

DR. K N MODI UNIVERSITY, NEWAI STUDENT EVALUATION SYSTEM

Continuous Assessment

All courses undertaken by students are evaluated during the semester using internal system of continuous assessment. The students are evaluated on class /tutorial participation, assignment work, lab work, class tests, mid-term tests, quizzes and end semester examinations, which contribute to the final grade awarded for the subject. Students will be notified at the commencement of each courses about the evaluation methods being used for the courses and weightages given to the different assignments and evaluated activities.

In order to make the evaluation system as similar and transparent with any of the globally reputed educational institutions like N.I.Ts, I.I.Ts etc. the Dr. K. N. Modi University Academic Council has adopted the grading practices. Here marks obtained in the continuous assessment and end semester examination are added together and a 10-point grading system will be used to award the student with on overall letter grade for the course (subject).

Distribution of Marks

(i) Courses without Practical Components

Continuous Assessment	- 25
Mid –Term Examination	- 15
End –Term Examination	- 60

Total : 100

(ii) Courses with Practical Components only

Continuous Assessment	- 30
Mid –Term Examination (Practical)	- 20
End –Term Examination (Practical)	- 50

Total : 100

Letter Grading system

Final evaluation of course is carried out on a TEN POINT grading system. Performance Grade and Grade Points are as shown below:

Table 1

Marks	Grade Value	Grade	Description
91 to 100	10	A+	Out Standing
81 to 90	9	A	Excellent
71 to 80	8	B	Very Good
61 to 70	7	C	Good

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51 to 60	6	E	Average
41 to 50	5	E	Fair
Less than 41	0	F	Fail
Absent in the University Final Examination	0	I	Incomplete

**However, within the above grading system the student has to earn a minimum of 24 marks each in Continuous Assessment and End Term Examination, that is a total of $(24) + (24) = 48$ marks have to be secured for getting declared pass in the "Fair" category.*

Note: In order to convert the GPA and CGPA into percentile, multiply the same with the Conversion factor of 9.10.

A student who earns a minimum of 5 grade Point (E grade) in a course (subject) is declared to have successfully completed the course, and is deemed to have earned the credits assigned to that course. A course successfully completed cannot be repeated.

A student should have appeared for the end semester examination of the prescribed course of study (mere appearance in the continuous assessment test is not sufficient) to be eligible for the award of the degree in the course.

If a student is eligible for but fails to appear in the end semester examination, he/she will be awarded an 'I' grade (incomplete) on the grade sheet. For all practical purposes an 'I' Grade is treated as an 'F'.

If a student is not eligible to appear in the end semester examination owing to his/her not fulfilling the minimum attendance requirements, he may be permitted to re-register for those courses in which he/she had attendance shortage, at the next available opportunity.

Grade Point Average (GPA) & Cumulative Grade Point Average (CGPA)

Each course grade will be converted into a specific number of points associated with the grade as mentioned in above Table 1. Here points are weighted with the number of credits assigned to a course. The Grade Point Average (GPA) is the weighted average of grade points awarded to a student. The Grade Point Average for each semester will be calculated only for those students who have passed all the courses of that semester. The weighted average of GPA's of all semester that the student has completed at any point of time is the Cumulative Grade Point Average (CGPA) at that point of time.

CGPA upto any semester will be calculated only for those students who have passed all the courses upto that semester.

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Calculation of GPA and CGPA :

Example: Table 2

Courses	Credits	Letter Grade	Grade Value	Credit Value	Grade Points
Mathematics	3	C	7	3x7	21
Chemistry	3	B	8	3x8	24
Physics	3	A	9	3x9	27
Language Lab	2	B	8	2x8	16
TOTAL	11			TOTAL	88

$$\text{In this case GPA} = \frac{\text{Total Grade Points}}{\text{Credits}} = \frac{88}{11} = \mathbf{8.0}$$

Suppose the GPAS in two successive semesters are 7.0 and 8.0 with 26 and 24 respective course credits, then the

$$\text{CGPA} = \frac{7 \times 26 + 8 \times 24}{26 + 24} = \frac{374}{50} = \mathbf{7.48}$$

After the results are declared, grade cards will be issued to each student which will contain the list of courses for that semester and the grades obtained by the student, as well as GPA of that semester. However, a conversion factor of “9.1”, will be included, enabling students and future employers for transforming CGPA into percentage of marks at par with the existing practices of I.I.Ts, N.I.Ts and A.I.C.T.E.

Minimum Eligibility Requirements in Dr. K. N. Modi University for proceeding to the next academic year of study.

A First year Student of Dr. K. N. Modi University satisfying the below mentioned requirements is eligible to study in the 3rd Semester of next academic year.

“Pass with Minimum E Grade in Four Theory Papers & Pass in Four Laboratory Papers in the I & II Semester (Combined)”

A Second year Student of Dr. K. N. Modi University satisfying the below mentioned requirements is eligible to study in the Vth Semester of the next academic year.

“Pass with Minimum E Grade in Four Theory Papers & Pass in Four Laboratory Papers in the IIIrd & IV Semester (Combined)”

A Third year Student of Dr. K. N. Modi University satisfying the below mentioned requirements is eligible to study in the VIIth Semester of the next academic year.

“Pass with Minimum E Grade in Four Theory Papers & Pass in Four Laboratory Papers in the Vth & VI Semester (Combined)”

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DR. K. N. MODI UNIVERSITY

Study and Evaluation Scheme (Year-I Semester-1st) B.Tech (Common to all branches) Effective from session 2013-14

S. NO.	Sub Code	Subject Name	Period			Evaluation Scheme			Credit
						Continuous Assessment	Final Exam	Total	
			L	T	P				
1	01BT101	Mathematics-I	3	1	0	40	60	100	3
2	01BT102	Physics	3	1	0	40	60	100	3
3	01BT103	Chemistry	3	1	0	40	60	100	3
4	01BT104	Engineering Mechanics	3	1	0	40	60	100	3
5	01BT105	Environmental Science & Ecology	3	1	0	40	60	100	3
6	01BT106	Engineering Graphics	3	1	0	40	60	100	3
7	01BT107	Professional Communication	3	1	0	40	60	100	3
LAB									
1	01BP102	Physics-laboratory	0	0	2	50	50	100	1
2	01BP103	Chemistry-Laboratory	0	0	2	50	50	100	1
3	01BP104	Workshop Practical	0	0	2	50	50	100	2
4	01BP107	Professional Communication Practical	0	0	2	50	50	100	1
5	01BP1010	Seamless Learning	0	0	4	100		100	1
6	01BP1011	Co-Curricular Activities	0	0	4	100		100	1
Total			21	7	16				28

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Year-I Semester-2nd

S.N O.	Sub Code	Subject Name	Period			Evaluation Scheme			Credit
			L	T	P	Continuous Assessment	Final Exam	Total	
1	01BT201	Mathematics-II	3	1	0	40	60	100	3
2	01BT202	Fundamental Electrical Engineering	3	1	0	40	60	100	3
3	01BT203	Basic Electronics	3	1	0	40	60	100	3
4	01BT204	Computer Concept & Programming in C	3	1	0	40	60	100	3
5	01BT205	Applied Engineering Physics	3	1	0	40	60	100	3
6	01BT206	Manufacturing Process	3	1	0	40	60	100	3
7	01BT207	Professional Ethics	3	1	0	40	60	100	3
LAB									
1	01BP202	Electrical Engineering Lab	0	0	2	50	50	100	1
2	01BP203	Basic Electronics Lab	0	0	2	50	50	100	1
3	01BP204	Computer Concept & Programming in C	0	0	2	50	50	100	1
4	01BP206	Mechanics lab	0	0	2	50	50	100	2
5	01BP2010	Seamless Learning	0	0	4	100		100	1
6	01BP2011	Co-Curricular Activities	0	0	4	100		100	1
		Total	21	7	16				28

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Year-II Semester-IIIrd

S.NO.	Sub Code	Subject Name	Period			Evaluation Scheme			Credit
						Continuous Assessment	Final Exam	Total	
			L	T	P				
1	02BT301	Mathematics-III	3	1	0	40	60	100	3
2	02BT302	Material Science	3	1	0	40	60	100	3
3	02BT303	Digital Electronics	3	1	0	40	60	100	3
4	02BT304	AUTOCAD	3	1	0	40	60	100	3
5	02BT305	Object Oriented Programming & C++	3	1	0	40	60	100	3
6	02BT306	Total Quality Management	3	1	0	40	60	100	3
7	02BT307	Human Resource Management	3	1	0	40	60	100	3
LAB									
1	02BP308	Autocad lab	0	0	2	50	50	100	1
2	02BP309	Programming using C++ lab	0	0	2	50	50	100	1
3	02BP310	Digital Electronic lab	0	0	2	50	50	100	1
4	02BP311	Material Science lab	0	0	2	50	50	100	2
5	02BP3010	Seamless Learning	0	0	4	100		100	1
6	02BP3011	Co-Curricular Activities	0	0	4	100		100	1
		Total	21	7	16				28

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Year-I Semester-1st

MATHEMATICS –I

CODE: 01BT101

Course Objective:

The main objectives of this course are to train the students to read and write mathematical Poofs; to develop the students' mathematical problem solving skills; and to familiarize the students with Standard concepts in mathematics

Unit – I:

Matrices

Elementary row and column transformation, Rank of matrix, Linear dependence, Consistency of linear system of equations and their solution, Characteristic equation, Caley-Hamilton theorem, Eigen values and eigen vectors, Diagonalisation,

Unit - II:

Differential Calculus-I

Leibnitz theorem, Partial differentiation, Euler's theorem on homogeneous function, Change of variables, Expansion of function of several variables.

