AKU B.E./B.Tech CIVIL Sem 2 syllabus

English

PAPER CODE – 100106 || 100206
HSMC ENGLISH

CREDIT:3

1. VOCABULARY BUILDING
A. THE CONCEPT OF WORD FORMATION
B. ROOT WORDS FROM FOREIGN LANGUAGES AND THEIR USE IN ENGLISH
C. ACQUAINTANCE WITH PREFIXES AND SUFFIXES FROM FOREIGN LANGUAGES IN ENGLISH TO FORM DERIVATIVES.
D. SYNONYMS, ANTONYMS, AND STANDARD ABBREVIATIONS.
E. AFFIXES, ACRONYMS

2. BASIC WRITING SKILLS
A. SENTENCE STRUCTURES
B. USE OF PHRASES AND CLAUSES IN SENTENCES
C. IMPORTANCE OF PROPER PUNCTUATION
D. KINDS OF SENTENCES
E. USE OF TENSE, USE IN CONTEXT AND COHERENCE OF TENSE IN WRITING
F. USE OF VOICE – ACTIVE/PASSIVE IN SENTENCES
G. USE OF SPEECH – DIRECT AND INDIRECT SPEECH
H. FRAMING QUESTIONS- DIRECT, USING MODAL VERBS

3. IDENTIFYING COMMON ERRORS IN WRITING
A. SUBJECT-VERB AGREEMENT
B. NOUN-PRONOUN AGREEMENT
C. MISPLACED MODIFIERS
D. ARTICLES
E. PREPOSITIONS
F. REDUNDANCIES
G. CLICHÉS

H. COMMON ENGLISH ERRORS

4. NATURE AND STYLE OF SENSIBLE WRITING
A. DESCRIBING
B. DEFINING
C. CLASSIFYING
D. PROVIDING EXAMPLES OR EVIDENCE
E. WRITING INTRODUCTION AND CONCLUSION
F. ORGANISING PRINCIPLE OF PARAGRAPHS IN DOCUMENTS
G. ARGUMENT, DESCRIBING/ NARRATING/ PLANNING, DEFINING,CLASSIFYING
H. LEXICAL RESOURCES, USING SUITABLE LANGUAGE REGISTER
I. COHERENCE, WRITING INTRODUCTION, BODY AND CONCLUSION, TECHNIQUES FOR WRITING PRECISELY,GRAMMAR AND ACCURACY

5. WRITING PRACTICES
A. COMPREHENSION
B. FORMAL LETTER WRITING/ APPLICATION/ REPORT WRITING/ WRITING MINUTES OF MEETINGS
C. ESSAY WRITING
D. FORMAL EMAIL WRITING
E. RESUME/ CV WRITING, COVER LETTER,
F. STATEMENT OF PURPOSE

6. ORAL COMMUNICATION
(THIS UNIT INVOLVES INTERACTIVE PRACTICE SESSIONS IN LANGUAGE LAB)
A. LISTENING COMPREHENSION
B. PRONUNCIATION, INTONATION, STRESS AND RHYTHM
C. COMMON EVERYDAY SITUATIONS: CONVERSATIONS AND DIALOGUES
D. COMMUNICATION AT WORKPLACE
E. INTERVIEWS
F. FORMAL PRESENTATIONS
G. ACQUAINTING STUDENTS WITH IPA SYMBOLS
H. PHONETICS (BASIC)
I. SOUNDS – VOWELS, CONSONANTS
J. CLEARING MOTHER TONGUE INFLUENCE
K. CLEARING REDUNDANCIES AND COMMON ERRORS RELATED TO INDIANISMS
L. GROUP DISCUSSION
M. EXPRESSING OPINIONS
N. COHERENCE AND FLUENCY IN SPEECH

7. READING SKILLS
A. READING COMPREHENSION,
B. PARAGRAPH READING BASED ON PHONETIC SOUNDS/ INTONATION

8. PROFESSIONAL SKILLS
A. TEAM BUILDING
B. SOFT SKILLS AND ETIQUETTES

9. ACQUAINTANCE WITH TECHNOLOGY-AIDED LANGUAGE LEARNING
A. USE OF COMPUTER SOFTWARE (GRAMMARLY, GINGER...)
B. USE OF SMARTPHONE APPLICATIONS (DUOLINGO, BUSUU...)

