Group – A
(Common For All Branches)

Applied Maths-I (AS-1001)

Course Code	AS-1001	Credits-4	L-3, T-1, P-0
Name of the Course	Applied Maths-I		
Lectures to be Delivered	52 (1 Hr Each) (L=39, T=13 for each semester)		
Semester End Examination	Max Marks: 100	Min Pass Marks: 40	Maximum Time: 3 hrs
Continuous Assessment (based on sessional test (2) 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)			Max Marks: 50

Instructions

1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D and E. Section E will be Compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 20% of the total marks of the semester end examination for the course. Section A, B, C and D will have two questions from the respective sections of the syllabus and each question will carry 20% of the total marks of the semester end examination for the course.
2. **For Candidates:** Candidates are required to attempt five question in all selecting one question from each of the section A, B, C and D of the question paper and all the subparts of the questions in section E. Use of non-programmable calculators is allowed.

Section A

Function of several variables, limits and continuity, partial derivatives, higher order partial derivatives, Euler's theorem, Jacobians, maxima of functions of two variables. Lagrange's method of multipliers, double and triple integrals, change of variables, applications of double and triple integrals, beta and gamma functions.

Section B

Reduction formulae, definite integral as limit of a sum, area under a curve, length of an arc of a curve. Linear differential equations of second order with constant coefficients: complementary functions, particular integrals, Euler homogeneous form, and variation of parameters. Convergence of series, Taylor's theorem with remainder, power series expansion of functions, Taylor's and Maclaurin's series.

Section C

Matrices: review of properties of determinants. Elementary operations on matrices. Homogeneous and nonhomogeneous system of linear equations and their properties, bilinear, quadratic, hermitian and skew-hermeitian forms. Eigenvalues of hermitian, skew-hermitian and unitary matrices.

Section D

Complex analytic functions: brief review of complex numbers, complex variable, concept of limit, continuity and derivatives of analytical function, cauchy-Riemann equations, harmonic function, complex series, some elementary functions, logarithm.

Books:

1. Kryszig, Thomas-Finny, Advanced Engineering Mathematics.
2. S.S. Shastri, "Engineering Mathematics (2^{nd} edition) Vol-I and Vol-II.
3. B.S. Grewal, Higher Engineering Mathematics.
4. Piskunov, Differential and Integral Calculus.
5. R.K.Jain and S.R. K. Iyengar, Advanced Engineering, Mathematics.
6. Michael D. Greenberg, Advanced Engg. Mathematics.

Applied Physics-I (AS-1002)

Course Code	AS-1002	Credits-4	L-3, T-1, P-0
Name of the Course	Applied Physics-I		
Lectures to be Delivered	52 (1 Hr Each) (L=39, T=13 for each semester)		
Semester End Examination	Max Marks: 100	Min Pass Marks: 40	Maximum Time: 3 hrs
Continuous Assessment (based on sessional test (2) 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)			Max Marks: 50

Instructions

1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D and E. Section E will be Compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 20% of the total marks of the semester end examination for the course. Section A, B, C and D will have two questions from the respective sections of the syllabus and each question will carry 20% of the total marks of the semester end examination for the course.
2. **For Candidates:** Candidates are required to attempt five question in all selecting one question from each of the section A, B, C and D of the question paper and all the subparts of the questions in section E. Use of non-programmable calculators is allowed.

Section A

Physical Optics: Interference-division of wavefront-fresnel's biprism, division of multitude, interference by Newton's rings, Michelson's interferometer and its applications.

Diffraction- Difference between fraunhofer and fresnel diffraction through slit, plane transmission grating, its dispersal and resolving powers Polarization- polarized and unpolarised light, double refraction, nicol prism, quarter and half wave plates, polarimetry, biquartz and laurents half shade polarimeters, simple concepts of photoelasticity.

Special theory of Relativity: Michelson-Moreley experiments, Relativistic transformations, Variation of mass with velocity, mass energy equivalence.

Section B

Wave and oscillations: Simple harmonic oscillations, simple concept of harmonic oscillator, resonance, quality factor, E.M wave theory, Review of basic ideas, Maxwell's equations and their experimental basis. Simple plane wave equations, simple concepts of wave-guides and co-axial cables, Poynting vector.

