SRI KRISHNADEVARAYA UNIVERSITY:: ANANTAPURAMU

UG CBCS SYLLABUS
VI Semester
(2017-2018)

B.Sc., MATHEMATICS
VI SEMESTER- SYLLABUS

(AS PER CBCS AND SEMESTER SYSTEM)

III YEARS

w.e.f. 2017-2018

AP STATE COUNCIL OF HIGHER EDUCATION
CBCS - PATTERN FOR MATHEMATICS

CBCS B.A./B.Sc. **Mathematics** Course Structure
w.e.f. 2015-16 (Revised in April, 2016)

Year	Seme-ster	Paper	Subject	Hrs.	Credits	IA	EA	Total
1	**I**	I	Differential Equations & Differential Equations Problem Solving Sessions	6	5	25	75	100
	II	II	Solid Geometry & Solid Geometry Problem Solving Sessions	6	5	25	75	100
2	**III**	III	Abstract Algebra & Abstract Algebra Problem Solving Sessions	6	5	25	75	100
	IV	IV	Real Analysis & Real Analysis Problem Solving Sessions	6	5	25	75	100
3	**V**	V	Ring Theory & Vector Calculus & Ring Theory & Vector Calculus Problem Solving Sessions	5	5	25	75	100
		VI	Linear Algebra & Linear Algebra Problem Solving Sessions	5	5	25	75	100
	VI	VII	**Electives: (any one)** VII-(A) Laplace Transforms VII-(B) Numerical Analysis VII-(C) Number Theory & Elective Problem Solving Sessions	5	5	25	75	100
		VIII	**Cluster Electives:** VIII-A-1: Integral Transforms	5	5	25	75	100
			VIII-A-2: Advanced Numerical Analysis	5	5	25	75	100
			VIII-A-3: *Project work* or VIII-B-1: Principles of Mechanics	5	5	25	75	100
			VIII-B-2: Fluid Mechanics VIII-B-3: *Project work* or VIII-C-1: Graph Theory VIII-C-2: Applied Graph Theory VIII-C-3: *Project work*					

SRI KRISHNADEVARAY UNIVERSITY:: ANANTAPURAMU
UG CBCS SYLLABUS
B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS
SEMESTER – VI, PAPER – VII-(A)
ELECTIVE-VII(A); LAPLACE TRANSFORMS

60 Hrs

UNIT – 1 (12 hrs) Laplace Transform I : -
Definition of - Integral Transform – Laplace Transform Linearity, Property, Piecewise continuous Functions, Existence of Laplace Transform, Functions of Exponential order, and of Class A.

UNIT – 2 (12 hrs) Laplace Transform II : -
First Shifting Theorem, Second Shifting Theorem, Change of Scale Property, Laplace Transform of the derivative of f(t), Initial Value theorem and Final Value theorem.

UNIT – 3 (12 hrs) Laplace Transform III : -
Laplace Transform of Integrals – Multiplication by t, Multiplication by t^n – Division by t. Laplace transform of Bessel Function, Laplace Transform of Error Function, Laplace Transform of Sine and cosine integrals.

UNIT –4 (12 hrs) Inverse Laplace Transform I : -
Definition of Inverse Laplace Transform. Linearity, Property, First Shifting Theorem, Second Shifting Theorem, Change of Scale property, use of partial fractions, Examples.

UNIT –5 (12 hrs) Inverse Laplace Transform II : -
Inverse Laplace transforms of Derivatives–Inverse Laplace Transforms of Integrals – Multiplication by Powers of 'P'– Division by powers of 'P'– Convolution Definition – Convolution Theorem – proof and Applications – Heaviside's Expansion theorem and its Applications.

Reference Books :-
1. Laplace Transforms by A.R. Vasistha and Dr. R.K. Gupta Published by Krishna Prakashan Media Pvt. Ltd. Meerut.
2. Fourier Series and Integral Transforms by Dr. S. Sreenadh Published by S.Chand and Co., Pvt. Ltd., New Delhi.
3. Laplace and Fourier Transforms by Dr. J.K. Goyal and K.P. Gupta, Published by Pragathi Prakashan, Meerut.
4. Integral Transforms by M.D. Raising hania, - H.C. Saxsena and H.K. Dass Published by S. Chand and Co., Pvt.Ltd., New Delhi.