10. ACTIVITIES
A. NARRATIVE CHAIN
B. DESCRIBING/ NARRATING
C. WRITING ESSAYS IN RELAY
D. PEER/ GROUP ACTIVITIES
E. BRAINSTORMING VOCABULARY
F. CUE / FLASH CARDS FOR VOCABULARY
G. DEBATES

SUGGESTED READINGS:

- PRACTICAL ENGLISH USAGE. MICHAEL SWAN. OUP. 1995.
- REMEDIAL ENGLISH GRAMMAR. F.T. WOOD. MACMILLAN.2007
- ON WRITING WELL. WILLIAM ZINSSER. HARPER RESOURCE BOOK. 2001
- STUDY WRITING. LIZ HAMP-LYONS AND BEN HEASLY. CAMBRIDGE UNIVERSITY PRESS. 2006.
- COMMUNICATION SKILLS. SANJAY KUMAR AND PUSHPLATA. OXFORD UNIVERSITY PRESS. 2011.
- EXERCISES IN SPOKEN ENGLISH. PARTS. I-III. CIEFL, HYDERABAD. OXFORD UNIVERSITY PRESS

Chemistry

CHEMISTRY

CREDITS - 5.5

MODULE 1: ATOMIC AND MOLECULAR STRUCTURE (10

LECTURES)
FAILURE OF CLASSICAL NEWTONIAN AND MAXWELL WAVE MECHANICS TO EXPLAIN PROPERTIES OF PARTICLES AT ATOMIC AND SUB-ATOMIC LEVEL; ELECTROMAGNETIC RADIATION, DUAL NATURE OF ELECTRON AND ELECTROMAGNETIC RADIATION, PLANK'S THEORY, PHOTOELECTRIC EFFECT AND HEISENBERG UNCERTAINTY PRINCIPLE. FAILURE OF EARLIER THEORIES TO EXPLAIN CERTAIN PROPERTIES OF MOLECULES LIKE PARAMAGNETIC PROPERTIES. PRINCIPLES FOR COMBINATION OF ATOMIC ORBITALS TO FORM MOLECULAR ORBITALS. FORMATION OF HOMO AND HETERO DIATOMIC MOLECULES AND PLOTS OF ENERGY LEVEL DIAGRAM OF MOLECULAR ORBITALS. COORDINATION NUMBERS AND GEOMETRIES, ISOMERISM IN TRANSITIONAL METAL COMPOUNDS, CRYSTAL FIELD THEORY AND THE ENERGY LEVEL DIAGRAMS FOR TRANSITION METAL IONS AND THEIR MAGNETIC PROPERTIES.

MODULE 2: SPECTROSCOPIC TECHNIQUES AND APPLICATIONS (8 LECTURES)
PRINCIPLES OF VIBRATIONAL AND ROTATIONAL SPECTROSCOPY AND SELECTION RULES FOR APPLICATION IN DIATOMIC MOLECULES. ELEMENTARY IDEA OF ELECTRONIC SPECTROSCOPY. UV-VIS SPECTROSCOPY WITH RELATED RULES AND ITS APPLICATIONS. FLUORESCENCE AND ITS APPLICATIONS IN MEDICINE. BASIC PRINCIPLE OF NUCLEAR MAGNETIC RESONANCE AND ITS APPLICATION. BASICS OF MAGNETIC RESONANCE IMAGING.

MODULE 3: INTERMOLECULAR FORCES AND PROPERTIES OF GASES (4 LECTURES)
IONIC, DIPOLAR AND VAN DER WAALS INTERACTIONS. EQUATIONS OF STATE OF IDEAL AND REAL GASES, DEVIATION FROM IDEAL BEHAVIOUR. VANDER WAAL GAS EQUATION.

MODULE 4: USE OF FREE ENERGY IN CHEMICAL EQUILIBRIA & WATER CHEMISTRY (8 LECTURES)
THERMODYNAMIC FUNCTIONS: ENERGY, ENTHALPY ENTROPY AND FREE ENERGY. EQUATIONS TO INTERRELATE THERMODYNAMIC PROPERTIES. FREE ENERGY, EMF. AND CELL POTENTIALS, THE NERNST EQUATION AND APPLICATIONS. CORROSION. USE OF FREE ENERGY CONSIDERATIONS IN METALLURGY THROUGH ELLINGHAM DIAGRAMS. SOLUBILITY EQUILIBRIA. WATER CHEMISTRY, HARD AND SOFT WATER.