Dielelectrics: Molecular Theory, polarization, displacement susceptibility, dielectric coefficient, permitivity and various relations between these Gauss's law in the presence of dielectric, energy stored in an electric field. Behavior of dielectric in field –simple concepts, dielectric losses.

Section C

Quantum Physics: Difficulities with classical physics, Introduction to quantum mechanics-simple concepts, discovery of Planck's constant. De Broglie Waves, Phase and Group Velocities, Particle diffraction, Uncertainty Principle, the wave equation, Postulates of quantum mechanics, Time dependent and independent Schrodinger equation, Expectation Values, Eigen Values and Eigen functions, Particle in a box, Finite Potential Well, Tunnel Effect, Harmonic oscillator. Statistical distributions, Maxwell Boltzmann Statistics, Quantum statistics.

Section D

Nuclear Physics: Neutron cross-section, nuclear fission, moderators, nuclear reactors, reactor criticality, interaction of radiation with matter-basic concepts, Radiation Detectors-ionization chamber, G.M counter, scintillations & solid state detectors, cloud Chamber & bubble chamber.

Books:

1. Arthur Beiser, Concepts of Modern Physics, 5th International edition Tata McGraw Hill
2. Wehr, Richards & Adair, Physics of the Atom.
3. A.S.Vasudeva, Modern Engg. Physics.

Engg. Graphics Drawing (ME-1001)

Course Code	ME-1001	Credits-6	L-0, T-0, P-6
Name of the Course	Engg. Graphics Drawing		
Lectures to be Delivered	78 Hrs. of Lab. Work (6 hrs. per week)		
Semester End Examination	Max Marks: 100	Min Pass Marks: 40	Maximum Time: 3 hrs
Continuous Assessment (based on sessional test (2) 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)		Max Marks: 50	Min. Pass Marks: 25

Instructions

1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D and E. Section E will be Compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 20% of the total marks of the semester end examination for the course. Section A, B, C and D will have two questions from the respective sections of the syllabus and each question will carry 20% of the total marks of the semester end examination for the course.
2. **For Candidates:** Candidates are required to attempt five question in all selecting one question from each of the section A, B, C and D of the question paper and all the subparts of the questions in section E. Use of non-programmable calculators is allowed.
3. This course will be conducted in drawing hall fitted with drawing tables and drafters.

Section A

Drawing Techniques: Various type of lines, principal of dimensioning, size and location as per IS code of practice (SP-46) for general engg. Drawing. Practice of drawing, various types of lines and dimensioning exercises. Drawing exercises pertaining to symbols. Conventions and Exercise of lettering techniques. Free hand printing of letters and numerals in 3, 5, 8 and 12 mm sizes, vertical and inclined at 75 degree. Instrumental lettering in single stroke. Linear Scale, Diagonal scale & vernier scale.

Projection of Points, Lines and Planes: Concept of horizontal and vertical planes. First and third angle projections: projections of point and lines, true length of lines and their horizontal and vertical traces, projection of planes and their traces. Auxiliary planes.

Section B

Projections of Solids: Right regular solids of revolution and polyhedrons etc. and their auxiliary views.

Section C

Sectioning of Solids: Principal of sanctioning, types of sanctioning and their practice on projection of solids, sectioning by auxiliary planes.

Isometric Projection: Concept of isometric views: isometric scale and exercise on isometric views.

Section D

Practice In: Orthographic projections

Development of Surfaces: Development of surfaces of cylinders, cones, pyramid, prism etc. exercises involving development of unique surfaces like Y-piece, hopper, tray, truncated pieces etc.

Intersection of Surfaces: Intersection of cylinders, cones and prisms with their axes being vertical, horizontal or inclines. Exercise on intersection of solids-cylinder and cylinder, cylinder and cone, prism and prism.

Note: Some exercise in each Section should be done using Auto CAD.

