FACULTY OF ENGINEERING

Scheme of Instruction & Examination

and

Syllabi

B.E.-I Semester

of

Four Year Degree Programme

in

Mechanical Engineering
Production Engineering
Automobile Engineering

(With effect from the academic year 2016-17)

(As approved in Faculty Meeting held on 18 June 2016)

Issued by

Dean, Faculty of Engineering
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SCHEME OF INSTRUCTION & EXAMINATION
B.E. I - SEMESTER
(MECHANICAL ENGINEERING, PRODUCTION ENGINEERING, & AUTOMOBILE ENGINEERING)

S. No	Course Code	Course Title	Scheme of Instructions (Contact Hrs/Wk)			Scheme of Examination			Credits
			L	T	Pr/Drg	CIE	SEE	Duration in Hrs	
Theory Courses									
1.	BS 101 MT	Engineering Mathematics I	3	1	0	30	70	3	3
2.	BS 102 PH	Engineering Physics I	3	0	0	30	70	3	3
3.	BS 103 CH	Engineering Chemistry I	3	0	0	30	70	3	3
4.	ES 104 CE	Engineering Mechanics I	3	1	0	30	70	3	3
5.	ES 105 CS	Computer Programming and Problem Solving	3	0	0	30	70	3	3
6.	MC 106 EG	Engineering English	3	0	0	30	70	3	3
Practical / Laboratory Courses									
7.	BS 151 PH	Engineering Physics Lab I	0	0	2	25	50	3	1
8.	BS 152 CH	Engineering Chemistry Lab I	0	0	2	25	50	3	1
9.	ES 157 ME	Engineering Drawing I	0	0	2 x 2	50	50	3	2
10.	ES 154 CS	Computer Programming Lab	0	0	2	25	50	3	1
11.	ES 155 ME	Engineering Workshop I	0	0	2	25	50	3	1
12.	MC 156 EG	Engineering English Lab	0	0	2	25	50	3	1
		Total	**18**	**2**	**14**	**355**	**720**		**25**

BS: Basic Sciences
PC: Professional Course
OE: Open Elective
ES: Engineering Sciences
HS: Humanities and Sciences
CIE: Continuous Internal Evaluation
MC: Mandatory Course
PE: Professional Elective
SEE: Semester End Examination(Univ.Exam)

L: Lectures T: Tutorials

Note: 1) Each contact hour is a Clock Hour

2) The practical class can be of two and half hour (clock hours) duration as per the requirement of a particular laboratory.

Course Code	Course Title						Core/Elective
BS 101 MT	ENGINEERING MATHEMATICS – I (Common to all branches)						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
NIL	3	1	0	0	30	70	3

Course Objectives:

- To study matrix algebra and its use in solving system of linear equations and in solving eigenvalue problems
- To introduce the concepts of sequences, series and their properties
- To provide the knowledge of curve sketching
- To introduce the concepts of functions of several variables
- To study vector differential and integral calculus

UNIT – I

Linear Algebra: Introduction to Matrices, Elementary row and column operations, Rank of a Matrix, Echelon form, System of linear equations, Eigenvalues, Eigenvectors, Cayley-Hamilton theorem, Diagonalization, Quadratic forms, signature and Index.

UNIT – II

Infinite Series: Sequences, Infinite series, Convergence and Divergence , P-Series test, Geometric Series test, Comparison tests, D'Alembert's Ratio test, Raabe's test, Cauchy's n^{th} root test, Alternating series, Leibnitz's test, Absolute Convergence, Conditional Convergence.

UNIT – III

Differential Calculus: Rolle's theorem, Lagrange's and Cauchy's mean value theorems, Taylor's series, Curvature, Radius of curvature , Envelopes, Evolutes and Involutes, Asymptotes of a curve, Curve sketching (cartesian).

UNIT – IV

Functions of Several Variables: Limits and Continuity of Functions of two variables, Partial derivatives, Total differentials and derivatives, Derivatives of composite and implicit functions, Higher order partial derivatives, Taylor's theorem for

functions of two variables, Maxima and minima of functions of two variables, Jacobian, Change of variables.

UNIT – V

Vector Calculus: Scalar and vector fields, Vector differentiation, Gradient of a scalar field, Directional derivative, Divergence and Curl of a vector field, Line, Surface and Volume integrals , Green's theorem in a plane, Gauss's divergence theorem, Stoke's theorem(without proof) and their applications.

Suggested Reading :

1) Larry Turyn, "Advanced Engineering Mathematics" , CRC Publications, 2014.

2) R.K.Jain and S.R.K.Iyengar, "Advanced Engineering Mathematics", Narosa Publications, Fourth Edition, 2014.

3) Srimanta Pal and Subodh C. Bhunia, " Engineering Mathematics", Oxford University Press,2015.

4) Peter V.O'Neil " Advanced Engineering Mathematics", CENGAGE Learnig, 7th Edition,2013.

