08.301 ENGINEERING MATHEMATICS II 3 – 1 – 0
(C M P U N E R F T A H B)

Module I (16 hours)

Multiple Integrals: Double Integrals (Cartesian only). Change of order of integration. Area enclosed by plane curves. Triple integrals. Volume of solids.

Vector Integration: Line and surface and volume integrals. Green's theorem in the plane. Stoke's theorem and Gauss' divergence theorem (no proof).

Module II (18 hours)

Fourier Series: Fourier series of periodic functions of period 2π and $2l$. Dirichlet's condition for convergence. Odd and even functions. Half range expansions.

Fourier Transforms: Fourier integral theorem (no proof) – Fourier transforms – Fourier sine and cosine transforms, inverse Fourier transforms, properties.

Module III (18 hours)

Partial differential equations: Formation of PDE. Solution of Lagranges linear equation. First order nonlinear equations – standard forms – Homogeneous PDE with constant coefficients.

Application of PDE: Derivation of one-dimensional Wave and Heat equations. Solution by separation of variables. Boundary value problems in one-dimensional Wave and Heat equations.

Reference Books

1. Advanced Engineering Mathematics, 8th Edn. – Kreyszig, Wiley Eastern.
2. Advanced Engineering Mathematics – Peter O Neil, Thomson Publications.
3. Higher Engineering Mathematics – B. S. Grewal, Khanna Publishers.
4. Higher Engineering Mathematics – B. V. Ramana, Tata Mc Graw Hill.
5. Advanced Engineering Mathematics – Michael D. Greenberg, Pearson Education

Internal Continuous Assessment *(Maximum Marks-50)*

25 Marks - Tests (minimum 2)

15 Marks - Assignments (minimum 3) such as home work, problem solving, literature survey, seminar, term-project, programming exercises, etc.

10 Marks - Regularity in the class

University Examination Pattern

PART A: Short answer questions — *10 x 4 marks=40 marks*

All questions are compulsory. There should be at least three questions from each module and not more than four questions from any module.

PART B: Descriptive/Analytical/Problem solving questions — *3 x 20 marks=60 marks*

Candidates have to answer one question out of two or two questions out of four from each module.

Maximum Total Marks: 100

08.302 PROBLEM SOLVING AND PROGRAMMING IN C (R F) 2 – 2 – 0

Module I (15 hours)

Introduction to digital computer – VonNewman concept – hypothetical decimal computer – functional units of a computer – storage – primary storage – secondary storage. Introduction to programming languages – types of programming languages – high level languages – assembly language – machine language. Problem solving concepts – flow charts and algorithms – problem definition phase – general problem solving strategies – top-down design – breaking a problem into sub problems – choice of a suitable data structure. Documentation of programs – debugging of programs.

Module II (20 hours)

Important C concepts. Preprocessor directives – header files – data types and qualifiers – operators and expressions – enumerations – data input and output – control statements – arrays and strings – structures and unions – working with bits in C – storage classes. Example programs including bubble sort, selection sort, and linear and binary search.

Module III (17 hours)

Pointers – arrays of pointers – structures and pointers. Memory allocation functions. Function – function definition – function prototypes – function call by value and call by reference – recursive functions. Data files – formatted, unformatted and text files. Low level programming in C. Command line arguments. Example programs.

Text Books:

1. Computer Programming in C – V. Rajaraman, PHI
2. Programming with C – B.S. Gottfried, Schaum's Series, TMH.
3. A structured Programming Approach Using C – B.A. Forouzan and R.F. Gilberg, Thomson Learning.
4. Problem Solving and Program Design in C – J.R. Hanly and E.B. Koffman, Pearson/Addison Wesley
5. Fundamentals of computers – V. Rajaraman, PHI

Reference Books:

1. The C Programming language – Keringhan B.W. and Ritche D.M., PHI 1990.
2. Programming with ANSI and Turbo C – Ashok N. Kamthane, Pearson Education India
3. Programming Techniques through C – M.G. Venkateshmurthy, Pearson Education India.
4. A Book on C – A. Kelly and I. Pohl, Pearson Education.

Internal Continuous Assessment *(Maximum Marks-50)*

25 Marks - Tests (minimum 2)

15 Marks - Assignments (minimum 3) such as home work, problem solving, literature survey, seminar, term-project, programming exercises in C, etc.