Books:

1. N.D. Bhatt, Elementary Engineering Drawing.
2. P.S.Gill, Engineering Drawing & Engg. Graphics.
3. L.V. Lakshminarayan & R.S. Vaish Engineering Graphics.
4. N.D. Bhatt and V.M. Panchal, Engineering Drawing Plane and Solid Geometry, 44th Edition 2002, Charotar Publishing House.
5. James D. Bethune, Engineering Graphics with AutoCAD 2002, Publisher-Pearson Education.
6. P.S.Gill, engineering Graphics and Drawing, S.K.Kataria and Sons Millennium Edition.
7. T. Jeyapoovan, Engineering Graphics using AUTOCAD 2000, 1st Edition 2002, Vikas Publishing House.
8. K. Venugopal: Engineering Drawing and Graphics + AutoCAD 4th Edition, New Age International Publishers Ltd. New Delhi.

Communication & Professional Skills in English (HU-1003)

Course Code	HU-1003	Credits-4	L-3, T-1, P-0
Name of the Course	Communication & Professional Skills in English		
Lectures to be Delivered	52 (1 Hr Each) (L=39, T=13 for each semester)		
Semester End Examination	Max Marks: 100	Min Pass Marks: 40	Maximum Time: 3 hrs
Continuous Assessment (based on sessional test (2) 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)			Max Marks: 50

Instructions

1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D and E. Section E will be Compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 20% of the total marks of the semester end examination for the course. Section A, B, C and D will have two questions from the respective sections of the syllabus and each question will carry 20% of the total marks of the semester end examination for the course.
2. **For Candidates:** Candidates are required to attempt five question in all selecting one question from each of the section A, B, C and D of the question paper and all the subparts of the questions in section E.

Section A

Reading Skills: The skill of effective reading – eye movements, fixations, regression and visual wandering, the right approach to reading; Factors affecting the style of reading – reader related material related and environmental; Memory, retention, association of read material.

Kinds of Reading: Introduction to phonetics – familiarization with speech sound and their symbols – articulation of speech sounds – stress and intonation.

Grammar: Word building use of punctuation marks, articles, tenses, abbreviations, prepositions, idioms & phrases transformation of sentences, incorrect to correct English, single word for a group of words.

Section B

Writing Skills: Business letters: principles, structure and style of writing business i.e., sales letters, claim and adjustment letters, inviting quotations/tenders, writing a memo, job application letters, preparing a personal resume; Effective Meetings: Qualities i.e. planning, processing the discussion, conducting a meeting use of different type of questions, summaries, handling problem situations and problem people, writing notices, agenda and minutes of meetings; Report writing: Characteristics, types of reports, structure of technical/research reports, preparatory steps to report writing; Elements of style: Definition of style, characteristics of a good technical style – practical hints to improve the style of writing ; précis writing; Comprehension of passages (May be picked up from the books recommended for reading).

Section C

Listening Skills: Barriers to listening, effective listening and feedback skills, Telephone techniques. Considerations of listening and voice, developing telephone skills – preparing for the call, controlling the call follow up action. Handling difficult calls and difficult callers.

Section D

Speaking And Discussion Skills: Effective speaking: Preparation i.e., deciding the objective, preparing the environments, organizing the material selection of words, voice modulation, speed, expression, body language, dealing with questions, dealing with nervousness, presentation of

audio-visual aids; Group Discussions: The art of participating in group discussion i.e., initiative, cooperation with group members, analysis of the issue, putting one's views effectively, establishing leadership.

Assignments / Seminars / discussions may be given for following skill development.

a) Word processing a document
b) Report writing
c) Preparing agenda for meeting
d) Preparing minutes of the meeting / seminars.
e) Press Releases
f) Preparing a Brochure
g) Advertisements
h) Preparing a power point slide show on a PC / OHP
i) Any other exercise decided by the course Professor.