PARAMETERS OF QUALITY OF WATER TO BE USED IN DIFFERENT INDUSTRIES AS FOR DRINKING WATER. CALCULATION OF HARDNESS OF WATER IN ALL UNITS. ESTIMATION OF HARDNESS USING EDTA AND ALKALINITY METHOD. REMOVAL OF HARDNESS BY SODA LIME AND ION EXCHANGE METHOD INCLUDING ZEOLITE METHOD.

MODULE 5: PERIODIC PROPERTIES (4 LECTURES)
EFFECTIVE NUCLEAR CHARGE, PENETRATION OF ORBITALS, VARIATIONS OF S, P, D AND F ORBITAL ENERGIES OF ATOMS IN THE PERIODIC TABLE, ELECTRONIC CONFIGURATIONS, ATOMIC AND IONIC SIZES, IONIZATION ENERGIES, ELECTRON AFFINITY AND ELECTRONEGATIVITY, POLARIZABILITY, ACID, BASE, PRINCIPLE OF HSAB THEORY, OXIDATION STATES, HYBRIDIZATION AND MOLECULAR GEOMETRIES.

MODULE 6: STEREOCHEMISTRY (4 LECTURES)
REPRESENTATIONS OF 3-D STRUCTURES, STRUCTURAL ISOMERS AND STEREOISOMERS, CONFIGURATIONS AND SYMMETRY AND CHIRALITY, ENANTIOMERS, DIASTEREOMERS, OPTICAL ACTIVITY, ABSOLUTE CONFIGURATIONS AND CONFORMATIONAL ANALYSIS.

MODULE 7: ORGANIC REACTIONS AND SYNTHESIS OF A DRUG MOLECULE (4 LECTURES)
INTRODUCTION TO INTERMEDIATES AND REACTIONS INVOLVING SUBSTITUTION, ADDITION, ELIMINATION, OXIDATION- REDUCTION, DIELS ELDER CYCLIZATION AND EPOXIDE RING OPENINGS REACTIONS. SYNTHESIS OF A COMMONLY USED DRUG MOLECULE LIKE ASPIRIN.

Programming for Problem Solving

PAPER CODE – 100104 || 100204
ESC PROGRAMMING FOR PROBLEM SOLVING

CREDIT:5

MODULE 1: INTRODUCTION TO PROGRAMMING
INTRODUCTION TO COMPONENTS OF A COMPUTER SYSTEM (DISKS, MEMORY, PROCESSOR, WHERE A PROGRAM IS STORED AND EXECUTED, OPERATING SYSTEM, COMPILERS ETC). IDEA OF ALGORITHM: STEPS TO SOLVE LOGICAL AND NUMERICAL PROBLEMS. REPRESENTATION OF ALGORITHM:

FLOWCHART/PSEUDO CODE WITH EXAMPLES. FROM ALGORITHMS TO PROGRAMS; SOURCE CODE, VARIABLES (WITH DATA TYPES) VARIABLES AND MEMORY LOCATIONS, TYPE CASTING/TYPE CONVERSION, RUN TIME ENVIRONMENT (STATIC, DYNAMIC LOCATION), STORAGE CLASSES (AUTO, REGISTER, STATIC, EXTERN), SYNTAX AND LOGICAL ERRORS IN COMPILATION, OBJECT AND EXECUTABLE CODE.

MODULE 2: OPERATORS
ARITHMETIC EXPRESSIONS/ARITHMETIC OPERATORS/RELATIONAL OPERATORS/LOGICAL OPERATORS/BITWISE OPERATORS AND PRECEDENCE

MODULE 3: CONDITIONAL BRANCHING AND LOOPS
WRITING AND EVALUATION OF CONDITIONALS AND CONSEQUENT BRANCHING, ITERATION AND LOOPS

MODULE 4: ARRAYS
ARRAY DECLARATION & INITIALIZATION, BOUND CHECKING ARRAYS (1-D, 2-D), CHARACTER ARRAYS AND STRINGS.