10 Marks - Regularity in the class

University Examination Pattern

PART A: ***Short answer questions*** *10 x 4 marks=40 marks*

All questions are compulsory. There should be at least three questions from each module and not more than four questions from any module.

PART B: ***Descriptive/Analytical/Problem solving questions*** *3 x 20 marks=60 marks*

Candidates have to answer one question out of two or two questions out of four from each module.

Maximum Total Marks: 100

08.304 ELECTRONIC CIRCUITS (R F) 2 – 1 – 0

Module I (12 hours)

Design and analysis of Rectifiers, Filters, Clippers, Clampers, Regulators, Differentiators, Integrators-RC circuits-response of high pass / low pass RC to sine wave, pulse and square wave inputs- principle of operation of inverters, uninterrupted power supplies, switched mode power supplies

Module II (13 hours)

Transistor amplifiers- classification – small signal analysis – voltage divider bias – emitter follower configuration- feed back configurations- RC phase shift, wein bridge, Colpitts, Hartely oscillator(No derivations), Multivibrators- monostable, bistable and astable- 555 timer and applications (No derivations)

Module III (14 hours)

Operational Amplifiers, Block diagram, characteristic features of OP Amps, ideal OP Amps, common mode and difference mode- summing amplifier, differential amplifier, inverting, non inverting amplifiers. Active filters, Applications, Chebyshev and Butterworth filters, Low pass Butterworth Filter, High pass Butterworth Filter, Band Pass and Band rejection filters, Oscillators- Wein Bridge and Phase shift Oscillators

Text Books:

1. Electronic Devices and Circuits Theory – Boylestead and Nashelky, PHI
2. Op-amp and Linear Integrated Circuits – Gayakwad, 4th Edn., Pearson Education

Reference Books:

1. Electronic Circuits – R.D. Sudhaker Samuel and V Nattarju, Sanguine Technical Publishers

Internal Continuous Assessment *(Maximum Marks-50)*

25 Marks - Tests (minimum 2)
15 Marks - Assignments (minimum 3) such as home work, problem solving, literature survey, seminar, term-project, hardware/software/simulation exercises, etc.
10 Marks - Regularity in the class

University Examination Pattern

PART A: *Short answer questions* — *10 x 4 marks=40 marks*

All questions are compulsory. There should be at least three questions from each module and not more than four questions from any module.

PART B: *Descriptive/Analytical/Problem solving questions* — *3 x 20 marks=60 marks*

Candidates have to answer one question out of two or two questions out of four from each module.

Maximum Total Marks: 100

08.305 DIGITAL SYSTEM DESIGN (R F) 2 – 2 – 0

Module I (16 hours)

Number systems – Decimal, Binary, Octal and Hexadecimal – conversion from one system to another – representation of negative numbers – representation of BCD numbers – character representation – character coding schemes – ASCII – EBCDIC etc. Addition, subtraction, multiplication and division of binary numbers (no algorithms). Addition and subtraction of BCD, Octal and Hexadecimal numbers. Representation of floating point numbers – precision – addition, subtraction, multiplication and division of floating point numbers (no algorithms).

Module II (18 hours)

Postulates of Boolean algebra – logic functions – logic gates – methods of minimization of logic functions – Karnaugh map method and tabulation method – realization using logic gates. Design of combinational logic circuits – adder, subtractor, parallel adder, carry look ahead adder, multilevel carry look ahead adder, BCD adder, code converter, magnitude comparator, decoder, multiplexer, demultiplexer, parity generator – design examples.

Module III (18 hours)

Sequential logic circuits – flip flops – RS, JK, D and T type – master-slave flip flop. Analysis and design of clocked sequential circuits – state diagram – state reduction and assignment – design with state equations – shift registers – universal shift registers – serial adder – design of synchronous and asynchronous counters – timing Sequences. Introduction to Programmable Logic Devices (PLDs). Basics of Hardware Description language (HDL).

Text Books:

1. Digital Design – M. Morris Mano, Pearson Education.
2. Digital Fundamentals – T.L. Floyd and R.P. Jain, Pearson Education.
3. Digital Electronics Principles and Applications – Tokheim, TMH.