Unit – III:

Differential Calculus-II

Jacobian, approximation of errors, Extrema of functions of several variables, Lagrange's method of multipliers (Simple applications).

Unit – IV:

Integral Calculus

Double integral, Areas and Volume by double integral, Change of order of integration, Change of variables, Beta and Gamma functions (Simple Properties)

Unit – V:

Differential Equations

Differential Equations of First Order and First Degree – Variable Separable, Homogeneous Forms, Reducible to Homogeneous Form, Linear Form, Reducible to Linear Form, Exact Form and Linear Differential Equations of Higher Order with Constant Coefficients Only

Reference Books:

1. Grewal, B.S. Engineering Mathematics, Hanna publishers.
2. Grewal, B.S. Higher Engineering Mathematics, Khanna publishers.
3. Kreyszig E. Advanced Engineering Mathematics, JhonWiley&sons.
4. Neil, PeterV.O'. Advance Engineering Mathematics, Thomson Learning.
5. H. K .Dass : S. Chand Publications

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ENGINEERING PHYSICS CODE: 01BT102

Course Objective:

The main objectives of this course are to educate students to think and participate deeply, creatively, and analytically in emerging areas of engineering technology. Educate students in the basics of instrumentation, design of laboratory techniques, measurement, data acquisition, interpretation, and analysis.

UNIT 1: Relativistic Mechanics. Introduction, Inertial & non inertial frames, Lorentz transformation of space and time, Length contraction, Time dilation, Proper frame, Proper length, Proper time, Michelson-Morley Experiment, Einstein postulates, Addition of velocities, Variation of mass with velocity, Mass energy equivalence.

UNIT 2: Interference Introduction, Interference of light, Biprism experiment, Displacement of fringes, Interference in thin film, Wedge shaped film, Newtonian ring.

Diffraction Introduction, Difference between interference and Diffraction, Single, double & N slit experiment, Diffraction grating, Grating spectra, Rayleigh's criterion and resolving power of grating.

UNIT 3: Polarization Introduction to Polarization Phenomenon, Plane of polarization of light, Malus law, Calcite crystal geometry and applications, double refraction, Nicol Prism, production and analysis of plane, Circular & elliptical polarized light, Fresnel's theory of optical activity, Polaroid's, Polarimeter types.

Laser: Introduction to Laser and its main components, Spontaneous & Stimulated emission of radiation, Einstein's coefficient, Types of laser, Construction & working principles of Ruby, He-Ne LASER, Laser application and semiconductor laser and its advantage.

UNIT 4: X-rays Introduction, Production of x ray, properties of x ray, x ray spectra, Energy level diagram of x ray, Mosley's law, Absorption of x ray, diffraction of x ray, Bragg's law, Application of x ray, Compton effect.

UNIT 5: Quantum Mechanics Introduction, Dual nature of light, Debrogli's experiment – wave & particle nature, Davison and Germer's experiment, Heisenberg's uncertainty principle & its application, Schrodinger's wave equation, time dependent & independent Schrodinger's wave equation, Application of Schrodinger's wave equation.

Reference books:

1. Yadav, V.S. Engineering Physics by (TMH publications)
2. Serway, R.A.; Jewett, J.W. Engineering Physics (Thomson Asia Pvt. Ltd.)
3. Beiser, Arthur. Engineering Physics (Mac Graw Hill)
4. Khare, P. Fundamental of Physics

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ENGINEERING CHEMISTRY CODE - 01BT103

Course Objective:

The main objectives of this course are to analyse atomic and molecular structure in terms of wavefunctions, charge densities and energy level diagrams. Characterized the structures of diatomics and polyatomics in terms of molecular orbitals and relate intermolecular forces to the structure of liquids.

UNIT 1: Chemical Bonding and States of Matter

MO Theory and its applications to homodiatomic molecules, types of bonds – ionic, covalent, metallic and hydrogen bond. States of matter, liquid crystalline state, Classification and applications of liquid crystals. Types of unit cell, space lattice and Bragg's law, fullerenes.

UNIT 2: Reaction kinetics, Phase rule and Electrochemistry Order and molecularity of reactions, zero, I and II order reactions, integrated rate equations. Phase rule (statement, definitions and meaning of terms involved) and its application to one component system (water). Cell potential, electrochemical, galvanic and concentration cells, electrochemical theory of corrosion and protection of corrosion, fuel cells.

UNIT 3: Structural and Mechanistic Concepts of Organics Inductive, electrometric, mesomeric and hyper conjugative effects, stability of reaction intermediates (carbocations and free radicals), mechanism of nucleophilic substitution reactions (SN1 and SN2), mechanism of the following reactions Aldol Condensation, Cannizzaro Reaction, Diels Alder Reactions Optical isomerism, Molecular chirality, R,S Configuration and E-Z nomenclature, Molecular chirality and optical isomerism, E - Z nomenclature, R, S configuration, conformational analysis of n-butane

UNIT 4: Polymers and Organometallics

Polymerization and its classification, thermoplastic and thermosetting resins, elastomers and synthetic fibres, ion exchange resins. General methods of synthesis of organometallic compounds and their applications in polymerization and catalysis.

UNIT 5: Analytical Methods and Fuels

Titrimetric analysis, acid base, red ox, precipitation and complex metric titrations, elementary ideas and simple applications of UV, IR and ¹H NMR spectral techniques, Water treatment methods for boiler feed water by Calgon process, zeolites and ion exchange resins. Classification of fuels. Analysis of coal, determination of caloric values, biomass and biogas.

Reference books:

1. Sivasankar, B. Engineering Chemistry, Tata McGraw Hill publications
2. Wilkinson, F. A.; Cotton, G.; Murrillo, C. A.; Bochman Advanced Inorganic Chemistry, Willey India Edition
3. March's Advanced Organic Chemistry: Reactions, Mechanisms and Structure: John Wiley & sons, 6th Edition
4. Gray, G. W.; Winsor, P. A. Liquid Crystals and Plastic Crystals, Vol. I, edited by and Ellis Harwood Series in Physical Chemistry, Network.

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ENGINEERING MECHANICS CODE - 01BT104

Course Objective:

The main objectives of this course are to develop the ability to analyze any static problem in a simple and logical manner, and to apply to its solution a few well-understood basic principles of Physics.

UNIT 1: Two dimensional force system

Basic concept, law of motion, principle of transmissibility of force, transfer of force to parallel position, resultant of a force system simplest resultant of two dimensional concurrent and non concurrent force system, distributed force system, free body diagram, equilibrium and non equilibrium.

Friction:

Introduction, law of coulomb friction, equilibrium of body involving dry friction, belt friction, application.

UNIT 2: Beam Introduction, shear force and bending moment diagram. **Trusses:** Introduction, simple truss and solution of simple truss, method of joint and section.

UNIT 3: Centroid and moment of inertia Centroid of plane, curve, area, volume, and composite bodies, moment of inertia of plane area, parallel axis theorem, perpendicular axis theorem, principle moment inertia, mass moment of inertia of circular ring, disc, cylinder, sphere.

UNIT 4: Kinematics of rigid body Introduction, plane motion of rigid body, velocity and acceleration under translation and rotational motion, relative velocity.

Kinetics of rigid body: Introduction, force, mass and acceleration, work and energy, impulse and momentum, D'Alembert's principle and dynamic equilibrium. **Vibration:** Undamped free vibration

UNIT 5: Simple stress and strain Introduction, normal and shear stresses, stress strain diagram for ductile and brittle material, elastic constant, one dimensional loading of members of varying cross section, strain energy **Pure bending of beams:** Introduction, Simple bending theory, stress in beam of different cross section.

Torsion: Introduction, torsion of shaft of circular section, torque and twist, shear stress due to torque.

Reference books:

1. Kumar, D.S. Engineering mechanics
2. Shames, H. Irving engineering mechanics by prentice-Hall.
3. Mubeen, Abdul Mechanics of solid by Pearson Education Asia.
4. Popov, E.P. Mechanics of Material by Prentice Hall of India private limited.

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ENVIRONMENTAL SCIENCE & ECOLOGY CODE - 01BT105

Course Objective:

This course provides an introduction to the science of ecology and the physical and biological processes that affect our environment. Main objective of the course is for student to learn about the conceptual framework of ecology.

UNIT 1: Definition

Scope, & importance, need for public awareness- environment definition, Ecosystem, Balance eco-system, Human activities- food shelter, Economic and social Security. Food web and food chains. Housing Industry, Mining and Transportation activities, Basic of Environmental Impact Assessment. Sustainable development.

UNIT 2: Natural Resources

Water Resources- Availability and Quality aspects. Water borne diseases, Water induce diseases, Mineral resources, Forest Wealth, forest resources, uses forest resources. Material cycle- Carbon, Nitrogen, and Sulphur Cycle.

UNIT 3: Energy

Different type of energy, Electro-magnetic radiation, Conventional, Non-Conventional sources – Hydro - Electric, Fossil Fuel Based Nuclear, Solar, Biomass and Bio -gas, Hydrogen as after native future sources of Energy.

