TEM

NATIONAL INSTITUTE OF TECHNOLOGY: TIRUCHIRAPPALLI- 620 015

DEPARTMENT OF MATHEMATICS

COURSE OUTLINE TEMPLATE			
Course Title	MA601: Numerical Methods and Applied Statistics		
Course Code	MA601	No. of Credits	3
Department	Mathematics	Faculty	Dr. R. Tamil Selvi
Pre-requisites Course Code	B. Tech. Engineering Mathematics		
Course Coordinator's (if, applicable)			
Other Course Teacher(s)/Tutor(s)		Email Id	Telephone No.
1	Dr. R. Tamil Selvi	tamil@nitt.edu	7598176202
Course Type	√ Core course	☐ Elective course	

COURSE OVERVIEW

To understand the mathematical applications to engineering problems using Numerical Techniques, Linear Programming Concept, Standard distributions, ,Sampling distributions, and Time Series Analysis.

COURSE OBJECTIVES

- To make the students mathematically strong for solving engineering problems.
- To provide the required fundamental concepts in numerical methods,probability and statistics.
- To introduce the basic concepts of n- dimensional random variables and their applications, n-random samples and time series analysis.

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
1. To apply the principles and techniques learnt in this course for solving the practical problems which arise in the industry 2. To formulate real problems with multi dimensions 3. To develop student's problem solving skill in their domain.	The Engineering Graduates will apply their knowledge of mathematics to engineering problems.

COURSE TEACHING AND LEARNING ACTIVITIES			
S. No.	**Week**	**Topic**	**Mode of Delivery**
	Week-1 **Week - 2**	1.Linear system-Direct methods- Gauss Elimination 2.Gauss Jordan- Finding Inverse 3.Direct methods-Gauss Jacobi+ Tutorial 1. Gauss seidel, 2. Regula falsi method 3. N. R. method. + Tutorial	**Chalk and Talk**
	Week-3 **Week-4**	Interpolation 1.Forward, Backward 2.Lagranges 3.Introduction to L.P, Graphical method + Tutorial 1.Graphical Method 2. Simplex 3. Simplex + Tutorial	**Chalk and Talk**
	Week -5 **Week-6** **Week – 7** **Week-8 & 9**	1.Big-M and Two-phase methods-problems 2.Revised simplex –problems. 1.Duality-dual simplex, sensitivity analysis- 2 Integer programming-problems **Assessment-I** 1.Assignment problems 2. Transportation problems -Tutorial 1.Random variables-1 dim, 2 dim 2. Standard distributions -Binomial 3. Poisson, Normal + Tutorial	**Chalk and Talk**
	Week – 10 **Week - 11**	1. Sampling- Introduction 2. Large samples 3. Large samples + Tutorial 1. Small samples- t-test 2. F-test 3. Chi- square test + Tutorial	**Chalk and Talk**

	Week -12 **Week -13**	1. Curve fitting 2. Correlation-Simple, Partial & Multiple 3. Regression + Tutorial 4. ANOVA- one-way, two-way **Assessment-II** 1. Latin square design 3. Time series analysis + Tutorial	**Chalk and Talk**

COURSE ASSESSMENT METHODS

S. No.		Week/Date	Duration	% Weightage
1.	Assessment-I	*6th week*	1 Hour	20%
2.	Assessment-II	*12th week*	1 Hour	20%
3.	Compensation Assessment	*14th week*	1 Hour	20%
4.	Assignment			10%
5.	Final Assessment	*After 14th week*	3 Hours	50% Total : 100 Marks

ESSENTIAL READINGS : Textbooks, Reference books, Website addresses, Journals, Softwares etc.

Reference Books

1. BOWKER and LIBERMAN, Engineering Statistics, Prentice-Hall.
2. GUPTA, S.C. and KAPOOR, V.K., Fundamentals of Mathematical Statistics, Sultan Chand and Sons.
3. SPIEGEL, MURRAY R., Probability and Statistics, Schaum's series.
4. SPIEGEL, MURRAY R., Statistics, Schaum's series.
5. GUPTA, S.C. Fundamentals of Statistics, Himalaya Publishing House.

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

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COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

a) Students who have missed either Assessment-I or Assessment-II or both can register for Compensation Assessment which shall be conducted soon after the completion of the Assessment-II and before the Final Assessment.

b) The Compensation Assessment shall be conducted for 20 marks comprising the syllabus of both Assessment -I & Assessment - II.

ADDITIONAL COURSE INFORMATION

FOR SENATE'S CONSIDERATION

Course Faculty _____ **CC-Chairperson** _____ **HOD** _____