Reference Books:

1. Digital Electronics-an Introduction to Theory and Practice – W.H. Gothman, PHI.
2. An Introduction to Digital Computer Design – V. Rajaraman and T. Radhakrishnan, 5th Edn., PHI.
3. Digital Logic Applications and Design – V.N. Yarbrough, Thomson Learning.
4. Digital Design and Computer Architecture – D.M. Harris and S.L. Harris, Morgan Kaufmann Publishers.

Internal Continuous Assessment *(Maximum Marks-50)*

25 Marks - Tests (minimum 2)

15 Marks - Assignments (minimum 3) such as home work, problem solving, literature survey, seminar, term-project, hardware/PC interface exercises, simulation exercises using technical computing software etc.

10 Marks - Regularity in the class

University Examination Pattern

PART A: Short answer questions — *10 x 4 marks=40 marks*

All questions are compulsory. There should be at least three questions from each module and not more than four questions from any module.

PART B: Descriptive/Analytical/Problem solving questions — *3 x 20 marks=60 marks*

Candidates have to answer one question out of two or two questions out of four from each module.

Maximum Total Marks: 100

08.307 ELECTRONIC CIRCUITS LAB (R F) 0-0-4

1. Characteristics of diode, zener diode.
2. CE characteristics of BJT.
3. CS characteristics of FET.
4. Rectifier circuits with and without filters.
5. RC lowpass and highpass circuits.
6. Differentiating and Integrating circuits.
7. Clipping and Clamping circuits.
8. Simple zener diode regulator.
9. RC coupled amplifier using BJT.
10. RC phase shift oscillator using BJT.
11. Astable and Monostable multivibrators using 555 Timer IC.
12. Astable and Monostable multivibraors using 741 OPAMP.

Internal Continuous Assessment *(Maximum Marks-50)*

20 Marks - Tests (minimum 1)
20 Marks - Up-to-date lab work, problem solving capability, keeping track of rough record and fair record, term projects, assignment-hardware exercises, etc.
10 Marks - Regularity in the class

University Examination Pattern *(Maximum marks - 100)*

Marks should be awarded as follows:

20 Marks - Algorithm/Design.
25 Marks - Viva voce.
30 marks - Implementing the work/Conducting the experiment.
25 Marks - Output/Results and inference.

General instructions:

- Evaluation is a serious process that is to be conducted under the equal responsibility of both the internal and external examiners.
- The number of candidates evaluated per day should not exceed 20

03.308 PROGRAMMING LAB (R F) 0 – 0 – 4

Familiarization of operating systems like DOS and Windows.
Programming exercises in C based on the course *08.302 Problem Solving and Programming in C.*
The exercises may include the following:-

Programs using –

Decision making, branching and looping
- if, if ... else statements
- switch, goto statements
- while, do, for statements

Arrays and strings
- one-dimensional, two-dimensional, multidimensional arrays
- reading/writing strings
- operations on strings
- string handling

Functions
- user defined functions
- function calls, arguments & return values
- nesting of functions
- recursive functions
- passing arrays and strings to functions

Structures and unions
- copying and comparing structure variables
- arrays of structures
- arrays within structures
- structures with in structures
- structures and functions
- unions

Pointers
- pointers and arrays
- pointers and character strings
- array of pointers
- pointers and functions
- pointers and structures

Files, memory allocation, bit-level programming
- files → defining, opening/closing, input-output operations
- command line arguments
- memory allocation functions
- bit-wise operators

Internal Continuous Assessment *(Maximum Marks-50)*

20 Marks - Tests (minimum 1)
20 Marks - Up-to-date lab work, problem solving capability, keeping track of rough record and fair record, term-projects, assignment - programming exercises, etc.
10 Marks - Regularity in the class

University Examination Pattern *(Maximum marks – 100)*

Marks should be awarded as follows:

20 Marks - Algorithm/Design.
25 Marks - Viva voce
30 marks - Implementing the work/Conducting the experiment.
25 Marks - Output/Results and inference.

General Instructions:
- **Evaluation is a serious process that is to be conducted under the equal responsibility of both the internal and external examiners.**
- **The number of candidates evaluated per day should not exceed 20**