UNIT 4: Pollution

Environmental Pollution and their effects, Water Pollution, Land pollution, Noise pollution, Public Health aspects, Air Pollution, Social waste management

Current environment issues of importance: Population Growth, Climate Change and Global warming- effects,

UNIT 5: Environmental Protection

Role of Government, Legal aspects, initiatives by Non-governmental Organization (**NGO**), Environmental Education, Women Education, Automobile pollution, Acid rain, Green House Effect, Ozone Layer depletion, Animal Husbandry, hazardous waste management

Reference books:

1. Venugopal Raw, P. Principles of Environmental Science and Engineering –Prentice Hall of India.
2. Meenakshi, Environmental Science and Engineering –Prentice Hall of India.
3. Reddy, M.Anji.Environmental Science & Technology - B.S. Publications.

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ENGINEERING GRAPHICS CODE - 01BT106

Course Objective: Drawing is the language of engineers and technicians. Reading and interpreting engineering drawing is their day to day responsibility. The course is aimed at developing basic graphic skills so as to enable them to use these skills in preparation of engineering drawings, their reading and interpretation. The emphasis while imparting instructions should be to develop conceptual skills in the students following BIS SP 46 - 1988 and angle projection in general.

UNIT: I

Introduction: Handling use and care of Drawing Instruments and Materials Layout of drawing sheets, Free Hand Sketching and Lettering, Different types of lines in Engineering drawing as per ISI specifications. Practice of free hand sketching of vertical, horizontal and inclined lines, geometrical figures such as triangles, rectangles and circles.

UNIT: II

Lettering Technique and Practice: Instrumental single stroke lettering of 35 mm and 70 mm height in the ratio of 7:5, Free hand lettering (Alphabet and numerals) - lower case and upper case, single stroke and block letters, vertical and inclined at 75 degree in different standards, Necessity of dimensioning, method and principles of dimensioning (mainly theoretical instructions).

UNIT: III

Scales: Scales - their need and importance - (Theoretical instructions). Drawing of plain and diagonal scales.

Projection: Theory of projections (Elaborate theoretical instructions) Drawing 3 views of given objects (Non symmetrical objects may be selected for this exercise), Drawing 6 views of given objects (Non symmetrical objects may be selected for this exercise), Orthographic drawing or interpretation of views.

UNIT: IV

Geometrical Construction and Engineering Curves: Regular polygon of given side, Conic sections- construction of ellipse, parabola, hyperbola, Construction of cycloid, epicycloids and hypocycloid.

UNIT: V

Isometric Views: Fundamentals of isometric projections (Theoretical instructions), Isometric views from 2 or 3 given orthographic views.

RECOMMENDED BOOKS

1. Elementary Engineering Drawing (in first angle projection) by ND Bhatt, Charotar Publishing House
2. A Text Book of Engineering Drawing by Surjit Singh, Published by Dhanpat Rai and Co., New Delhi
3. Engineering Drawing by PS Gill, Published by SK Kataria and Sons, Delhi

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PROFESSIONAL COMMUNICATION CODE - 01BT107

Course Objective:

The aim of the course is to provide high level professional communication skills to the students. It will help the students to increase the ability to work within and across diverse and converging media environments.

Unit 1: Basic Applied Grammar

Words and Sentences, Kind of Sentences, Parts of Speech: Noun (Definition, Singular, Plural, Pronoun and Determiners, Verb, Usage of Modal Verb, Adjectives, Articles, Adverb, Preposition, Conjunction, Interjection, Exercise.

Unit 2: Grammar (Tenses)

Present Tense : Simple Present, Present Continuous, Present Perfect, Present Perfect Continuous, Exercise

Past Tense : Simple Past Tense, Past Continuous, Past Perfect, Past Perfect Continuous, Exercise

Future Tense : Simple Future Tense, Future Continuous, Future Perfect, Future Perfect Continuous, Exercise

Active and Passive Voice: Exercise

Unit 3: Comprehension and Precise Writing

Reading Comprehension: Exercises, Reason for poor Comprehension, Improving Comprehension Skills, Developing skills of Comprehension, Precise writing, Use and Procedure of Precise Writing

Unit 4: Letter writing and Review Writing

Letter: Letter writing, Classification of Letters, Social Letters, Business Letters, Resume Writing, Review Writing

Unit 5: Essay and Paragraph Writing

Essay writing: Types of Essay, Argumentative Essay, Descriptive Essay, Paragraph writing Component of a Paragraph (Topic, Unity, Coherence, Adequate Development), Techniques for Paragraph Writing.

Reference books:

1. Sinha, R.P. Current English Grammar and Usage with composition by Oxford Univ. Press New Delhi.
2. Nesfield, J.C. English Grammar, Composition and usage by Macmillan India Ltd. Delhi.
3. Wren P.C.; Martin English Grammar & Composition, S. Chand & Co. Ltd. New Delhi.
4. Raman, Meenakshi Technical Communication Principles and Practice by, Oxford Univ. Press New Delhi.
5. Sharma, Neeru. Communication Techniques: Vayu Education of India, New Delhi.

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ENGINEERING PHYSICS LAB

CODE: 01BP102

1. To determine the wavelength of monochromatic light by Newton's ring.
2. To determine the wavelength of monochromatic light with the help of Fresnel's Biprism.
3. To determine the specific rotation of cane sugar solution using polarimeter.
4. To study the polarization of light by simple reflection using laser.
5. To determine the specific resistance of a given wire using Carey Foster's bridge.
6. To determine the unknown resistance of a given wire using Carey Foster's bridge
7. To verify Stefan's Law by electrical method.
8. To calibrate the given ammeter .
9. To calibrate the given voltmeter by potentiometer.
10. To determine the energy band gap of a given semiconductor material.
11. To determine the characteristics of a P-N Junction diode for reverse saturation current and temperature.
12. To determine the coefficient of viscosity of a liquid.

ENGINEERING CHEMISTRY LAB

CODE - 01BP103

1. Determination of amount of Oxalic acid in 1 liter of solution using N/10 NaOH solution.
2. To determine the temporary and permanent hardness in water sample using EDTA as standard solution.
3. To determine the viscosity of given liquid by Ostwald's viscometer.
4. Preparation of Bakelite resin.
5. Determination of COD of a waste water sample.
6. To determine the alkalinity of a given water sample.
7. To determine the total residual chlorine in water.
8. Determination of BOD of a waste water sample.
9. Determination of TDS value of a given water sample.
10. To determine the ion-exchange capacity of a given cation exchanger.

WORKSHOP PRACTICE

CODE – 01BP104

- 1. Carpentry Shop:** 1.Timber, definition, engineering application, seasoning and presentation. 2. Plywood and ply boards.
- 2. Welding Shop:** 1.Definition of welding, brazing and soldering processes and their application.2. Mould any pattern.3. Gas welding practice on mild steel flat by student. 4. Lap joint by gas welding. 5. Square butt joint by MMA welding.6.Lap joint by MMA welding7. Demonstration of brazing.

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3. Machine Shop Practice: 1. Study of machine tools and operations. 2. Plane turning 3. Step turning. 4. Taper turning. 5. Threading.

4. Foundry Shop: 1. Study of tools and operations. 2. Pattern making. 3. Role of gate, runner, riser, core and chaplets. 4. Casting defects.

5. Fitting and Smithy Shop: 1. Study tools and operations. 2. Finishing of two sides of a square piece by filing. 3. Tin smithy for making mechanical joint and soldering of joint. 4. To cut a square notch using hacksaw and to drill three holes on PCD and tapping. 5. Study tools and operations of gas welding & arc welding.

PROFESSIONAL COMMUNICATION PRACTICAL CODE: 01BP107

- (i) Orientation to Speech Sounds through International Phonetic Alphabets (I.P.S.): British Received Pronunciation.
- (ii) Speech Drills with Emphasis on Articulatory Phonetics, Place and Manner.

**LIST OF PRACTICALS **

Stress in Speech: Based on Accentual Patterns.

Intonation-Pattern-Practice: Rising, Falling and Level-Tones.

Rhythm in Speech-Practices on Strong and Weak-form Words.

Individual Conferencing / Speaking along with Quizzes.

Conversational Skills for Interview/ Seminars / Workshops with Emphasis on Kinesis along with Promotion of Phonetic-Script-Skills.

Group-Discussion: Practices based on Accurate & Current Grammatical Patterns.

Official / Public Speaking: Practices based on Mechanics of Articulation.

Theme Presentation-Practices Based on Linguistic Patterns.

Developing Argumentative Skills/ Role-Play Presentations with Proper Rhythmic Stress.

Testing comprehension: Reading and Listening Exercises with the use of Audio-Visual Aids.

Audience-based, Effective Speech Production (Elocution)

Syllabus

Year-I Semester-2nd

ENGINEERING MATHEMATICS – II CODE: 01BT 201

Course Objective:

The main objectives of this course are to train the students to read and write mathematical proofs; to develop the students' mathematical problem solving skills; and to familiarize the students with standard concepts in mathematics.

Unit – I:

Laplace Transformation

Existence condition, Laplace transform of standard functions, Properties, Inverse Laplace transform of functions using partial fractions. Convolution theorem. Solving linear differential equations using Laplace transformation

Unit – II

Linear Algebra-I

Matrices, Properties, Special Matrices, Linear Systems Gauss Elimination Method (GEM) GEM, Row Echelon Form, Row reduced echelon form Elementary matrices, Properties, Inverse of a matrix Vector spaces in R^n , Subspaces, Linear combinations Linear Span, Linear independence and dependence, basis, dimension Row space, Column space, Null space.