Suggested Activities:
Seminar/ Quiz/ Assignments

Cluster Elective- VIII-A-1:   INTEGRAL TRANSFORMS

60 Hrs

UNIT – 1 (12 hrs) Application of Laplace Transform to solutions of Differential Equations : -
   Solutions of ordinary Differential Equations.
   Solutions of Differential Equations with constants co-efficient
   Solutions of Differential Equations with Variable co-efficient

UNIT – 2 (12 hrs) Application of Laplace Transform : -
   Solution of simultaneous ordinary Differential Equations.
   Solutions of partial Differential Equations.

UNIT – 3 (12 hrs) Application of Laplace Transforms to Integral Equations : -
   Definitions : Integral Equations-Abel's, Integral Equation-Integral Equation of Convolution Type, Integro Differential Equations.Application of L.T. to Integral Equations.

UNIT –4 (12 hrs) Fourier Transforms-I : -
   Definition of Fourier Transform – Fourier's in Transform – Fourier cosine Transform – Linear Property of Fourier Transform – Change of Scale Property for Fourier Transform – sine Transform and cosine transform shifting property – modulation theorem.

UNIT – 5 (12 hrs) Fourier Transform-II : -
   Convolution Definition – Convolution Theorem for Fourier transform – parseval's Indentify – Relationship between Fourier and Laplace transforms – problems related to Integral Equations.

Finte Fourier Transforms : -
   Finte Fourier Sine Transform – Finte Fourier Cosine Transform – Inversion formula for sine and cosine Transforms only statement and related problems.

Reference Books :-
   1. Integral Transforms by A.R. Vasistha and Dr. R.K. Gupta Published by Krishna Prakashan Media Pvt. Ltd. Meerut.
   2. A Course of Mathematical Analysis by Shanthi Narayana and P.K. Mittal, Published by S. Chand and Company pvt. Ltd., New Delhi.
   3. Fourier Series and Integral Transforms by Dr. S. Sreenadh Published by S.Chand and Company Pvt. Ltd., New Delhi.
   4. Lapalce and Fourier Transforms by Dr. J.K. Goyal and K.P. Gupta, Published by Pragathi Prakashan, Meerut.
   5. Integral Transforms by M.D. Raising hania, - H.C. Saxsena and H.K. Dass Published by
      S.Chand and Company pvt. Ltd., New Delhi.

Suggested Activities:
Seminar/ Quiz/ Assignments

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B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS
SEMESTER – VI: PAPER – VIII-A-2

ELECTIVE – VIII-A-2: ADVANCED NUMERICAL ANALYSIS

60 Hrs

Unit – I (10 Hours)

Curve Fitting: Least – Squares curve fitting procedures, fitting a straight line, nonlinear curve fitting, Curve fitting by a sum of exponentials.

UNIT- II : (12 hours)

Numerical Differentiation: Derivatives using Newton's forward difference formula, Newton's backward difference formula, Derivatives using central difference formula, stirling's interpolation formula, Newton's divided difference formula, Maximum and minimum values of a tabulated function.

UNIT- III : (12 hours)

Numerical Integration: General quadrature formula on errors, Trapozoidal rule, Simpson's 1/3 – rule, Simpson's 3/8 – rule, and Weddle's rules, Euler – Maclaurin Formula of summation and quadrature, The Euler transformation.

UNIT – IV: (14 hours)

Solutions of simultaneous Linear Systems of Equations: Solution of linear systems – Direct methods, Matrix inversion method, Gaussian elimination methods, Gauss-Jordan Method ,Method of factorization, Solution of Tridiagonal Systems,. Iterative methods. Jacobi's method, Gauss-siedal method.

UNIT – V (12 Hours)

Numerical solution of ordinary differential equations: Introduction, Solution by Taylor's Series, Picard's method of successive approximations, Euler's method, Modified Euler's method, Runge – Kutta methods.

Reference Books :

1. Numerical Analysis by S.S.Sastry, published by Prentice Hall India (Latest Edition).
2. Numerical Analysis by G. Sankar Rao, published by New Age International Publishers, New – Hyderabad.
1. Finite Differences and Numerical Analysis by H.C Saxena published by S. Chand and Company, Pvt. Ltd., New Delhi.
4. Numerical methods for scientific and engineering computation by M.K.Jain, S.R.K.Iyengar, R.K. Jain.

Suggested Activities:
Seminar/ Quiz/ Assignments .

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B.A./B.Sc. THIRD YEAR MATHEMATICS SYLLABUS
SEMESTER – VI: PAPER – VIII-A-3

ELECTIVE – VIII-A-3: PROJECT WORK

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