Recommended Books:

1. Sheila HA Smith, M and Thomas, L., Methuen, Reading to Learn; London, 1982.
2. McGraw, SJ;Basic Managerial Skills for all, Prentice Hall of India, New Delhi 1991
3. Technical Reporting Writing British Association for commercial and Industrial Education, BACIE, 1992
4. Chrissie Wright (Ed.); Handbook of Practical Communication Skills; JAICO Books
5. K.K.Sinha, Business Communication, Galgotia Publishing Company, New Delhi, 1999.
6. English Grammar
7. David Cameron, Mastering Modern English.
8. Robert L. Shuster, Written Communication in Business.
9. Ron Ludlow & Ferous panton. The Essence of Effective Communication.
10. Ragmond & Petit, business Communication.
11. Common Errors in English, by Sudha Publication (P) Ltd., B-5, Prabhat Kiran Building, Rajendra Place, New Delhi – 110008.
12. Abul Hashem, Common Errors in English, Ramesh Publishing House, Daryagang New Delhi.
13. Objective English by Tata McGraw Hill Publishing Co. Ltd., New Delhi.
14. R.K.Bansal & J.B. Harrison, spoken English for India, Orient Longman.
15. Veena Kumar, The Sounds of English, Makaav Educational Software, New Delhi.
16. R.C.Sharma & Krishna Mohan, Business Correspondence and Report writing, Tat McGraw Hill Publishing Co. Ltd., New Delhi
17. Group Discussion by Sudha Publications and Ramesh Publishing House, New Delhi.

Recommended Readings

1. Business @ The Speed of thought, Bill Gates.
2. My Experiments with Truth, M.K.Ghandhi
3. Wings of Fire, A.P.J. Kalam
4. An Autobiography, Jwahar Lal Nehru.

Basic Electronics (EC – 1001)

Course Code	EC -1001	Credits-4	L-3, T-1, P-0
Name of the Course	Basic Electronics		
Lectures to be Delivered	52 (1 Hr Each) (L=39, T=13 for each semester)		
Semester End Examination	Max Marks: 100	Min Pass Marks: 40	Maximum Time: 3 hrs
Continuous Assessment (based on sessional test (2) 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)			Max Marks: 50

Instructions

1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D and E. Section E will be Compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 20% of the total marks of the semester end examination for the course. Section A, B, C and D will have two questions from the respective sections of the syllabus and each question will carry 20% of the total marks of the semester end examination for the course.
2. **For Candidates:** Candidates are required to attempt five question in all selecting one question from each of the section A, B, C and D of the question paper and all the subparts of the questions in section E. Use of non-programmable calculators is allowed.

Section -A

Brief review of Band Theory, transport phenomenon in semiconductors, Electrons and holes in Intrinsic semiconductor, Donor and acceptor Impurities, charge densities in semiconductor.

PN Junction, Reverse and Forward bias conditions, Diode Characteristic and parameter, Ideal vs. Practical diode.equivalent circuits and frequency response. rectification-half and full wave, Zener and Avalanche diode, its role as regulator, photodiode.

Section B

Bipolar junction transistor (BJT) and their characteristics as circuit and gain elements.

Two port network analysis, h-parameters and trans-conductance. Equivalent circuits for JFET and MOSFET, enhancement mode and depletion mode MOSFETS.

Unijunction transistor (UJT), UJT characteristics, parameters and circuit operation.

Section C

Bias for transistor amplifier: fixed bias, emitter feed back bias. Feedback principles. Types of feedback, Stabilization of gain, reduction of non-linear distortion, change of inputs and output resistance by negative feedback in amplifier. Amplifiers coupling, types of coupling, Amplifier pass band, Eq circuits for BJT at high frequency response of CE, RC-Coupled amplifiers at mid, low and high frequencies.

Section D

Semi conductor processing, active and passive elements, Integrated circuits, bias for integrated circuits. Basic operational amplifier, applications of operational amplifier – adder, subtractor, Integrator, differentiator and comparator, Photo transistor: its characteristics and applications.

Reference Books:-

1. A.P.Malvino.Electronic Principles.
2. J.D. Ryder Electronic Fundamentals and Applications.
3. J.Millman and C.C.Halkias Electronic Circuits & Devices.
4. J.Millman & C.C.Halkias Integrated Circuits & Devices.
5. N.N.Bhargava & Kulshrestha, Electronic Devices.