Unit – III:

Linear Algebra-II

Fundamental theorem for system of linear equations Vector spaces subspaces Basis, Cardinality, Examples Properties of basis, more examples of subspaces Linear transformations Matrix associated with linear transformations.

Unit – IV:

Differential Equations- I

Second Order Ordinary Differential Equations with Variable Coefficients, Homogeneous and Exact Forms, Change of Dependent Variable, Change of Independent Variable, Normal Forms, Method of Variation of Parameter

Unit – V:

Differential Equations- II

Series Solutions of Second Order Linear Differential Equations with Variable Coefficients (Complementary Functions only), Partial Differential Equations of First Order, Lagrange's Form, Standard Forms, Charpit's Method

Reference Books:

1. Grewal, B.S. Engineering Mathematics, Hanna publishers.
2. Grewal, B.S. Higher Engineering Mathematics, Khanna publishers.
3. Kreyszig E. Advanced Engineering Mathematics, Jhon Wiley & sons.
4. Neil, Peter V. O'. Advance Engineering Mathematics, Thomson Learning.
5. H. K. Dass : S. Chand Publications.

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FUNDAMENTALS OF ELECTRICAL ENGINEERING CODE: 01BT202

Course Objective:

To teach students and make them understand about electrical quantities, Measuring Equipment's used in industries as well as in houses.

UNIT I – Basic Concepts of Electrical Engineering

Electric Current, Electromotive force, Electric Power, Basic Circuit Components, Kirchhoff's laws, Network Sources, Node Voltage Method, Mesh Current Method, Superposition, Thevenin's, Norton's Theorems.

UNIT II - A. C. Circuits

Alternating Quantities: Introduction, Generation of AC Voltages, Root Mean Square and Average Value of Alternating Currents and Voltages, Form Factor and Peak Factor, Phasor Representation of Alternating Quantities. R-L, R-C, R-L-C circuits (series and parallel), Time Constant, Phasor representation, Response of R-L, R-C and R-L-C circuit to sinusoidal input Resonance-series and parallel R-L-C Circuits.

UNIT III – Polyphase AC Circuits

Polyphase systems, Reason for use of three phase system, generation of three phase voltages, interconnection of three phase star/delta, voltage and current in balanced star/delta connections, phasor diagram, Power in star/delta connections. Star-Delta and vice-versa conversions.

UNIT IV – Basic principle of Instruments

Principles, Construction and application of moving coil, moving iron, dynamometer type, induction type instruments, extension of range of ammeter, voltmeter (shunt and multiplier), Two-wattmeter method for the measurement of power.

UNIT V - Transformers

Construction and Working principles and phasor diagrams of Single-phase Transformer, Emf equation, Equivalent circuit, Regulation and efficiency, and Auto transformer.

Rotating Machines

Construction and working principles of dc motor and generator and its characteristics Applications of DC machines, Construction and working principles of 3- ϕ -Induction motor, Torque-speed characteristics, and Industrial applications. Introduction and working principle of synchronous machine

Text Books:

1. P.C. Sen "Principles of Electric Machines and Power Electronics", Wiley Eastern 2003.
2. Vincent DEL TORO "Electrical Engineering Fundamental's Prentice Hall India", Ed 2002.
3. D, P. Kothari, I. J Nagrath McGraw Hills

BASIC ELECTRONICS CODE: 01BT203

Course Objective:

Electronics Industry is called the backbone of IT industry also Electronic Equipments are used every where irrespective of the type of industry. Hence the course is designed to make students fundamentally clear about the basics.

Syllabus

UNIT I -- Electronics Engineering Materials and Semiconductor Devices (EEMSD):

Solids, Classification of solids, Energy levels and Energy levels diagrams, Semiconductor and its types, intrinsic and extrinsic Semiconductors, conduction in metals and Semiconductors, difference among metals, semiconductors and insulators, current components in semiconductors, continuity equation.

UNIT-II

Various methods of formation of PN Junction, drift and diffusion current ,difference between drift and diffusion currents , PN Junction diodes, diode under forward bias , diode under reverse bias, V- I characteristics of PN Junction diode, Break down and types Break down diodes ,diode as a switch, diode as a Rectifier, Half wave Rectifier, Full wave Rectifier. Types of diodes – Zener diodes, Photodiodes, Light emitting diodes (LED's), Varactor diodes and tunnel diodes.

UNIT-III

Rectifiers and filter circuit: Half wave, full wave and Bridge rectifier circuits and their analysis, L, C and Pi filters, Basic regulator supply using zener diode. Working of Switched Mode Power Supply.

UNIT IV

Bipolar Junction Transistors, Construction and Principles of Operation of npn and pnp transistors, BJT configurations e.g.: common base, common emitter, common collector, characteristics of bipolar junction transistors (BJT's)-Comm. Base, Comm. emitter, Comm. Collector configuration.

UNIT-V

Principles of Operation of Junction field effect Transistors, physical structure, JFET biasingCircuit, JFET Configurations as common source, common gate , common drain. JFET amplifier, MOSFET Construction and Principles of Operation. MOSFET characteristics.

TEXT BOOKS

1. Electronics Devices and circuits by Millman & Halkias.
2. Electronics devices and circuit theory by Robert Boylestad

REFERENCE BOOKS:

- 1 .NN Bhargava and SC Gupta: Basic Electronics : TMH
2. JB Gupta : Basic Electronics : S K Kataria and Sons Delhi

COMPUTER CONCEPTS AND PROGRAMMING IN C CODE:01BT204

Course Objective: The Objective of-C language is a simple computer language designed to enable sophisticated programming language. C is a powerful, flexible language that provides fast program execution and imposes few constraints on the programmer. It allows low level access to information and commands while still retaining the portability and syntax of a high level language.C is defined as a small but powerful set of extensions to the standard ANSI C language. Its additions to C are mostly based on Smalltalk, one of the first object-oriented programming languages.

Syllabus

UNIT – 1 Computer Fundamentals

Functional units of Computer: I/O devices, Primary and secondary memories, Introduction to the Digital Computer, generation of computer Number System: Decimal, Binary, Octal, and hexadecimal, Number Systems and conversion methods

UNIT 2:

Standard I/O in “C”, **Fundamental Data Types and Storage Classes:** Character types, Integer, short, long, unsigned, single and double-precision floating point, storage classes, automatic, register, static and external, **Operators and Expressions:** Using numeric and relational operators, mixed operands and type conversion, Logical operators, Bit operations, Operator precedence and associativity,

UNIT 3:

Conditional Program Execution: Applying if and switch statements, nesting if and else, restrictions on switch values, use of break and default with switch, **Program Loops and Iteration:** Uses of while, do and for loops, multiple loop variables, assignment operators, using break and continue, **Modular Programming:** Passing arguments by value, scope rules and global variables, separate compilation, and linkage, building your own modules.

UNIT 4:

Arrays: Array notation and representation, manipulating array elements, using multidimensional arrays, arrays of unknown or varying size, **Structures:** Purpose and usage of structures, declaring structures, assigning of structures, **Pointers to Objects:** Pointer and address arithmetic, pointer operations and declarations, using pointers as function arguments, Dynamic memory allocation, defining and using stacks and linked lists.

UNIT 5:

Sequential search, Sorting arrays, Strings, Text files, **The Standard C Preprocessor:** Defining and calling macros, utilizing conditional compilation, passing values to the compiler, **The Standard C Library:** Input/output : fopen, fread, etc, string handling functions, Math functions : log, sin, alike Other Standard C functions

Reference book Let Us C – Yashwant Kanetkar.9 edition

[C complete reference](#) McGraw-Hill Osborne Media

APPLIED ENGINEERING PHYSICS CODE: 01BT205

Course Objectives

This course stresses the creation of physical models for real systems. Applications of a basic description of the properties of elastic media given. The methods required to predict the performance of physical or engineering systems are demonstrated using examples drawn from various fields of science and engineering with emphasis on mechanics and nano physics.

UNIT I - Field:

Introduction, Scalar and Vector fields, Co ordinate Systems, Definitions of gradient Divergence and curl, Maxwell’s Equations Boundary Conditions, Wave equation and its solution for free space, Nature of E.M. Waves, Pointing vector

Syllabus

UNIT II - Electromagnetic Theory (EMT)

Introduction, Scalar & dot products, gradient of scalar system Ampere's Law, Maxwell's equations (differential and integral forms), pointing vector, Pointing Theorem (Statement only), propagation of plane electromagnetic waves in conducting and non-conducting medium.

UNIT III - Solid State Physics

Introduction Fermi-Dirac distribution function, Position of Fermi level in intrinsic semiconductors (with derivation) and in extrinsic semiconductors (variation of Fermi level with temperature (without derivation) Formation of energy bands in metals, semiconductors and insulators; intrinsic and extrinsic semiconductors, Fermi energy levels for doped, undoped semiconductors and pn junction; Tunnel diode, Zener diode.

UNIT IV - Superconductivity: Introduction Meissner Effect, Type I and Type II Superconductors, BCS theory (Qualitative only), London's equation, properties of superconductors & applications.

X-Rays: production and properties, Crystalline and Amorphous solids (Brief) Bragg's Law, Applications.