MODULE 5: BASIC ALGORITHMS
SEARCHING (LINEAR SEARCH, BINARY SEARCH ETC.), BASIC SORTING ALGORITHMS (BUBBLE, INSERTION AND SELECTION), FINDING ROOTS OF EQUATIONS, NOTION OF ORDER OF COMPLEXITY THROUGH EXAMPLE PROGRAMS (NO FORMAL DEFINITION REQUIRED)

MODULE 6: FUNCTION
INTRODUCTION & WRITING FUNCTIONS, SCOPE OF VARIABLES FUNCTIONS (INCLUDING USING BUILT IN LIBRARIES), PARAMETER PASSING IN FUNCTIONS, CALL BY VALUE, PASSING ARRAYS TO FUNCTIONS: IDEA OF CALL BY REFERENCE

MODULE 7: RECURSION
RECURSION, AS A DIFFERENT WAY OF SOLVING PROBLEMS. EXAMPLE PROGRAMS, SUCH AS FINDING FACTORIAL, FIBONACCI SERIES, REVERSE A STRING USING RECURSION, AND GCD OF TWO NUMBERS, ACKERMAN FUNCTION ETC. QUICK SORT OR MERGE SORT.

MODULE 8: STRUCTURE/UNION
STRUCTURES, ACCESSING STRUCTURE ELEMENTS, WAY OF STORAGE OF STRUCTURE ELEMENT, DEFINING STRUCTURES

AND ARRAY OF STRUCTURES, BASIC DEFINITION OF UNION, COMPARISON B/W STRUCTURE & UNION WITH EXAMPLE

MODULE 9: POINTERS
IDEA OF POINTERS, DEFINING POINTERS, USE OF POINTERS IN SELF-REFERENTIAL STRUCTURES, NOTION OF LINKED LIST (NO IMPLEMENTATION), POINTER TO POINTER, POINTER TO ARRAY, POINTER TO STRINGS, ARRAY OF POINTER, POINTER TO FUNCTION, POINTER TO STRUCTURE.

MODULE 10: FILE HANDLING
(ONLY IF TIME IS AVAILABLE, OTHERWISE SHOULD BE DONE AS PART OF THE LAB)

SUGGESTED TEXT BOOKS

- BYRON GOTTFRIED, SCHAUM'S OUTLINE OF PROGRAMMING WITH C, MCGRAW-HILL
- E. BALAGURUSWAMY, PROGRAMMING IN ANSI C, TATA MCGRAW-HILL

SUGGESTED REFERENCE BOOKS

- BRIAN W. KERNIGHAN AND DENNIS M. RITCHIE, THE C PROGRAMMING LANGUAGE, PRENTICE HALL OF INDIA
- YASHWANT KANETKAR, LET US C, BPB PUBLICATION

Workshop Manufacturing Practices

WORKSHOP MANUFACTURING PRACTICES

CREDIT-03

DETAILED CONTENTS
1. MANUFACTURING METHODS-CASTING, FORMING, MACHINING, JOINING, ADVANCED MANUFACTURING METHODS

2. CNC MACHINING, ADDITIVE MANUFACTURING

3. FITTING OPERATIONS & POWER TOOLS

4. CARPENTRY

5. PLASTIC MOULDING, GLASS CUTTING

6. METAL CASTING

7. WELDING (ARC WELDING & GAS WELDING), BRAZING, SOLDERING

SUGGESTED TEXT/REFERENCE BOOKS:

1.HAJRA CHOUDHURY S.K., HAJRA CHOUDHURY A.K. AND NIRJHAR ROY S.K., “ELEMENTS OF WORKSHOP TECHNOLOGY”, VOL. I 2008 AND VOL. II 2010, MEDIA PROMOTERS AND PUBLISHERS PRIVATE LIMITED, MUMBAI.

2.KALPAKJIAN S. AND STEVEN S. SCHMID, “MANUFACTURING ENGINEERING AND TECHNOLOGY”, 4TH EDITION, PEARSON EDUCATION INDIA EDITION, 2002.

3.GOWRI P. HARIHARAN AND A. SURESH BABU,”MANUFACTURING TECHNOLOGY – I” PEARSON EDUCATION, 2008.

4.ROY A. LINDBERG, “PROCESSES AND MATERIALS OF MANUFACTURE”, 4TH EDITION, PRENTICE HALL INDIA, 1998.

5.RAO P.N., “MANUFACTURING TECHNOLOGY”, VOL. I AND VOL. II, TATA MCGRAWHILL

Mathematics –II (Differential Equations)

PAPER CODE - 101202
BSC MATHEMATICS –II (DIFFERENTIAL EQUATIONS)

CREDIT:4

ORDINARY DIFFERENTIAL EQUATIONS
MODULE 3A: FIRST ORDER ORDINARY DIFFERENTIAL EQUATIONS
EXACT, LINEAR AND BERNOULLI’S EQUATIONS, EULER’S EQUATIONS, EQUATIONS NOT
OF FIRST DEGREE: EQUATIONS SOLVABLE FOR P, EQUATIONS SOLVABLE FOR Y, EQUATIONS
SOLVABLE FOR X AND CLAIRAUT’S TYPE.