Introduction to Computer & Programming in C (CS-1001)

Course Code	CS-1001	Credits-4	L-3, T-1, P-0
Name of the Course	Introduction to Computer & Programming in C		
Lectures to be Delivered	52 (1 Hr Each) (L=39, T=13 for each semester)		
Semester End Examination	Max Marks: 100	Min Pass Marks: 40	Maximum Time: 3 hrs
Continuous Assessment (based on sessional test (2) 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)			Max Marks: 50

Instructions

1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D and E. Section E will be Compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 20% of the total marks of the semester end examination for the course. Section A, B, C and D will have two questions from the respective sections of the syllabus and each question will carry 20% of the total marks of the semester end examination for the course.
2. **For Candidates:** Candidates are required to attempt five question in all selecting one question from each of the section A, B, C and D of the question paper and all the subparts of the questions in section E. Use of non-programmable calculators is allowed.

Section A

Fundamental Computer Concept: Operating system fundamentals, disk basics, VDU Basics, Keyboard basics, introduction to compiler, interpreter, assembler, linker and loader and their inter relationship, Introduction to basics of Information Technology.

Section B

Problem solving with Computers: Algorithms, pseudo codes and Flowcharts, Debugging, testing and documentation, structure-programming concepts, top down and bottom-up design approaches. Data types, Constants, variables, arithmetic and logical expressions, data inputs and output, assignments statements, conditional statements.

Section C

Iteration, arrays processing, use-defined data types, functions, recursion, parameter passing by reference and by value.

Section D

Structure, Multiple structures, Arrays of structure, Unions,

Files: reading, writing text and binary files, pointers, character pointers, pointers to arrays, arrays of pointer to structures.

(The programming language C is to be taught along with the course in detail.)

Books:

1. Kanitkar, "Let us C", BPB Publications
2. Richie and Kerningham, "C Programming"
3. V Rajaraman "Fundamentals of computers"
4. D.Dromey, "How to solve it by computers" (Prentice Hall)
5. E. Balaguruswamy, "Programming in C", Tata McGraw Hill.

Applied Physics Lab (AS-1003)

Course Code	AS-1003	Credits-2	L-0, T-0, P-2
Name of the Course	Applied Physics Lab		
Lectures to be Delivered	26 hours of Lab. work (2 hrs. per week)		
Semester End Examination	Max Marks: 50	Min Pass Marks: 20	Maximum Time: 3 hrs
Continuous Assessment	Lab work 30% Lab Record 25% Viva/ Hands on 25% Attendance 20%	Max Marks: 50	Min Pass Marks: 25

Instructions for paper setter / candidates

Laboratory examination will consist of two parts:

(i) Performing a practical exercises assigned by the examiner (25 marks).

(ii) Viva-voce examination (25 marks)

Viva-voce examination will be related to the practicals performed / project executed by the candidate related to the paper during the course of the semester.

List of Experiments

Note: (Two experiments to be done from each section, total number of experiments required to be performed 10 to be decided by the teacher concerned and availability of equipment.)

Section A

1. To find the wavelength of sodium light by Newton's rings experiment.
2. To find the wavelength of sodium light by Fresnel's Biprism experiment.
3. To find the wavelength of sodium light by using the phenomenon of diffraction of light at a straight edge.
4. To find the wavelength of various colors of white light with the help of a plane transmission diffraction grating.
5. To find the wavelength of sodium light by Michelson interferometer.

Section B

1. To find the refractive index and Cauchy's constant of a prism by using spectrometer.
2. To find the resolving power of a telescope.
3. To study the beam parameters of a helium-neon laser.
4. To find the specific rotation of sugar solution by using a polarimeter.
5. To find the velocity of Ultrasonic Waves in a given liquid.
6. To find the specific rotation of sugar using polarimeter

Electricity and Magnetism

Section C

1. To compare the capacitances of two capacitors by De'sauty Bridge.
2. To find the flashing & quenching potentials of argon & also to find the capacitance of unknown capacitor.
3. To find the temperature coefficient of resistance by using platinum resistance thermometer and Callender & Griffith bridge.