Ultrasonics: Introduction, Production of Ultrasonics (Magnetostriction and piezoelectric methods), engineering applications.

Unit V -Recent Developments in Physics (Nano Physics):

Introduction, Nanoparticles, Properties of nanoparticles (optical, electrical, Magnetic, structural, mechanical), Brief description of different methods of synthesis of nanoparticles such as physical, chemical, biological, and mechanical. Synthesis of colloids. Growth of nanoparticles, Synthesis of metal nanoparticles by colloidal route, Applications of nanotechnology-electronics, energy, automobiles, space and defenses, medical, environmental, textile, cosmetics.

Reference Books:

1. Principles of Physics, Serway and Jewett (Saunders college publishing)
2. Introduction to Solid State Physics, Kittel C (Wiley and Sons)
3. Physics of the Atom, Wehr and Richards (Addison, Wesley)
4. Nanotechnology, Principles and Practices, Dr.S.K.Kulkarni (Capital Publishing house)
5. Engineering Physics, V.S. Yadav

MANUFACTURING PROCESSES

CODE: 01BT206

Course Objective:

To make students familiar with material forming processes, extrusion, wire drawing and sheet metal shearing, welding, material removal process including cutting tools and machine tools, welding processes metal casting process ,design and application.

Unit-I - Basic Metals & Alloys: Properties and Applications

Properties of Materials: Strength, elasticity, stiffness, malleability, ductility, brittleness, toughness and hardness. Elementary ideas of fracture fatigue & creep.

Syllabus

Unit-II - Ferrous Materials: Carbon steels, its classification based on % carbon as low, mild, medium & high carbon steel, its properties & applications. Wrought iron. Cast iron. Alloy steels: stainless steel, tool steel. **Non-Ferrous metals & alloys:** Common uses of various non-ferrous metals & alloys and its composition such as Cu-alloys: Brass, Bronze,

Unit-III - Introduction to Metal Forming & Casting Process and its applications

Metal Forming: Basic metal forming operations & uses of such as: Forging, Rolling, cutting and forming, its applications. Hot-working versus cold-working.

Casting: Molding sands and its desirable properties. Mould making with the use of a core. Gating system. Casting defects & remedies. Cupola Furnace. Die-casting and its uses.

Unit-IV - Introduction to Machining

Machining: Basic principles of Lathe-machine and operations performed on It., Drilling, Milling & Grinding. Shaper and planner

Unit-V - Welding: Importance & basic concepts of welding, classification of welding processes. Gas-welding, types of flames. Electric-Arc welding. Resistance welding. Soldering & Brazing and its uses.

Reference Books

1. K.M .MohitUmesh Publication
2. P.C .Sharma: S. Chand Publication
3. AshishDatt Sharma: College Book House , Jaipur

PROFESSIONAL ETHICS CODE: 01BT207

Course Objective:

- To create an awareness on Engineering Ethics and Human Values.
- To instill Moral and Social Values and Loyalty.
- To appreciate the rights of others.

UNIT I - Human values

Morals, Values and Ethics – Integrity – Work Ethic – Service Learning – Civic Virtue – Respect for Others – Living Peacefully – caring – Sharing – Honesty – Courage – Valuing Time – Co-operation – Commitment – Empathy – Self-Confidence – Character – Spirituality

UNIT II- Engineering ethics

Senses of 'Engineering Ethics' - variety of moral issued - types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy – Models of Professional Roles - theories about right action - Self-interest - customs and religion uses of ethical theories.

UNIT III - Engineering as social experimentation

Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study

Syllabus

UNIT IV - Safety, responsibilities and rights

Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the Three Mile Island and Chernobyl case studies. Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - Intellectual Property Rights (IPR) - discrimination.

UNIT V - Global issues

Multinational corporations - Environmental ethics - computer ethics - weapons development - engineers as managers-consulting engineers-engineers as expert witnesses and advisors -moral leadership-sample code of Ethics like ASME, ASCE, IEEE, Institution of Engineers (India), Indian Institute of Materials Management, Institution of electronics and telecommunication engineers (IETE),India, etc.

Reference Books

1. S.DineshBabu : Laxmi Publication Delhi
2. A text book on Professional Ethics and Humane values: R.S. Nagarazan
3. A. Alavudeen, R. KaliRahman M. kumaran,Laxmi Publication Delhi
4. Vaishali R. Khosla&KavitaBhagat: Technical Publication Pune.
5. V.S.Bagad, I.ADhotre Technical Publication Pune.

ELECTRICAL ENGINEERING LAB CODE:01BP202

List of Practical's

A minimum of 10 experiments from the following:

- 1 Verification of Thevenin's Theorem.
- 2 Verification of super position theorem
- 3 Phasor diagram and power circuit of LCR circuit
- 4 Measurement of power and power factor in single phase load using 3 ammeter/bolt meter.
- 5 Calibration of energy meter watt meter voltmeter ammeter
- 6 Two wattmeter method of measuring power in 3 phase circuit (Register load only)
- 7 Load test on single phase transformer regulations and efficiency of transformer.
- 8 Short circuit / open circuit test on single phase transformer
- 9 Measure the ammeter and field resistance of DC machine.
- 10 Connection and starting of 3 phase induction method using direct on line or star delta starter.
- 11 Starting and speed control of a DC stunt motor.

Syllabus

BASIC ELECTRONICS LAB CODE:01BP203

List of Practical's

A minimum of 10 experiments from the following:

- 1 To know and study symbols of various electronic components
- 2 To become familiar with various electronic components equipments]
- 3 To calculate rms values of current and voltage
- 4 To study CRO and function generator
- 5 To calculate rms value , max value ,time frequency etc for the giving wave .
- 6 To absorb lissajous figures on CRO.
- 7 To study printed circuit board and method for manufacturing
- 8 To study and practices soldering and desoldering of components
- 9 To study and draw characteristics of PN junction diode
- 10 To study and draw characteristics of Zener junction diode

COMPUTER CONCEPT & PROGRAMMING IN C CODE:01BP204

List of Practical's

1. 1 Write a program which calculate the average of two no , also print the remainder if second is divided by first no
2. Write a program which read three numbers and then print greater no.
3. Write a program which read a no. between, 1 to 7 and then print the day corresponding.
4. Write a program which calculate the factorial of given no
5. Write a program which generates the following pattern.
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
6. Write a program which read a number and then check whether that number is prime or not .
7. Write a program which read a set of number from keyboard and then find out smallest element. Use array for store number.
8. Write a program which read an array sort that and then print.
9. Write a program which read two matrix and then print a matrix which is addition of these two matrix
10. Write a program which read two matrixes and multiply them.
11. Write a function which calculate the multiplication of two number , call this function in main program
12. Write a program which calculates the factorial of number using recursion.
13. Write a program which reads two strings, concatenates these two and prints the result.
14. Write a program which reads a string and then prints total no . of characters in this .
15. Write a program for file handling .

Syllabus

MECHANICS LAB CODE:01BP206

List of Experiments

1. To verify the parallelogram law of vector addition
2. To verify the triangle law of forces using given model.
3. To verify the belt friction law
4. To study simple gear train using given model\
5. To study worm gear using given model.
6. To study screw jack using given model.
7. To study coefficient of friction.

Syllabus

Year II Semester III.

ENGINEERING MATHEMATICS-III

CODE- 02BT301

Course Objective

The main objectives of this course are to train the students to read and write mathematical proofs; to develop the students' mathematical problem solving skills; and to familiarize the students with standard concepts in mathematics.

Unit – I:

Function of Complex variable:

Analytic function, C-R equations, Cauchy's integral theorem, Cauchy's integral formula for derivatives of analytic function, Taylor's and Laurent's series, Residue theorem.

Unit – II:

Z – Transform

Z-Transform- Review of Sampled Data Systems, Time Domain Representations of Discrete Time Signals, Definition of Z transforms Theorems and Examples of Z transforms, ROC in Z Domain, Properties of the Z-Transform, Inverse Z-Transform,

Unit – III:

Statistical Techniques

Moments, Moment generating functions, Skewness, Kurtosis, Correlation and Regression, Binomial distribution, Poisson distribution.

Unit – IV:

Numerical Techniques – I

Difference operation Forward backward and central, shift and average operators and relation between them, Newton's forward and backward differences interpolation formulae, Lagrange's Interpolation Formula,

Unit –V:

Numerical Techniques –II

Numerical differentiation, Numerical integration, Trapezoidal, Simpson's one third and three-eighth rules, Solution of ordinary first order differential equations by Euler's, Picard's and fourth-order Runge - Kutta methods.

Reference Books:-

1. R.K. Jain & S.R.K. Iyenger, Advance Engineering Mathematics, Narosa Publication House, 2002.
2. Chandrika Prasad, Advanced Mathematics for Engineers, Prasad Mudralaya, 2010.
3. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 2010
4. Devi Prasad, An introduction to Numerical Analysis, Narosa Publication house, New Delhi
5. S.P. Gupta, Statistical Methods, Sultan and Sons, New Delhi, 2009.
- 6 H. K .Dass : S. Chand Publication.

Syllabus

MATERIAL SCIENCE

CODE: 02BT302

Course Objective: At the end of the course the student will have an understanding of mechanics, physical and chemical properties of materials including metals, ceramics, polymers and composites and the reasons for these properties to exist.

