

I Year – II SEMESTER**T P C**
3+1 0 3**MATHEMATICS – II**
(MATHEMATICAL METHODS)

(Common to All Branches)

UNIT I Solution of Algebraic and Transcendental Equations:

Introduction- Bisection Method – Method of False Position – Iteration Method – Newton-Raphson Method (One variable and Simultaneous Equations)

Subject Category

ABET Learning Objectives a e k

ABET internal assessments 1 2 4 6

JNTUK External Evaluation A B E

UNIT II Interpolation:

Introduction- Errors in Polynomial Interpolation – Finite differences- Forward Differences- Backward differences –Central differences – Symbolic relations and separation of symbols-Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unevenly spaced points - Lagrange's Interpolation formula.

Subject Category

ABET Learning Objectives a e

ABET internal assessments 1 2 4 6

JNTUK External Evaluation A B E

UNIT III Numerical solution of Ordinary Differential equations:

Solution by Taylor's series-Picard's Method of successive Approximations-Euler's Method-Runge-Kutta Methods

Subject Category

ABET Learning Objectives a e

ABET internal assessments 1 2 4 6

JNTUK External Evaluation A B E

UNIT IV Fourier Series:

Introduction- Determination of Fourier coefficients – even and odd functions –change of interval– Half-range sine and cosine series

application: Amplitude, spectrum of a periodic function

Subject Category.

ABET Learning Objectives a e d
 ABET internal assessments 1 2 6
 JNTUK External Evaluation A B E

UNIT V Fourier Transforms:

Fourier integral theorem (only statement) – Fourier sine and cosine integrals - sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.

Subject Category

ABET Learning Objectives a d e k
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UNIT VI Z-transform:

Introduction– properties – Damping rule – Shifting rule – Initial and final value theorems -Inverse z transform- -Convolution theorem – Solution of difference equation by Z - transforms.

Subject Category

ABET Learning Objectives a b e k
 ABET internal assessments 1 2 6
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BOOKS:

1. **B.S. GREWAL**, HigherEngineering Mathematics, 42nd Edition, Khanna Publishers
2. **DEAN G. DUFFY**, Advanced Engineering Mathematics with MATLAB, CRC Press
3. **V.RAVINDRANATH and P. VIJAYALAXMI**, Mathematical Methods, Himalaya Publishing House
4. **ERWYN KREYSZIG**, Advanced Engineering Mathematics, 9th Edition, Wiley-India

Subject Category	ABET Learning Objectives	ABET Internal Assessments	JNTUK External Evaluation	Remarks
	a) Apply knowledge of math, science, & engineering b) Design & conduct	1. Objective tests 2. Essay questions tests	A. Questions should have: B. Definitions, Principle of operation or	

<p>Theory Design Analysis Algorithms Drawing Others</p>	<p>experiments, analyze & interpret data</p> <p>c) Design a system/process to meet desired needs within economic, social, political, ethical, health/safety, manufacturability, & sustainability constraints</p> <p>d) Function on multidisciplinary teams</p> <p>e) Identify, formulate, & solve engineering problems</p> <p>f) Understand professional & ethical responsibilities</p> <p>g) Communicate effectively</p> <p>h) Understand impact of engineering solutions in global, economic, environmental, & societal context</p> <p>i) Recognize need for & be able to engage in lifelong learning</p> <p>j) Know contemporary issues</p> <p>k) Use techniques, skills, modern tools for engineering practices</p>	<p>3. Peer tutoring based</p> <p>4. Simulation based</p> <p>5. Design oriented</p> <p>6. Problem based</p> <p>7. Experiential (project based) based</p> <p>8. Lab work or field work based</p> <p>9. Presentation based</p> <p>10. Case Studies based</p> <p>11. Role-play based</p> <p>12. Portfolio based</p>	<p>philosophy of concept.</p> <p>C. Mathematical treatment, derivations, analysis, synthesis, numerical problems with inference.</p> <p>D. Design oriented problems</p> <p>E. Trouble shooting type of questions</p> <p>F. Applications related questions</p> <p>G. Brain storming questions</p>	
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