Section D

1. To find the frequency of AC mains by using sonometer.
2. To find the low resistance by carrey – Foster's bridge.
3. To find the resistance of a galvanometer by Thomson's constant deflection method using a post office box.

4. To find the value of high resistance by Substitution method.
5. To find the value of high resistance by Leakage method.
6. To convert a galvanometer into an ammeter of a given range.
7. To study the variation of magnetic field with distance and to find the radius of coil by Stewart and Gee's apparatus.
8. To find the reduction factor of two turn coil of tangent galvanometer by using a copper voltammeter.

Modern Physics:

Section E

1. To find the value of e/m for electrons by Helical method.
2. To determine the charge of an electron by Millikan's oil drop method.
3. To find the ionization potential of Argon. Mercury using a thyratron tube.
4. To find the value of Planck's constant by using a photoelectric cell.

Section F

1. To study the various crystal structures using Beed Model.
2. To calculate the hysteresis loss by tracing a B-H curve for a given sample.
3. To determine the band gap of an intrinsic semiconductor by four probe method.
4. To determine the resisitivity of a semi-conductor by four probe method at different temperatures.
5. To determine the Hall co-efficient.
6. To study the photovoltaic cell & hence to verify the inverse square law.

Books:

1. Practical Physics-S.L.Gupta & V.Kumar.
2. Advanced Practical Physics Vol. I & II – S.P. Singh
3. Practical Physics for B.Sc I, II and III - C.L.Arora.

Basic Electronics Lab (EC-1002)

Course Code	EC-1002	Credits-2	L-0, T-0, P-2
Name of the Course	Basic Electronics Lab		
Lectures to be Delivered	26 hours of Lab. work (2 hrs. per week)		
Semester End Examination	Max Marks: 50	Min Pass Marks: 20	Maximum Time: 3 hrs
Laboratory Continuous Assessment	Lab work 30% Lab Record 25% Viva/ Hands on 25% Attendance 20%	Max Marks: 50	Min Pass Marks: 25

Instructions for paper setter / candidates

Laboratory examination will consist of two parts:

(i) Performing a practical exercises assigned by the examiner (25 marks).

(ii) Viva-voce examination (25 marks)

Viva-voce examination will be related to the practical performed / project executed by the candidate related to the paper during the course of the semester.

List of Experiments:

1. (a) To study the use and scope of using an oscilloscope as a measuring device in an electronic laboratory.
   (b) To study the use and scope of using a millimeter (digital and analog) as a measuring device in an electronics laboratory.
   (c) To study the use and scope of function generator as a signal source in an electronics laboratory.

Set up an experiment to:

2. Draw forward bias and reverse bias characteristics of a p-n junction diode and use it as a half wave and full wave rectifier.
3. Draw the characteristics of a zener diode and use it as a voltage regulator.
4. Draw characteristics of common base configuration of p-n-p transistor.
5. Draw characteristics of common emitter configuration of an npn transistor.
6. Draw characteristics of common drain configuration of a MOSFET.
7. Find the voltage and current gain of single stage common emitter amplifier.
8. Draw the characteristics curve of UJT.
9. Find the voltage gain of single stage voltage series feedback amplifier.
10. Use operational amplifier as
    I) Inverting amplifier
    II) Non-inverting amplifier
    III) Comparator
11. Use operational amplifier as
    I) Integrator
    II) Differentiator
12. Use operational amplifier as
    I) Adder
    II) Precision amplifier
13. Find the overall voltage gain and current gain of a two stage RC coupled amplifier.

Basic electronics should stress on interfacing with real life devices and general-purpose linear units. Emphasis is on system design and not on discrete components, some of the components around which exercises can be built are

1. SCR as triacs and power control.
2. Power supplies starting with zener.
3. Op to compliers and isolations where photo diode, transistors, leds are used.
4. Laser diode (laser pointer)
5. Op amps
6. Op amps for instrument amplifiers.

Note: - Record to be maintained in the laboratory record book for evaluation. Usage of breadboard approach to be encouraged.