Unit 1: Crystal structures

Crystalline and noncrystalline materials. Miller indices. Anisotropic elasticity. Elastic behavior of composites. Structure and properties of polymers. Structure and properties of ceramics. Point defects. Theoretical yield point. Line defects and dislocations. Interfacial defects. Bulk or volume defects. Atomic vibrations. Yield criteria and macroscopic Property variability and design factors. Recovery, recrystallization and grain growth. Strengthening by second phase particles. Optimum distribution of particles. Lattice resistance to dislocation motion.

Unit 2: Applications and Processing of Ceramics

Types and applications of ceramics. Fabrication and processing of ceramics. Applications and Processing of Polymers mechanical behavior of polymers. Mechanisms of deformation and strengthening of polymers. Crystallization, melting and glass transition. Polymer types. Polymer synthesis and processing. Composites Particle reinforced composites. Fiber reinforced composites. Structural composites. Degradation of polymers.

Unit 3: Electrical Properties

Electrical conduction. Semi conductivity. Super conductivity. Electrical conduction in ionic ceramics and in polymers. Dielectric behavior. Ferroelectricity. Piezoelectricity Thermal Properties Heat capacity. Thermal expansion. Thermal conductivity. Thermal stresses.

Unit 4: Magnetic Properties

Diamagnetism and paramagnetic. Ferromagnetism. Antiferromagnetism and ferrimagnetism. Influence of temperature on magnetic behavior. Domains and Hysteresis

Unit 5: Optical Properties

Basic concepts. Optical properties of metals. Optical properties of nonmetals. Application of optical phenomena. Economic, Environmental and Social Issues of Material Usage Economic considerations. Environmental and societal considerations. Recycling issues. Life cycle analysis and its use in design.

Reference Books:-

1. Material Science: V. Raghawan, Prentice Hall Of India.
2. Electronics Material: Bell, Oxford University Press, YMCA New Delhi
3. Material Science: S.L.Kakani, New Age Publication, New Delhi
4. Material Science: G K Narula, Manohar Publishers and Distributors, New Delhi

Syllabus

DIGITAL ELECTRONICS CODE: 02BT303

Course Objective:

Digital electronics or switching Theory is taught with the aim to give in depth knowledge of Number systems which provide the basis for all operations in information processing systems. The goal of logic expression minimization is to find an equivalent of an original logic expression that has fewer variables per term, has fewer terms and needs less logic to implement. There are manual methods for logic expression minimization; algebraic minimization helps while designing logic memory organizations are also introduced.

UNIT 1: Number Systems, Basic Logic Gates & Boolean Algebra:

Radix representation of different numbers. Sign & magnitude representation, Fixed point representation, complement notation, various codes & arithmetic in different codes & their inter conversion. Features of logic algebra, postulates of Boolean algebra. Theorems of Boolean algebra. Boolean function. Derived logic gates: Exclusive-OR, NAND, NOR gates, their block diagrams and truth tables. Logic diagrams from Boolean expressions and vice-versa. Converting logic diagrams to universal logic.

UNIT 2: Digital Logic Gate Characteristics:

TTL logic gate characteristics. Theory & operation of TTL NAND gate circuitry. Open collector TTL. Three state output logic. TTL subfamilies. MOS & CMOS logic families. Realization of logic gates in RTL, DTL, ECL, and C-MOS & MOSFET. Interfacing logic families to one another.

UNIT 3: Minimization Techniques:

Minterm, Maxterm, Karnaugh Map, K map up to 4 variables. Simplification of logic functions with K-map, conversion of truth tables in POS and SOP form. Incomplete specified functions. Variable mapping. Quinn-McKlusky minimization techniques.

UNIT 4: Combinational Systems:

Combinational logic circuit design, half and full adder, subtractor. Binary serial and parallel adders. BCD adder. Binary multiplier. Decoder: Binary to Gray decoder, BCD to decimal, BCD to 7-segment decoder. Multiplexer, demultiplexer, encoder. Octal to binary, BCD to excess-3 encoder. Diode switching matrix. Design of logic circuits by multiplexers, encoders, decoders and demultiplexers.

UNIT 5: Sequential Systems:

Latches, flip-flops, R-S, D, J-K, and Master Slave flip flops. Conversions of flip-flops. Counters: Asynchronous synchronous and synchronous decade counter, Modulus counter, counter, counters design. Ring counter. Counter applications.

Reference Books

1. Digital Electronics: R.P. Jain. TMH New Delhi
2. Digital Electronics: M. Moris. Mano, McGraw Hills
3. Digital Electronics: V.K. Jain and Arti Aggarwal, Genius Publication, Jaipur
4. Digital Electronics: Salivahnan, S.K. Kataria and Sons New Delhi.

Syllabus

AUTO CAD COURSE CODE: 02BT304

Unit I

Introduction to Computers and Computer Aided Graphics – Workstations – Display Technology – Input and Output Devices – Graphics standards.

Unit II

Introduction to Computer Aided Design and Drafting – Applications – Various CAD Packages – Study of AUTOCAD 2000 software – Hardware requirements.

Unit III

Simple Exercises using various Drawing and Editing commands of AUTOCAD 2000

Unit IV

Simple Exercises using various formatting commands – Basic Dimensioning practice using AUTOCAD 2000.

Unit V

Simple Exercises using Layers and Blocks – Introduction to Isometric Drawings – Basic Plotting practice.

Text Book

1. George Omura, 'AUTOCAD 2000', BPP Publications, New Delhi, 2000 Reference Books
1. Shyam Tickoo, 'AUTOCAD 2000 BIBLE', BPP Publications, New Delhi, 2000
2. K.V. Natarajan, "Engineering Drawing and Graphics", 15th Ed. 2001

OBJECT ORIENTED PROGRAMMING & C++ CODE: 02BT305

Course Objective:

Object-oriented programming (OOP) is a Programming Paradigm that uses objects data structures consisting of data fields and methods together with their interactions to design applications and computer programs.

Unit – 1

Introduction to OOP:

Procedural Programming, Object oriented Programming Paradigm, Basic concept of object oriented programming: Object, class, data abstraction and encapsulation, Inheritance, Polymorphism, dynamic binding, message passing, application of OOP.

Unit - 2

Tour of C++:

Application of C++, A simple C++ program, structure of C++ program. Basic Facilities: Data Types, new operators and keywords, Type conversions in C++, Classes and Objects, Defining data members and member functions, Static class members, Array of objects, Constructors and Destructors

Syllabus

Unit - 3

Inheritance:

Introduction, Base class and derived class, Types of Inheritance: single, multilevel, multiple, hierarchical, hybrid, Virtual base class, Abstract class, this pointer, Virtual functions and pure virtual functions.

Unit - 4

Polymorphism:

Run time, Compile time, Early binding, Late binding, Functions: Call by reference, Function overloading, Inline Functions, Friend Functions.

Unit - 5

Operator Overloading:

Overloading unary and binary operators, overloading using friend functions. Exception handling: Error Handling, Exception Specification (i.e. Usage of Try, Catch, Throw).

Reference Books:

1. James Rumbaugh, "Object Oriented Modeling and Design", PHI
2. Herbert Schildt, "The Complete Reference: Java", TMH.
3. E. Balaguruswamy, "Programming in JAVA", TMH.
4. Thinking in C++ - Bruce Eckel.
5. Rajesh K. Shukla "Object Oriented Programming in C++".

TOTAL QUALITY MANAGEMENT CODE: 02BT306

Course Objective: Understanding the total quality concept and techniques for improving quality. Gain the information and skills needed to implement total quality practices. Determine the impact of quality on profitability, TQM as a fundamental business strategy, Communicate the importance of customer focused TQM, Use seven QC tools for data collection and analysis, Implement a business strategy driven by Total Quality Management (TQM), Accomplish the cultural transformation necessary for successful implementation of total quality practices, Achieve globalization in manufacturing and service through TQM, Apply the Malcolm Baldrige National Quality Award guidelines to TQM initiatives.

Unit1:

Evolution of Quality, Customer satisfactions, Quality , Characteristic of Quality , Cost of Quality , Quality Control and Inspection, , TQM concepts and Tools and Technique of TQM.

Unit2:

Deming's Philosophy, Gurus of TQM, 5 Principles of TQM, History of Quality control in India, TQM organization, Leadership, Characteristics of Quality Leaders, Role of TQM Leadership.

Syllabus

Unit3:

Continuation Process Improvement, the PDSA cycle, 6 sigma Quality, Benchmarking, Type of benchmarking and competitive analysis, TQC tools, process capability.

Unit4:

Statistical process control, Control Charts for attributes, p chart, n p chart, c chart, acceptance sampling, types of sampling plans, operating characteristics curve, double Sampling plan, reliability, redundancy.

Unit5:

Quality by design, Experimental design, Introduction to design experiments, Terminology used in design experiments, some important design , quality control, statistical quality control tables, Binomial Distribution, Poisson Distribution , Normal Curve .

Reference Books

1. Dale H. Besterfield et al, Total Quality Management, Third edition, Pearson Education (First Indian Reprints 2004).
2. Shridhara Bhatt K, Total Quality Management – Text and Cases, First Edition 2002, Himalaya Publishing House.
3. William J. Kolarii, Creating Quality, Mcgraw Hill, 1995.
4. Poornima M. Charantimath., Total Quality Management, Pearson Education, First Indian Reprint 2003.

HUMAN RESOURCE MANAGEMENT

CODE: 02BT307

Objectives: The objective of the course is to familiarize students with the different aspects of managing Human Resources in the organization through the phases of acquisition, development and retention.

