



RAJASTHAN TECHNICAL UNIVERSITY, KOTA

Teaching & Examination Scheme

B.Tech. : Mechanical Engineering 2nd Year - III Semester

THEORY											
SN	Categ ory	Course		Contact hrs/week			Marks				Cr
		Code	Title								
				L	T	P	Exm Hrs	IA	ETE	Total	
1	BSC	3ME2-01	Advance Engineering Mathematics-I	3	0	0	3	30	120	150	3
2	HSMC	3ME1-02/ 3ME1-03	Technical Communication/ Managerial Economics and Financial Accounting	2	0	0	2	20	80	100	2
3	ESC	3ME3-04	Engineering Mechanics	2	0	0	2	20	80	100	2
4	PCC	3ME4-05	Engineering Thermodynamics	3	0	0	3	30	120	150	3
5		3ME4-06	Materials Science and Engineering	3	0	0	3	30	120	150	3
6		3ME4-07	Mechanics of Solids	3	1	0	3	40	160	200	4
			Sub Total	16	1	0		170	680	850	17
PRACTICAL & SESSIONAL											
7	PCC	3ME4-21	Machine drawing practice	0	0	3		45	30	75	1.5
8		3ME4-22	Materials Testing Lab	0	0	3		45	30	75	1.5
9		3ME4-23	Basic Mechanical Engineering Lab	0	0	3		45	30	75	1.5
10		3ME4-24	Programming using MATLAB	0	0	3		45	30	75	1.5
11	PSIT	3ME7-30	Industrial Training	0	0	1		0	0	50	1
12	SODE CA	3ME8-00	Social Outreach, Discipline & Extra Curricular Activities	0	0	0		0	0	25	0.5
			Sub- Total	0	0	13		180	120	375	7.5
		TOTAL OF III SEMESTER		16	1	13		350	800	1225	24.5

L: Lecture, **T:** Tutorial, **P:** Practical, **Cr:** Credits

ETE: End Term Exam, **IA:** Internal Assessment

Office of Dean Academic Affairs
Rajasthan Technical University, Kota



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SYLLABUS

2nd Year - III Semester: B.Tech. (Mechanical Engineering)

3ME2-01: ADVANCE ENGINEERING MATHEMATICS-I

Credit: 3
3L+0T+0P

Max. Marks: 150 (IA:30, ETE:120)
End Term Exam: 3 Hours

SN	Contents	Hours
1	Numerical Methods – 1: Finite differences, Relation between operators, Interpolation using Newton's forward and backward difference formulae. Gauss's forward and backward interpolation formulae. Stirling's Formulae. Interpolation with unequal intervals: Newton's divided difference and Lagrange's formulae. Numerical Differentiation, Numerical integration: Trapezoidal rule and Simpson's 1/3rd and 3/8 rules.	10
2	Numerical Methods – 2: Numerical solution of ordinary differential equations: Taylor's series, Euler and modified Euler's methods. Runge- Kutta method of fourth order for solving first and second order equations. Milne's and Adam's predictor-corrector methods. Solution of polynomial and transcendental equations-Bisection method, Newton-Raphson method and Regula-Falsi method.	8
3	Laplace Transform: Definition and existence of Laplace transform, Properties of Laplace Transform and formulae, Unit Step function, Dirac Delta function, Heaviside function, Laplace transform of periodic functions. Finding inverse Laplace transform by different methods, convolution theorem. Evaluation of integrals by Laplace transform, solving ODEs by Laplace transforms method.	10
4	Fourier Transform: Fourier Complex, Sine and Cosine transform, properties and formulae, inverse Fourier transforms, Convolution theorem, application of Fourier transforms to partial ordinary differential equation (One dimensional heat and wave equations only).	7
5	Z-Transform: Definition, properties and formulae, Convolution theorem, inverse Z-transform, application of Z-transform to difference equation.	5
	Total	40

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