MODULE 3B: ORDINARY DIFFERENTIAL EQUATIONS OF HIGHER ORDERS

SECOND ORDER LINEAR DIFFERENTIAL EQUATIONS WITH VARIABLE COEFFICIENTS,
METHOD OF VARIATION OF PARAMETERS, CAUCHY-EULER EQUATION; POWER SERIES
SOLUTIONS; LEGENDRE POLYNOMIALS, BESSEL FUNCTIONS OF THE FIRST KIND AND THEIR
PROPERTIES.

TEXTBOOKS/REFERENCES:

- ERWIN KREYSZIG, ADVANCED ENGINEERING MATHEMATICS, 9TH EDITION, JOHN WILEY & SONS, 2006.
- W. E. BOYCE AND R. C. DIPRIMA, ELEMENTARY DIFFERENTIAL EQUATIONS AND BOUNDARY VALUE PROBLEMS, 9TH EDITION, WILEY INDIA, 2009.
- S. L. ROSS, DIFFERENTIAL EQUATIONS, 3RD ED., WILEY INDIA, 1984.
- E. A. CODDINGTON, AN INTRODUCTION TO ORDINARY DIFFERENTIAL EQUATIONS, PRENTICE HALL INDIA, 1995.
- E. L. INCE, ORDINARY DIFFERENTIAL EQUATIONS, DOVER PUBLICATIONS, 1958.
- G.F. SIMMONS AND S.G. KRANTZ, DIFFERENTIAL EQUATIONS, TATA MCGRAW HILL, 2007.

PARTIAL DIFFERENTIAL EQUATIONS
MODULE 3C: PARTIAL DIFFERENTIAL EQUATIONS – FIRST ORDER

FIRST ORDER PARTIAL DIFFERENTIAL EQUATIONS, SOLUTIONS OF FIRST ORDER LINEAR AND NON-LINEAR PDES.

MODULE 3D: PARTIAL DIFFERENTIAL EQUATIONS – HIGHER ORDER
SOLUTION TO HOMOGENOUS AND NON-HOMOGENOUS LINEAR PARTIAL DIFFERENTIAL EQUATIONS SECOND AND HIGHER ORDER BY COMPLIMENTARY FUNCTION AND PARTICULAR INTEGRAL METHOD. FLOWS, VIBRATIONS AND DIFFUSIONS, SECOND-ORDER LINEAR EQUATIONS AND THEIR CLASSIFICATION, INITIAL AND BOUNDARY CONDITIONS (WITH AN INFORMAL DESCRIPTION OF WELL-POSED PROBLEMS), D'ALEMBERT'S SOLUTION OF THE WAVE
EQUATION; DUHAMEL'S PRINCIPLE FOR ONE DIMENSIONAL WAVE EQUATION. SEPARATION OF
VARIABLES METHOD TO SIMPLE PROBLEMS IN CARTESIAN

COORDINATES. THE LAPLACIAN IN PLANE, CYLINDRICAL AND SPHERICAL POLAR COORDINATES, SOLUTIONS WITH BESSEL FUNCTIONS AND LEGENDRE FUNCTIONS. ONE DIMENSIONAL DIFFUSION EQUATION AND ITS
SOLUTION BY SEPARATION OF VARIABLES. BOUNDARY-VALUE PROBLEMS: SOLUTION OF BOUNDARY-VALUE PROBLEMS FOR VARIOUS LINEAR PDES IN VARIOUS GEOMETRIES.

TEXTBOOKS/REFERENCES:

- S. J. FARLOW, PARTIAL DIFFERENTIAL EQUATIONS FOR SCIENTISTS AND ENGINEERS, DOVER PUBLICATIONS, 1993.
- R. HABERMAN, ELEMENTARY APPLIED PARTIAL DIFFERENTIAL EQUATIONS WITH FOURIER SERIES
- AND BOUNDARY VALUE PROBLEM, 4TH ED., PRENTICE HALL, 1998.
- IAN SNEDDON, ELEMENTS OF PARTIAL DIFFERENTIAL EQUATIONS, MCGRAW HILL, 1964.
- MANISH GOYAL AND N.P. BALI, TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS, UNIVERSITY SCIENCE PRESS, SECOND EDITION, 2010.