Unit I:

Introduction: Concept, Nature, Scope, Objectives and Importance of HRM; Evolution of HRM; Challenges of HRM; Personnel Management vs. HRM.

Unit II:

Acquisition of Human Resources: HR Planning: Meaning, Objectives, Significance & process ; Job Analysis – Job Description and Job Specification; Difference between Recruitment and Selection

Unit III:

Training and Development: Concept and Importance of Training; Types of Training; Design of Training Programs; Evaluation of Training Effectiveness. Job Changes – Transfers, Promotions/Demotions, separations & Lay Off.

Syllabus

Unit IV:

Job Evaluation – Concept, Process and Significance; Components of Employee Remuneration – Base and Supplementary; Performance and Potential Appraisal – Concept and Objectives; Traditional and Modern Methods, Limitations of Performance Appraisal Methods, 360 Degree Appraisal Technique; Overview of Employee Welfare, Health and Safety, Social Security.

Unit V:

HRM Strategies for the New Millennium: Role of HRM in strategic management; human capital; emotional quotient; mentoring. Socialization & Paternalistic approach.

REFERENCE BOOKS:

1. Aswathappa, K., (2010), Human Resource Management, McGraw Hill Education.
2. DeCenzo, D. A. and Robbins, S.P. (2007), Fundamentals of Human Resource Management, 9th edition, John Wiley.
3. Durai, Praveen, (2010), Human Resource Management, Pearson Education.
4. Monappa, A. and Saiyadain, M: Personnel Management, McGraw-Hill Education.
5. Dessler, Gary : Human Resource Management, Pearson Education.
6. Jyothi, P. and Venkatesh, D.N, (2006), Human Resource Management, Oxford Higher Education

Reference Books:

1. A Text Book of Machine Drawing Laxmi Narayana and Mathur, M/s. Jain Brothers, New Delhi.
2. Machine drawing by N Sidheshwar, Kannaieh, V S Sastry, TMH, and New Delhi.

Syllabus

PROGRAMMING USING C++ LAB CODE: 02BP309

LIST OF EXPERIMENTS

Write programs to carry out:

1. Write a simple program for understanding of C++ program structure without any Class declaration.
2. Write a function which calculates the root of $ax^2 + bx + c = 0$, call that into main program, root are $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$.
3. By using structures write a program which reads the bio data of students, and then prints the bio data of those students which has more than 400 total marks.
4. Write a C++ program to demonstrate concept of declaration of class with public & private member, constructors, object creation using constructors, access restrictions, defining member functions within and outside a class.
5. Program involving multiple classes (without inheritance) to accomplish a task. Demonstrate composition of class.
6. Write a program to Representing concepts of data hiding and function overloading.
7. Write a program to demonstrate Friend function, friend classes and this pointer.
8. Program to use the protected members, public & private protected classes, multilevel inheritance
9. Write a program to demonstrating multiple inheritances.
10. Write a program to represent virtual functions, virtual base classes, and abstract classes.
11. Write a program that creates a binary file by reading the data for the students from the terminal. The data of each student consist of roll no., name and marks.
12. Write a program by using class, object, and inheritance to read two complex nos ,store in different object and then print the sum of these two..
13. Write a program to demonstrate hierarchical inheritances.
14. Write a program for overloading of '+' operator.
15. Write a program by using try catching, which read two no and then dividing first no by second no raise exception if second no is zero.

Text Books:

- Object oriented Programming with C++ by E Balagurusamy, 2001, Tata McGraw-Hill
- C++ How to Program by H M Deitel and P J Deitel, 1998, Prentice Hall
- Programming with C++ By D Ravichandran, 2003, T.M.H

Reference books:

1. Computing Concepts with C++ Essentials by Horstmann, 2003, John Wiley,
2. The Complete Reference in C++ by Herbert Schildt, 2002, TMH.
3. Object Oriented Programming in Turbo C++ by Robert Lafore, 1994, The WAITE Group Press.

Syllabus

DIGITAL ELECTRONIC LAB CODE: 02BP310

Course Objective:

To train the students with help of state of art electronic equipments for the demonstration of digital logic, number system conversion, adders, sub tractors, multiplexer, encoders etc. Also to give basic idea of digital logic design with the help of memory containing digital devices , sequential circuits like flip- flops, shift register, counter etc.

List of experiments:

- 1) Study of the operation of OR, AND, NOT, NAND, NOR, XOR, XNOR gate and to verify truth table.
- 2) Design NOT, AND, OR gate using Universal gates and to verify truth table with conventional basic gates.
- 3) Study and verify Truth Table of Binary Half-Adder & Binary Half Subtractor, also study and verify the Truth Table of Binary FULL Adder (Using two Half adders).
- 4) Study and verify the Truth Table of 4-to-1 Line Multiplexer.
- 5) Study and verify the Truth Table of 1-to-4 Line Demultiplexer.
- 6) Study and verify the Truth Table of 8-to-3 Line Encoder.
- 7) Study and verify the Truth Table of 3-to-8 Line Decoder.
- 8) Study of
 - (a) R-S Flip-Flop
 - (b) J-K Flip-Flop
 - (c) D Flip-Flop
 - (d) T Flip-Flop
- 9) Study of
 - (a) 4- bit Synchronous Binary up Counter
 - (b) 4-bit Asynchronous Binary up/down Counter.
- 10) Verification of operation of IC 74190 as modulo-N programmable Counter.
- 11) Study of 4-bit
 - (a) serial-in-serial-out shift register
 - (b) serial-in parallel-out shift register
 - (c) parallel-in-parallel-out shift register
 - (d) parallel-in-parallel-out shift register
- 12) Study of 3-bit
 - (a) serial-in-serial-out shift register
 - (b) serial-in parallel-out shift register
 - (c) parallel-in-parallel-out shift register
 - (d) parallel-in-parallel-out shift register

Reference Books

1. Digital Electronics: R.P. Jain, TMH New Delhi.
2. Digital Electronics: M. Moris Mano, McGraw Hills.
3. Digital Electronics: V.K. Jain and Arti Aggarwal, Genius Publication, Jaipur.
4. Digital Electronics: Salivahnan, S.K. Kataria and Sons New Delhi.

Syllabus

MATERIAL SCIENCE LAB

CODE: 02BP311

Course Objective: At the end of the course the student will have an understanding of mechanics, physical and chemical properties of materials including metals, ceramics, polymers and composites and the reasons for these properties to exist.

List of experiments:

1. To study different types of material property.
2. To study crystal structures of a given specimen.
3. To prepare solidification curve for a given specimen.
4. To study heat treatment processes (hardening and tempering) of steel specimen.
5. To study microstructure of heat-treated steel.
6. To study the creep behavior of a given specimen.
7. To study equilibrium of Iron Carbon diagram.
8. To study the UTM machine.

Reference Books:-

1. Material Science: V. Raghawan, Prentice Hall Of India.
2. Electronics Material: Bell, Oxford University Press, YMCA New Delhi
3. Material Science: S.L. Kakani, New Age Publication, New Delhi
4. Material Science: G K Narula, Manohar Publishers and Distributors, New Delhi.

Syllabus

AUTO CAD LAB COURSE CODE: 02BP308

1. Draw the figure 1 by invoking line tool in absolute coordinate system?
2. Draw the figure 2 by invoking line tool in relative polar coordinate system?
3. Draw the figure 3 by using line and circle tool?
4. Draw the figure 4 by invoking line, ellipse and arc tool?
5. Draw the figure 5 by invoking line, arc and offset tool?
6. Draw the figure 6 by invoking polygon tool?
7. Draw the figure 7 by invoking line, arc and mirror tool?
8. Draw the figure 8 by invoking line, offset and trim tool?
9. Draw the figure 9 by invoking line, circle, arc and arraypolar tool?
10. Draw front, side and top view as shown in figure10?
11. Draw isometric view as shown in figure 11?