Workshop Practice-I (ME-1002)

Course Code	ME-1002	Credits-3	L-0, T-0, P-3
Name of the Course	Workshop Practice-I		
Lectures to be Delivered	39hrs. (Lab Session=13(3 hrs. each))		
Semester End Examination	Max Marks: 50	Min Pass Marks: 20	Maximum Time: 3 hrs
Laboratory Continuous Assessment	Lab work 30% Lab Record 25% Viva/ Hands on 25% Attendance 20%	Max Marks: 50	Min Pass Marks: 25

Instructions for paper setter / candidates

Laboratory examination will consist of two parts:

(i) Performing a practical exercises assigned by the examiner (25 marks).

(ii) Viva-voce examination (25 marks)

Viva-voce examination will be related to the practicals performed / project executed by the candidate related to the paper during the course of the semester.

List of Experiments: -

Fitting Shop: -

Introduction to the tools used in Fitting Shop and various processes in Fitting shop.

1. To make a square piece of mild steel.
2. To make V-matching joint of mild steel.
3. To make a V-notch.

Machine Shop: -

Introduction to various machine tools and machine parts, such as Lathes, drilling machine, grinders etc. Cutting tools and operations.

1. Facing and turning on mild steel rod on Lathe Machine.
2. To make a groove on lathe machine.
3. Taper turning operation on Lathe Machine.

Carpentry and Pattern making Shop: -

Carpentry and Pattern Making Various types of timber and practice boards, defects in timber, seasoning of wood, tools, operations and joints. Introduction to the tools used in carpentry shop.

1. To make the 'T' lap joint.
2. To make 'T' Dove-tail joint.
3. To make Mortise & Tennon joint.

Welding Shop: -

Introduction to different welding methods, welding equipment, electrodes, welding joints, awareness of welding defects.

1. To make a lap joint.
2. To make a T joint.
3. To make a V-butt joint.

Smithy and Forging: -

Introduction to forging tools, equipments and operations, Forgability of metals.

1. To make a ring of mild steel by cold forging process.
2. To make S-hook by hot forging process.
3. To make chisel by hot forging process.

Foundry Shop: -

Introduction to moulding materials, moulds, use of cores, melting furnaces, tools and equipment used in Foundry.

1. Make a single piece pattern mould.
2. To make spilt pattern mould.
3. To make mould and core and assemble it.

Electrical and Electronics Shop: -

1. Introduction to electric wiring.
2. Exercises preparation of PCBs, involving soldering of electrical & electronic application.

Books: -

1. Workshop Technology by Chapman.
2. Manufacturing Processes by Begman.
3. Manufacturing Materials and processes by JS Campbell.

Note: - Industrial visits can be undertaken to various industries available in the vicinity of the concerned Engineering College. One project at the end of semester has to be submitted by a group of six students.

Information Technology Trainer Workshop-I (IT-1001)

Course Code	IT-1001	Credits-3	L-0, T-0, P-3
Name of the Course	Information Technology Trainer Workshop-I		
Lectures to be Delivered	39 Hrs. (Lab Session = 13(3 hrs. each))		
Semester End Examination	Max Marks: 50	Min Pass Marks: 20	Maximum Time: 3 hrs
Laboratory Continuous Assessment	Lab work 30% Lab Record 25% Viva/ Hands on 25% Attendance 20%	Max Marks: 50	Min Pass Marks: 25

Instructions for paper setter / candidates

Laboratory examination will consist of two parts:

(i) Performing a practical exercises assigned by the examiner (25 marks).

(ii) Viva-voce examination (25 marks)

Viva-voce examination will be related to the practicals performed / project executed by the candidate related to the paper during the course of the semester.

The workshop will provide training of hardware and software theory of a computer based on Pentium-IV CPU with windows 98 as an operating system with DMP/ DeskJet Printer/ Laser Printer.

(i) Study of Computer Mother Board: -

a) CPU, DMA, Wait state, RAM / ROM, NMI, Logic Address, reset, I / O Ports, Device Drivers, Power Management, Block Diagram.

