

Course Code		:	1BMAE301C	MATHEMATICS FOR ELECTRICAL SCIENCE STREAM (EE,ECS)	Semester	:	III
L:T:P		:	3 : 0 : 0		Course Type	:	BSC
Hours/Sem.	Teaching	:	42 Hrs		CIE Marks	:	50
	Learning (TW+SL)	:	42 Hrs		SEE Marks	:	50
	Exam	:	6Hrs		Total Marks	:	100
	Total Hrs.	:	90 Hrs		Credits	:	03

Professional Competency:

Apply statistical analysis, calculus and transform methods to solve engineering problems.

Course Outcomes:

After the completion of the course student will be able to

CO1: Apply correlation and regression analysis to fit a suitable mathematical model for Statistical data.

CO 2: Apply the concepts of probability distributions and Joint probability distribution for Engineering problems.

CO 3: Apply Fourier series to study the behavior of periodic functions and their applications.

CO4: Apply Fourier transforms and Z-Transform to solve engineering problems.

UNIT-I

10 Hrs.

Curve fitting, Correlation and Regressions: Principles of least squares, Curve fitting by the method of least squares in the form $y = a + bx$, $y = a + bx + cx^2$, $y = ab^x$. Correlation, Regression and rank correlation.

UNIT-II

11 Hrs.

Probability Distributions: Random variables-discrete and continuous Probability distribution function, cumulative distribution function, Mathematical Expectation, mean and variance, Binomial Poisson's and Normal distribution (derivations for mean and standard deviation for Binomial and Poisson distributions only) – Problems.

Joint Probability Distribution: Joint probability distributions for discrete and continuous random variables, expectation, covariance and correlation.

UNIT-III

11 Hrs.

Fourier series and practical harmonic analysis: Periodic functions, Dirichlet's condition. Fourier series expansion of functions with period 2π and with arbitrary period $2l$. Half-range Fourier series. Practical harmonic analysis.

UNIT-IV

10 Hrs.

Fourier and Z Transforms: Infinite Fourier transforms, Fourier cosine and sine transforms, Inverse Fourier transforms, Inverse Fourier cosine and sine transforms. Z-transforms- properties and problems.

Text Books

1. Ronald E. Walpole, Raymond H Myers, Sharon L Myers & Keying Ye "Probability & Statistics for Engineers & Scientists", Pearson Education, 9th edition, 2017.
2. Peter Bruce, Andrew Bruce & Peter Gedeck "Practical Statistics for Data Scientists" O' Reilly Media, Inc., 2nd edition 2020.

Reference Books

1. Erwin Kreyszig, "Advanced Engineering Mathematics", John Wiley & Sons, 9th Edition, 2006.
2. B. S. Grewal "Higher Engineering Mathematics", Khanna publishers, 44th Ed., 2021.

3. **G Haribaskaran** " Probability, Queuing Theory & Reliability Engineering", Laxmi Publication , Latest Edition, 2006
4. **Irwin Miller & Marylees Miller**, John E. Freund's "Mathematical Statistics with Applications" Pearson. Dorling Kindersley Pvt. Ltd. India, 8th edition, 2014.
5. **S C Gupta and V K Kapoor** , "Fundamentals of Mathematical Statistics", S Chand and Company , Latest edition.
6. **Robert V. Hogg, Joseph W. McKean & Allen T. Craig.** "Introduction to Mathematical Statistics", Pearson Education 7thedition, 2013.
7. **Jim Pitman.** Probability, Springer-Verlag , 1993.
8. **Sheldon M. Ross**, "Introduction to Probability Models" 11th edition. Elsevier, 2014.
9. **A.M. Yaglom and I. M. Yaglom**, "Probability and Information" D. Reidel Publishing Company. Distributed by Hindustan Publishing Corporation (India) Delhi, 1983.
10. **P.G. Hoel , S.C. Portand C. J. Stone**, "Introduction to Probability Theory", Universal Book Stall, (Reprint), 2003.
11. **S. Ross**, "A First Course in Probability", Pearson Education India, 6th Ed., 2002.
12. **W. Feller**, "An Introduction to Probability Theory and its Applications", Vol. 1, Wiley, 3rd Ed., 1968.
13. **N. P. Bali and Manish Goyal** , A Text book of Engineering Mathematics, Laxmi Publications, Reprint, 2010

Web Links and Video Lectures:

<https://drive.google.com/file/d/1KtCtZmnJnOvV1S68wXS9FZPXUFvRktBQ/view?usp=sharing>

Table: Matrix to describe the mapping of COs with POs (considering Wks) and PSOs

Course Outcomes (COs)	Program Outcomes and (Wks)											Program Specific Outcomes (PSOs)	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO1	3 (WK1, WK2, WK3 and WK4)	2 (WK1, WK2 and WK3)						1			1		
CO2	3 (WK1, WK2, WK3 and WK4)	2 (WK1, WK2 and WK3)						1			1		
CO3	3 (WK1, WK2, WK3 and WK4)	2 (WK1, WK2 and WK3)						1			1		
CO4	3 (WK1, WK2, WK3 and WK4)	2 (WK1, WK2 and WK3)						1			1		

Sri B.V.V.S.
Basaveshwar Engineering College, Bagalkote
Scheme (from 2026-27)

Sl. N o.	Cour se Code	Course Title	Teaching-Learning Scheme				Examina tion Duration (Hrs/Sem .)		Tot al Hou rs	Examination Scheme and Evaluation			Credits (C)= Tot al Ho urs /30
			L Hrs/ Week (Hrs/ Sem.)	T Hrs/ Week (Hrs/Se m.)	P Hrs/ Week (Hrs/Se m.)	Term Work (TW) and Self Learning (SL) (TW+S L) Hrs/ Sem.	CIE	SEE		CIE Mar ks	SEE Mar ks	Tota l Mar ks	
1	1BM AE30 1C	Mathe matics For Electric al Science Stream (EE, ECS)	3(42)	0	0	42	3	3	90	50	50	100	3= 90/ 30