COMPLEX VARIABLES
MODULE 4A: COMPLEX VARIABLE – DIFFERENTIATION
DIFFERENTIATION, CAUCHY-RIEMANN EQUATIONS, ANALYTIC FUNCTIONS, HARMONIC FUNCTIONS, FINDING HARMONIC CONJUGATE; ELEMENTARY ANALYTIC FUNCTIONS (EXPONENTIAL, TRIGONOMETRIC, LOGARITHM) AND THEIR PROPERTIES; CONFORMAL MAPPINGS, MOBIUS TRANSFORMATIONS AND THEIR PROPERTIES.

MODULE 4B: COMPLEX VARIABLE - INTEGRATION
CONTOUR INTEGRALS, CAUCHY-GOURSAT THEOREM (WITHOUT PROOF), CAUCHY INTEGRAL FORMULA (WITHOUT PROOF), LIOUVILLE'S THEOREM AND MAXIMUM-MODULUS THEOREM(WITHOUT PROOF); TAYLOR'S SERIES, ZEROS OF ANALYTIC FUNCTIONS, SINGULARITIES, LAURENT'S SERIES; RESIDUES, CAUCHY RESIDUE THEOREM (WITHOUT PROOF), EVALUATION OF DEFINITE INTEGRAL INVOLVING SINE AND COSINE, EVALUATION OF CERTAIN IMPROPER INTEGRALS USING THE BROMWICH CONTOUR.

MODULE 4C: APPLICATIONS OF COMPLEX INTEGRATION BY RESIDUES:

EVALUATION OF DEFINITE INTEGRAL INVOLVING SINE AND COSINE. EVALUATION OF CERTAIN IMPROPER INTEGRALS USING THE BROMWICH CONTOUR.

TEXTBOOKS/REFERENCES:

- ERWIN KREYSZIG, ADVANCED ENGINEERING MATHEMATICS, 9TH EDITION, JOHN WILEY & SONS, 2006.
- J. W. BROWN AND R. V. CHURCHILL, COMPLEX VARIABLES AND APPLICATIONS, 7TH ED., MC- GRAW HILL, 2004.
- VEERARAJAN T., ENGINEERING MATHEMATICS FOR FIRST YEAR, TATA MCGRAW-HILL, NEW DELHI, 2008.
- N.P. BALI AND MANISH GOYAL, A TEXT BOOK OF ENGINEERING MATHEMATICS, LAXMI PUBLICATIONS, REPRINT, 2010.
- B.S. GREWAL, HIGHER ENGINEERING MATHEMATICS, KHANNA PUBLISHERS, 35TH EDITION, 2000.

NUMERICAL METHODS

MODULE 5A: NUMERICAL METHODS – 1

SOLUTION OF POLYNOMIAL AND TRANSCENDENTAL EQUATIONS – BISECTION METHOD, NEWTON-RAPHSON METHOD AND REGULA-FALSI METHOD. FINITE DIFFERENCES, RELATION BETWEEN OPERATORS, INTERPOLATION USING NEWTON'S FORWARD AND BACKWARD DIFFERENCE 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.

MODULE 5B: NUMERICAL METHODS – 2

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 PREDICATOR-CORRECTOR METHODS. PARTIAL DIFFERENTIAL EQUATIONS: FINITE DIFFERENCE SOLUTION TWO DIMENSIONAL LAPLACE EQUATION AND POISSION EQUATION, IMPLICIT AND EXPLICIT METHODS FOR ONE DIMENSIONAL HEAT EQUATION (BENDER-SCHMIDT AND CRANK-NICHOLSON METHODS), FINITE DIFFERENCE EXPLICIT METHOD FOR WAVE EQUATION.

TEXTBOOKS/REFERENCES:

- P. KANDASAMY, K. THILAGAVATHY, K. GUNAVATHI, NUMERICAL METHODS, S. CHAND & COMPANY, 2ND EDITION, REPRINT 2012.
- S.S. SASTRY, INTRODUCTORY METHODS OF NUMERICAL ANALYSIS, PHI, 4TH EDITION, 2005.
- ERWIN KREYSZIG, ADVANCED ENGINEERING MATHEMATICS, 9TH EDITION, JOHN WILEY & SONS, 2006.
- B.S. GREWAL, HIGHER ENGINEERING MATHEMATICS, KHANNA PUBLISHERS, 35TH EDITION, 2010.