(ii) Study of bus, Slots and Ports: -

a) ISA, EISA, VESA, PCI, MCA, AGP, USB, AMR
b) Parallel, Serial – RS 232C, USB

(iii) Study of Memories on a PC: -

a) Memory – Types, Selection, Installation
b) ROM BIAS – Types, Setup, Installation
c) Floppy Drive – Types, R/W head, Control Card, Spindle Motor, Stepper Motor, Termination Resistor, Block Diagram, Write protect, Testing.
d) Hard Disk – Jumper Setting, Configuration, HDC, Installation Software, Testing, Block Diagram.

(iv) Study of Input/Output Device: -

a) Monitor – Types, Working principle, Configuration, modes, scanning, Block diagram Adapter
b) Card – Types, Dot pitch, Resolution.
c) Keyboard – Types, Construction, Working Principle.
d) Mouse – Types, Construction, Working Principle.

(v) Study of Hardware, Accessories (Mechanical / Electrical): -

a) Cabinet – Types, Selections
b) SMPS – Rating, Green PC, EPA Compliance
c) Cables – HD Cable, FDD Cable, Printer Cable.

d) Connectors – 9 pin M/F, 25 Pin M/F

(vi) Study of Printers: -

a) Printers – Types, construction, working Principle, Fonts, DeskJet, Dot Matrix, Laser Jet, Line Printer, Plotters, Block Diagram

(vii) Study of Multimedia Hardware Modules

a) CDROM drive – Jumper setting, Installation, Cables, Block Diagram, Configuration.
b) DVD drive – Types, Working Principle, Installation, Configuration
c) Speakers/Mike – Different Types
d) Tuner Cards – Different Types
e) Digital Cameras – Different Types
f) Video Conferencing Kit.

(viii) Study of Clean Power Supply Equipments: -

a) CVT's
b) UPS

Note: - Industrial visits can be undertaken to various industries available in the vicinity of the concerned Engineering College. One project at the end of semester has to be submitted by a group of six students.

Computer Programming Lab. (CS -1002)

Course Code	CS -1002	Credits-2	L-0, T-0, P-2
Name of the Course	Computer Programming Lab.		
Lectures to be Delivered	26 Hrs. of Lab. Work (2 hrs. per week)		
Semester End Examination	Max Marks: 50	Min Pass Marks: 20	Maximum Time: 3 hrs
Laboratory Continuous Assessment	Lab work 30% Lab Record 25% Viva/ Hands on 25% Attendance 20%	Max Marks: 50	Min Pass Marks: 25

Instructions for paper setter / candidates

Laboratory examination will consist of two parts:

(i) Performing a practical exercises assigned by the examiner (25 marks).

(ii) Viva-voce examination (25 marks)

Viva-voce examination will be related to the practicals performed / project executed by the candidate related to the paper during the course of the semester.

A. Dos 6.2 (through MS-DOS prompt, usage of basic commands, idea of .bat, .sys, .com, .exe etc.and usage of an editor to be done in consultation with the faculty incharge for the course).

B. Windows (usage of GUI for working effectively in laboratory to be done in consultation with the faculty incharge for the course).

C. Microsoft office (projects based on word, excel, power point, access, to prepare reports, presentations and databases to be done in consultation with the faculty incharge for the course).

D. Programming of fundamental algorithms in C in the form of projects in groups of two (based on how to solve it, Dromey and let us C by Kanitkar and in consultation with the faculty incharge for the course).List of Lab. exercises to be displayed in advance covering whole of the course. Tentative list is given below to be developed in the form of projects. 10 more exercises to be added by the faculty incharge.

1. Write a program to find the largest of three numbers (if-then-else).
2. Write a program to find the largest number out of ten numbers (for statement).
3. Write a program to find the average male height & average female heights in the class (input is in form of sex code, height).
4. Write a program to find roots of quadratic equation using functions and switch statement.
5. Write a program using arrays to find the largest and second largest no.
6. Write a program to multiply two matrices.
7. Write a program to read a string and write it in reverse order.
8. Write a program to concatenate two strings.
9. Write a program to sort numbers using the Quick sort Algorithm.
10. Represent a deck of playing cards using arrays.

Note: -Record to be maintained both electronically and hard copy for evaluation.