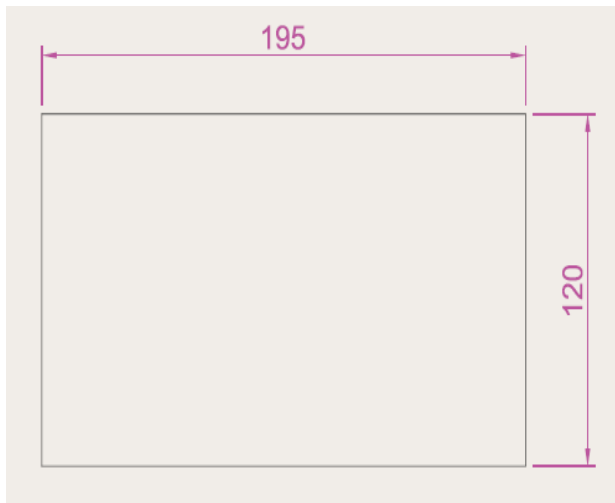


Figure 1

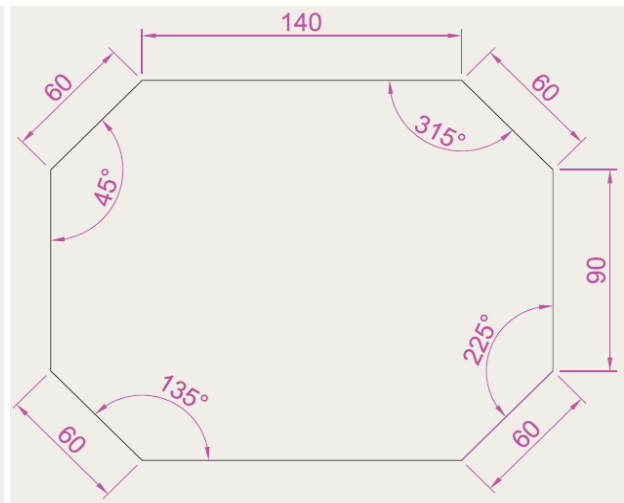
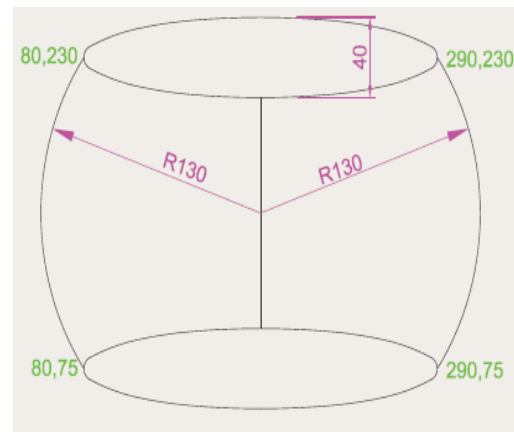
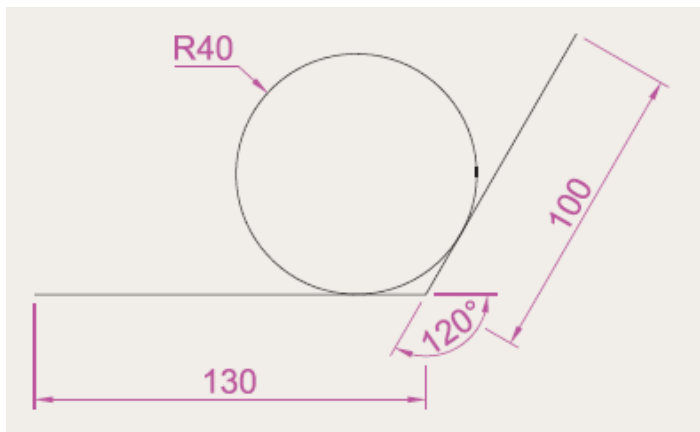


Figure 2



Syllabus

Figure 3

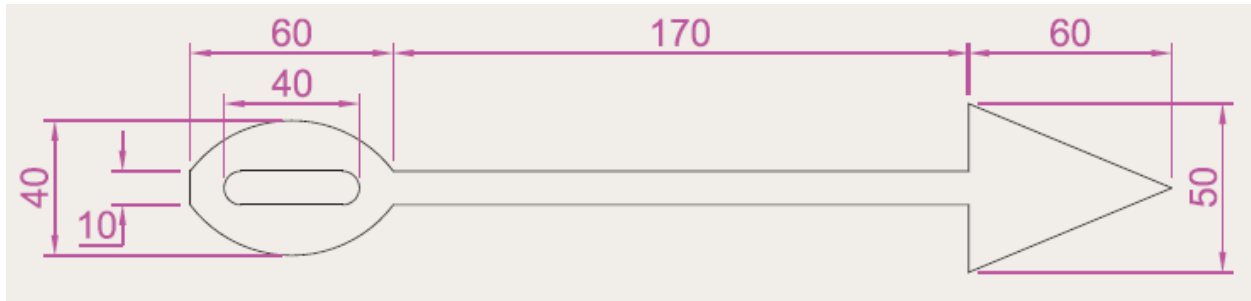


Figure 4

Figure 5

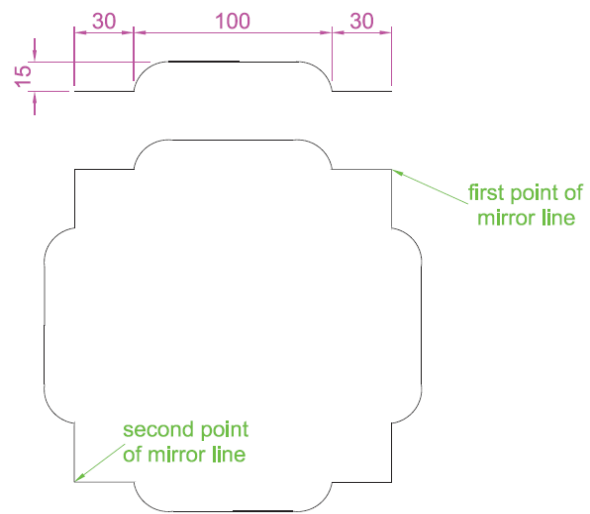
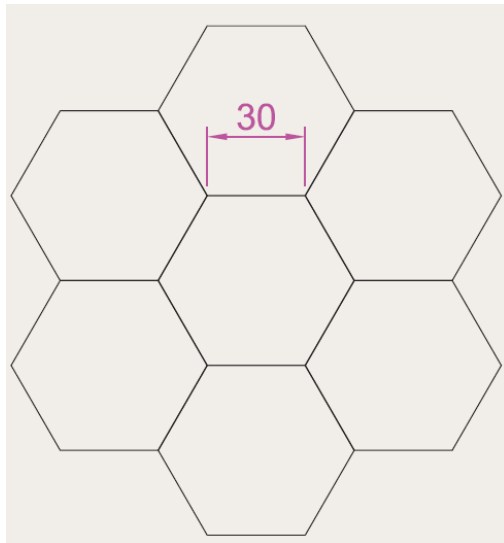


Figure 6

Figure 7

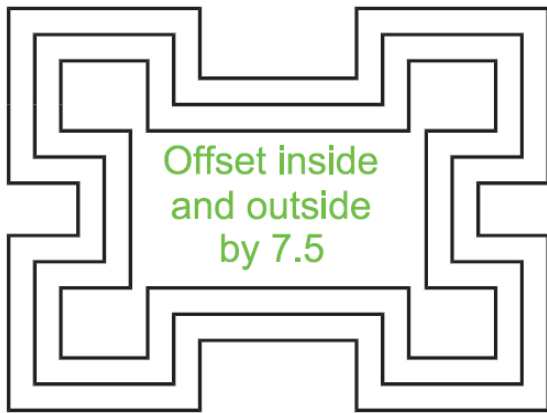


Figure 8

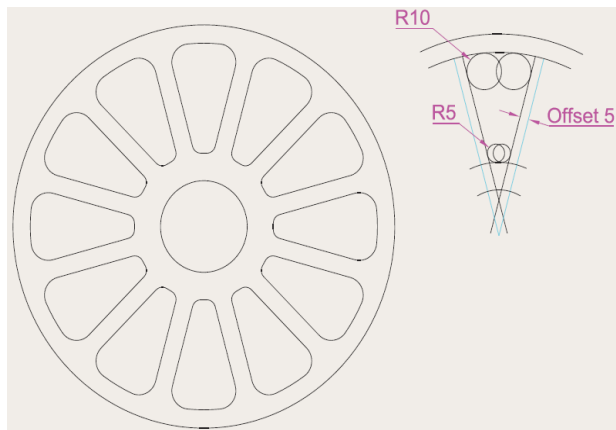


Figure 9

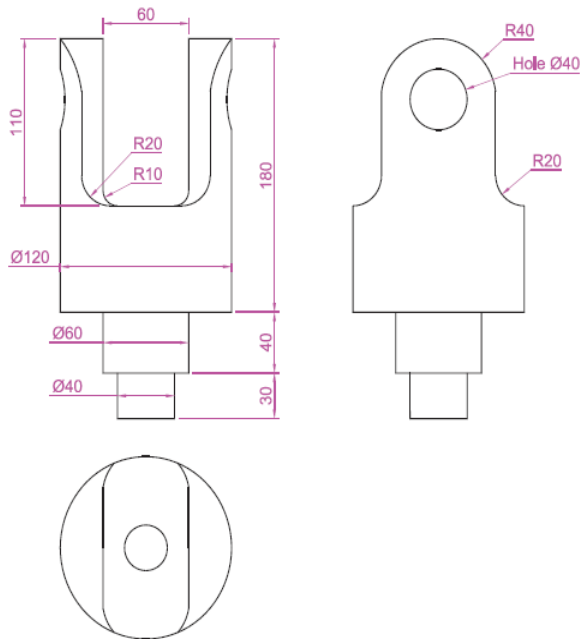


Figure 10

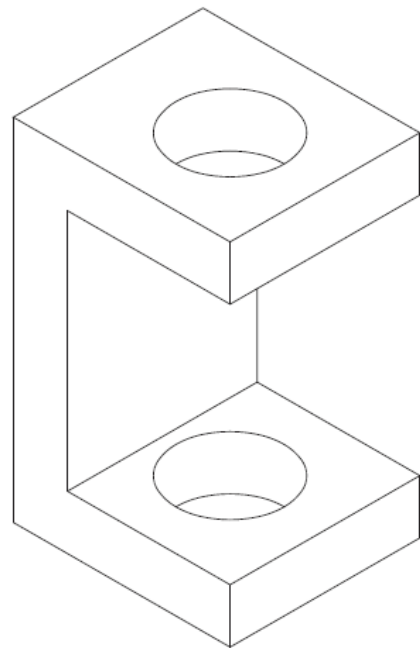


figure 11