

Course Code :		BMAB300M	BRIDGE COURSE MATHEMATICS-I	Semester :	III
L:T:P :		3 : 0 : 0		Course Type :	MC
Hours/Sem.	Teaching :	42 Hrs		CIE Marks :	100
	Learning (TW+SL) :	45 Hrs		SEE Marks :	00
	CIE Exam :	3 Hrs		Total Marks :	100
	SEE Exam :	----		Credits :	00
	Total Hrs. :	90 Hrs			

Professional Competency:

Apply calculus, linear algebra, Laplace transform, and numerical techniques to solve engineering and mathematical problems efficiently.

Course Outcomes

After completion of the course student will be able to

CO1: Apply the concepts of calculus

CO2: Apply the principles of linear algebra to solve system of linear equations.

CO3: Apply the Laplace transform techniques to solve differential equations.

CO4: Apply the Numerical techniques to solve engineering problems.

Partial Derivatives and Ordinary Differential equations

11 Hrs.

Partial differentiation, total derivative –differentiation of composite functions, Jacobian.

Linear and Bernoulli's differential equations. Exact and reducible to exact differential equations.

Integrating factors on $(1/N)(\partial M / \partial y - \partial N / \partial x)$ and $(1/M)(\partial N / \partial x - \partial M / \partial y)$.

Linear Algebra

10Hrs.

Elementary transformations, Rank of a matrix, consistency of a system of linear equations, solution of homogeneous and non homogeneous equations, Gauss-elimination method, Gauss-seidel method, Eigen values and eigen vectors by Rayleigh's power method.

Laplace Transform

11Hrs.

Introduction, Definition of Laplace Transform, Laplace Transform of standard functions, Properties: Shifting, differentiation, Integral and division by t. Periodic function, Heaviside's Unit step function. Inverse Laplace transform, properties(Shifting, Partial fractions, Logarithmic functions).Solutions of linear differential equations.

Numerical Methods

10 Hrs.

Introduction to root finding problems, Newton-Raphson's method. Finite differences, forward and backward difference operators (no derivations on relations between operators) Newton-Gregory forward and backward interpolation formulae (Without proof), Lagrange's interpolation formulae (without proof). Simpson's $1/3^{\text{rd}}$ and $3/8^{\text{th}}$ rule(no derivation)-problems. Runge-Kutta 4^{th} order method -problems.

Text Books

1. **B. S. Grewal:** "Higher Engineering Mathematics", Khanna Publishers, 44thEd., 2021.
2. **E. Kreyszig:** "Advanced Engineering Mathematics", John Wiley & Sons, 10thEd., 2018.
3. **H. K. Dass and Er. Rajnish Verma:** "Higher Engineering Mathematics" S. Chand Publication, 3rd Ed., 2014.

Reference Books

1. **V. Ramana:** "Higher Engineering Mathematics" McGraw-Hill Education, 11th Ed., 2017
2. **Srimanta Pal & Subodh C.Bhunia:** "Engineering Mathematics" Oxford University Press, 3rd Ed., 2016.
3. **N.P Bali and Manish Goyal:** "A Textbook of Engineering Mathematics" Laxmi

Publications, 10th Ed., 2022.

4. **C. Ray Wylie, Louis C. Barrett:** “Advanced Engineering Mathematics” McGraw – Hill Book Co., New York, 6th Ed., 2017.
5. **Gupta C.B, Sing S.R and Mukesh Kumar:** “Engineering Mathematic for Semester I and II”, Mc-Graw Hill Education(India) Pvt. Ltd 2015.
6. **David C Lay:** “Linear Algebra and its Applications”, Pearson Publishers, 4th Ed., 2018.
7. **Gareth Williams:** “Linear Algebra with Applications”, Jones Bartlett Publishers Inc., 6th Ed., 2017.

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, WK3, and WK4)						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 2025-26)

Sl. No.	Course Code	Course Title	Teaching-Learning Scheme				Examination Duration (Hrs/Sem.)		Total Hours	Examination Scheme and Evaluation			Credits (C)=Total Hours/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+SL) Hrs/Sem.				CIE Marks	SEE Marks	Total Marks	
							CIE	SEE					
1	BMA B300 M	BRIDGE COURSE MATHEMATIC S-I	0(42)	0	0	42	3	0	87	100	00	100	00= 100/ 42