2 | 2 |
| 7 | Mid-Term Exam 1 | 1 | |
| 8 | Curve fitting, Linear regression, Non linear regression. | 2 | 2 |
| 9 | Probability density function of two variables (discrete, continuous). | 2 | 2 |
| 10 | Mean, Variance, Standard deviation, Covariance, Correlation Coefficient. | 2 | 2 |
| 11 | Mid-Term Exam 2 | 1 | |
| 12 | Discrete probability distributions: Binomial, Poisson. | 2 | 2 |
| 13 | Continuous probability distributions: Normal, Gamma, Beta. | 2 | 2 |
| 14 | Quality control. | 2 | 2 |
| 15 | Final Exam | 2 | |

## Assessment Schedule

| Methods of Assessment | Grading / Marks | Weighting % | Outline Details |
|---|---|---|---|
| Assignments | 10 | 10 % | Week: All |
| Mid-Term Exam 1 | 30 | 30 % | Week: 7 1 hour |
| Mid-Term Exam 2 | 20 | 20 % | Week: 11 1 hour |
| Final Exam | 40 | 40 % | Week : 15 2 hours |

## List of References

| | |
|---|---|
| Course Notes | Lectures Notes (PDF) |
| Required Books | "Advanced Engineering Mathematics", A. Jeffrey, Harcourt / Academic Press, New York, 2002. |
| Recommended Books | "Advanced Engineering Mathematics", E. Kreyszig, John Wiley and Sons, New York, 1999. |
| Periodicals, web sites | www.intmath.com<br>www.academicpress.com |

Mathematics – Credit Hours – Department of Communications

Course Plan 2017 Dr. Mohamed Eid

Course Title: Engineering Mathematics 6 Code: EMP 302
Teaching Hours : 4 Lecture : 2 Tutorial : 2

## Contents

| Week | Topic | No. of Hours | |
|---|---|---|---|
| | | Lecture | Tutorials |
| 1 | **Introduction**<br>Laplace transformations, Convolution theorem. | 2 | 2 |
| 2 | Laplace transformations of periodic functions, Integral equations. | 2 | 2 |
| 3 | Heaviside's expansion theorem, Transfer functions, Green function, Z-transform, Inverse Z-transform. | 2 | 2 |
| 4 | Stability of discrete time systems, The strum-Liouville problem. | 2 | 2 |
| 5 | Eigenvalues and eigenfunctions, Orthogonality of eigenfunctions. | 2 | 2 |
| 6 | Legendre equation, Bessel equation. | 2 | 2 |
| 7 | Mid-Term Exam 1 | 1 | |
| 8 | **Partial differential equations:** Wave equation, Laplace equation. | 2 | 2 |
| 9 | Solving the wave equation: D'Alembert method, Separation method, Using Laplace transformations. | 2 | 2 |
| 10 | Solving the Laplace equation: Separation method, Using Laplace transformations. | 2 | 2 |
| 11 | Mid-Term Exam 2 | 1 | |
| 12 | Numerical solution of the Wave equation, Numerical solution of the Laplace equation. | 2 | 2 |
| 13 | Linear algebra, Linear spaces, Linear transformations. | 2 | 2 |
| 14 | Solving systems of linear equations: Gaussian method, Row Echelon form, Crammer method. | 2 | 2 |
| 15 | Final Exam | 2 | |

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|---|---|---|---|
| Assignments | 10 | 10 % | Week: All |
| Mid-Term Exam 1 | 30 | 30 % | Week: 7 1 hour |
| Mid-Term Exam 2 | 20 | 20 % | Week: 11 1 hour |
| Final Exam | 40 | 40 % | Week : 15 2 hours |

## List of References

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| Required Books | "Numerical Methods For Engineers and Scientists", Calculus, 2th Edition, J.D. Hoffman, Mc Graw Hill, Inc. New York, 1992. |
| Recommended Books | "Advanced Engineering Mathematics", E. Kreyszig, John Wiley and Sons, New York, 1999. |
| Periodicals, web sites | www.intmath.com<br>www.academicpress.com |