

Maulana Abul Kalam Azad University of Technology, West Bengal
(Formerly West Bengal University of Technology)
Syllabus for B. Tech in Electrical Engineering
(Applicable from the academic session 2018-2019)

Name of the course	MATHEMATICS-III		
Course Code: BS-M 301	Semester: 3rd		
Duration: 6 months	Maximum Marks: 100		
Teaching Scheme	Examination Scheme		
Theory: 3 hrs/week	Mid Semester Exam: 15 Marks		
Tutorial: 0 hr/week	Assignment & Quiz: 10 Marks		
Practical: 0 hrs/week	Attendance: 05 Marks		
Credit Points: 3	End Semester Exam: 70 Marks		
Objective:			
1.	To provide understanding of Probability required for an Electrical Engineer to apply in the profession. .		
2.	To understand different numerical methods required to solve numerically different systems		
3.	To have basic understanding of Z transform to be applied to solve problem of different discrete systems		
Pre-Requisite			
1.	Mathematics (10+2)		
Unit	Content	Hrs	Marks
1	<p>Probability: Basic Probability Theory: Classical definition and its limitations. Axiomatic definition. Some elementary deduction: i) $P(O)=0$, ii) $0 \leq P(A) \leq 1$, iii) $P(A')=1-P(A)$ etc. where the symbols have their usual meanings. Frequency interpretation of probability.</p> <p>Addition rule for 2 events (proof) & its extension to more than 2 events (statement only). Related problems. Conditional probability & Independent events. Extension to more than 2 events (pair wise & mutual independence). Multiplication Rule. Examples. Baye's theorem (statement only) and related problems.</p> <p>Random Variable & Probability Distributions. Expectation: Definition of random variable. Continuous and discrete random variables. Probability density function & probability mass function for single variable only. Distribution function and its properties (without proof). Examples. Definitions of Expectation & Variance, properties & examples.</p> <p>Some important discrete distributions: Binomial & Poisson distributions and related problems. Some important continuous</p>	1 3 2	

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	distributions: Uniform, Exponential, Normal distributions and related problems. Determination of Mean & Variance for Binomial, Poisson & Uniform distributions only.	2	
2	<p>Numerical Methods:</p> <p>Approximation in numerical computation: Truncation and rounding errors, Fixed and floating-point arithmetic, Propagation of errors.</p> <p>Interpolation: Newton forward/backward interpolation, Lagrange's and Newton's divided difference Interpolation.</p> <p>Numerical integration: Trapezoidal rule, Simpson's 1/3 rule, Expression for corresponding error terms.</p> <p>Numerical solution of a system of linear equations: Gauss elimination method, Matrix inversion, LU Factorization method, Gauss-Seidel iterative method.</p> <p>Numerical solution of Algebraic equation: Bisection method, Regula-Falsi method, Newton-Raphson method.</p> <p>Numerical solution of ordinary differential equation: Euler's method, Runge-Kutta methods, Predictor-Corrector methods and Finite Difference method.</p>	4 5 3 6 4 6	
3	Z transform: Sequence, Representation of sequence, Basic operations on sequences, Z-transforms, Properties of Z-transforms, Change of scale, Shifting property, Inverse Z-transform, Solution of difference equation , Region of convergence.	4	