

MA6351	PROBABILITY AND STATISTICS	L	T	P	EL	TOTAL CREDITS		
		3	1	0	3	5		
OBJECTIVES:								
<ul style="list-style-type: none">To provide students with the basic concepts of probability theoryTo equip the students with essential tools for statistical analyses at the graduate level.To Foster understanding through real-world statistical applications.								
MODULE I		RANDOM VARIABLES			L	T	P	EL
					3	1	0	3
Discrete and continuous random variables – Moments – Moment generating functions								
SUGGESTED ACTIVITIES :								
<ul style="list-style-type: none">Problem Solving sessionsSeminar by studentsApplication in real life problems								
SUGGESTED EVALUATION METHODS:								
<ul style="list-style-type: none">Tutorial problemsAssignment problemsQuizzes								
MODULE II		DISTRIBUTIONS			L	T	P	EL
					4	2	0	3
Binomial, Poisson, Geometric, Uniform, Exponential, Gamma and Normal distributions								
SUGGESTED ACTIVITIES :								
<ul style="list-style-type: none">Problem Solving sessionsSeminar by studentsApplication in real life problems								
SUGGESTED EVALUATION METHODS:								
<ul style="list-style-type: none">Tutorial problemsAssignment problemsQuizzes								
MODULE III		TWO - DIMENSIONAL RANDOM VARIABLES			L	T	P	EL
					4	2	0	3
Joint distributions – Marginal and conditional distributions								
SUGGESTED ACTIVITIES :								
<ul style="list-style-type: none">Problem Solving sessionsSeminar by studentsApplication in real life problems								
SUGGESTED EVALUATION METHODS:								
<ul style="list-style-type: none">Tutorial problemsAssignment problemsQuizzes								
MODULE IV		CORRELATION			L	T	P	EL
					4	2	0	3
Covariance – Correlation and Linear regression								

SUGGESTED ACTIVITIES : <ul style="list-style-type: none"> • Problem Solving sessions • Seminar by students • Application in real life problems 				
SUGGESTED EVALUATION METHODS: <ul style="list-style-type: none"> • Tutorial problems • Assignment problems • Quizzes 				
MODULE V TRANSFORMATION OF RANDOM VARIABLES	L	T	P	EL
	6	2	0	3
Transformation of random variables – Central limit theorem (for independent and identically distributed random variables).				
SUGGESTED ACTIVITIES : <ul style="list-style-type: none"> • Problem Solving sessions • Seminar by students • Application in real life problems 				
SUGGESTED EVALUATION METHODS: <ul style="list-style-type: none"> • Tutorial problems • Assignment problems • Quizzes 				
MODULE VI TESTING OF HYPOTHESIS (Large Samples)	L	T	P	EL
	6	2	0	3
Sampling distributions - Estimation of parameters - Statistical hypothesis - Large sample test based on Normal distribution for single mean and difference of means.				
SUGGESTED ACTIVITIES : <ul style="list-style-type: none"> • Problem Solving sessions • Seminar by students • Application in real life problems 				
SUGGESTED EVALUATION METHODS: <ul style="list-style-type: none"> • Tutorial problems • Assignment problems • Quizzes 				
MODULE VII TESTING OF HYPOTHESIS (Small Samples)	L	T	P	EL
	6	2	0	3
Tests based on t, Chi-square and F distributions for mean, variance and proportion - Contingency table (test for independent) - Goodness of fit.				
SUGGESTED ACTIVITIES : <ul style="list-style-type: none"> • Problem Solving sessions • Seminar by students • Application in real life problems 				

SUGGESTED EVALUATION METHODS:				
<ul style="list-style-type: none"> • Tutorial problems • Assignment problems • Quizzes 				
MODULE VIII	DESIGN OF EXPERIMENTS	L	T	P
		6	2	0
Analysis of variance – One way and two-way classification – Completely Random Design.				
SUGGESTED ACTIVITIES :				
<ul style="list-style-type: none"> • Problem Solving sessions • Seminar by students • Application in real life problems 				
SUGGESTED EVALUATION METHODS:				
<ul style="list-style-type: none"> • Tutorial problems • Assignment problems • Quizzes 				
MODULE IX	STATISTICAL QUALITY CONTROL	L	T	P
		4	2	0
Control charts for measurements (X and R charts) – Control charts for attributes (p, c and np charts)				
SUGGESTED ACTIVITIES :				
<ul style="list-style-type: none"> • Problem Solving sessions • Seminar by students • Application in real life problems 				
SUGGESTED EVALUATION METHODS:				
<ul style="list-style-type: none"> • Tutorial problems • Assignment problems • Quizzes 				

OUTCOMES :

Upon completion of the course, the students will be able to:

- Use statistical methodology and tools in the engineering problem-solving process
- Describe the properties of discrete and continuous distribution functions
- Use method of moments and moment generating functions
- Compute point estimation of parameters
- Apply the Central Limit Theorem
- Use statistical tests in testing hypotheses on data

TEXT BOOKS:

1. Milton. J. S. and Arnold. J.C., "Introduction to Probability and Statistics", Tata McGraw Hill, 4th Edition, 2007.
2. Johnson. R.A. and Gupta. C.B., "Miller and Freund's Probability and Statistics for Engineers", Pearson Education, Asia, 7th Edition, 2007.
3. Devore. J.L., "Probability and Statistics for Engineering and the Sciences", Cengage Learning, New Delhi, 8th Edition, 2012.

REFERENCES:

1. Papoulis. A and Unnikrishnapillai. S., "Probability, Random Variables and Stochastic Processes ", Mc Graw Hill Education India , 4th Edition, New Delhi , 2010.
2. Walpole. R.E., Myers. R.H., Myers. S.L. and Ye. K., "Probability and Statistics for Engineers and Scientists", Pearson Education, Asia, 8th Edition, 2007.
3. Ross, S.M., "Introduction to Probability and Statistics for Engineers and Scientists", 3rd Edition, Elsevier, 2004.
4. Spiegel. M.R., Schiller. J. and Srinivasan. R.A., "Schaum's Outline of Theory and Problems of Probability and Statistics". Tata McGraw Hill Edition, 2004.

Evaluation Pattern:

Category of Course	Continuous Assessment	Mid – Semester Assessment	End Semester
Theory	40	20	40

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	✓	✓	✓	✓						✓	✓
CO2	✓	✓	✓	✓	✓							
CO3	✓	✓	✓	✓	✓							
CO4	✓	✓	✓	✓	✓							
CO5	✓	✓	✓	✓	✓							
CO6	✓	✓	✓	✓	✓							

EE6351	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	L	T	P	EL	TOTAL CREDITS
		4	0	4	3	7
Prerequisites for the course: None						
OBJECTIVES : <ul style="list-style-type: none"> To learn the steady state DC and AC characteristics of electric circuits To understand the working of DC/AC motors, transformer and generators To understand the functionality of basic electronic circuits namely amplifiers, filters, data converters and oscillators To learn the design aspects of basic amplifier configurations and concepts of feedback techniques 						
MODULE I :		L	T	P		EL
		2	0	4		3
DC Electrical circuit - Fundamental laws– Steady State Solution of DC Circuits – Electrical measuring instruments.						