5) Eerwin Kreyszig, "Advanced Engineering Mathematics", Wiley- India, 9thEdition, 2012.

6) Manice D. Weir, Joel Hass, Frank R. Giordano, "Thomas' Calculus", Pearson Publications,11thEdition.

Course Code	Course Title						Core/Elective
BS 102 PH	ENGINEERING PHYSICS – I (Common to all branches)						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
NIL	3	0	0	0	30	70	3

Course Objectives:

The objective of the course is to acquire the knowledge on basic concepts in Physical Optics, Lasers, Fibre Optics, Wave mechanics, Statistical mechanics and Electromagnetic theory. It is also aimed at understanding various phenomena that are present in the course content and their applications in Engineering and Technology.

UNIT- I

Interference: Coherent and non-coherent sources - Division of amplitude and division of wave front - Interference in thin films (reflected light) - Newton's rings - Fresnel'sbiprism

Diffraction: Distinction between Fresnel and Fraunhoffer diffraction - Diffraction at a single slit - Double slit diffraction - Diffraction grating (N-slits)

UNIT - II

Polarization: Introduction - Malus's law - Double refraction - Nicol's prism - Quarter wave and half wave plates - Optical activity - Laurent's half shade polarimeter

Lasers: Characteristics of lasers - Spontaneous and stimulated emission of radiation - Einstein's coefficients - Population inversion - Ruby laser - Helium-Neon laser – Semiconductor laser – Applications of lasers.

Basic principles of holography – Construction and reconstruction of image on hologram – Applications of holography

UNIT- III

Fibre Optics: Introduction – Propagation of light through an optical fiber - Critical angle - Acceptance angle - Numerical aperture (NA)– Types of optical fibers and

refractive index profiles – Fibre drawing process (double crucible method)- Application of optical fibers

Ultrasonics: Introduction to Ultrasonic waves – Production of ultrasonic waves by Piezoelectric method – Detection of ultrasonic waves : Piezoelectric detector – Properties of Ultrasonics – Wavelength of Ultrasonics by Debye-Sears method – Applications.

UNIT- IV

Elements of Statistical Mechanics: Introduction – Ensembles – Phase space - Probability – Thermodynamical probability – Boltzmann's theorem on entropy and probability – Maxwell- Boltzmann statistics - Bose-Einstein statistics - Fermi-Dirac statistics –Planck's law of black body radiation distribution – Wien's law and Rayleigh Jeans law.

UNIT-V

Wave mechanics: Debroglie concept of matter waves – Debroglie wavelength – Physical significance and properties of wave function - Schrödinger time dependent and time independent wave equations - Particle in an Infinite Square well potential (Particle in a box).

Electromagnetic theory: Review of steady and varying fields - Conduction and displacement current - Maxwell's equations in integral and differential forms –Plane Electromagnetic wave equation – Poynting theorem.

Suggested Reading :

1) Resnick, Halliday and Krane – Physics Volume 2, 5th Edition, Wiley-India (P) Ltd. (2007).
2) M.S. Avadhanulu and P.G. Kshirasagar – Engg. Physics, S. Chand & Co., 9th Ed. (2010).
3) R. Murugeshan and K. Sivaprasath – Modern Physics, S. Chand & Co.,13th Ed. (2007).
4) R.K. Gaur and S.L. Gupta – Engg.Physics, DhanpatRai Publications, 8th Ed. (2001).
5) B.K. Pandey and S. Chaturvedi, *Engineering Physics,*Cenage Learning India (P) Ltd., 2012.
6) D.K.Bhattacharya and PoonamTandon – Engg. Physics, Oxford Higher Education.

Course Code	Course Title						Core/Elective
BS 103 CH	ENGINEERING CHEMISTRY – I (Common to all branches)						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
NIL	3	0	0	0	30	70	3

Course Objectives:

- To acquaint a knowledge in thermodynamic principles and their applications
- To explore water softening methods and domestic water treatment
- To study the classification, preparation, properties and uses of polymers.

Unit–I

THERMODYNAMICS: Definition of the terms-system and surroundings. Types of thermodynamic systems and processes. State and path function. Extensive and Intensive properties. The concept of reversible and irreversible processes. Work done in isothermal and adiabatic reversible and irreversible processes. First law of thermodynamics and its limitations.

Need for Second law and its statement. Spontaneous and non-spontaneous processes. The Carnot cycle, efficiency of reversible heat engine. Carnot theorem. Concept of entropy – entropy changes in reversible and irreversible processes. Physical significance of entropy. Gibbs and Helmholtz free energy and their significance. Variation of free energy with temperature and pressure. Criteria for spontaneity of a process in terms of entropy and free energy. Numerical problems.

Unit–II

PHASE RULE: Definition of terms phase, component and degrees of freedom. Statement of Phase rule. Phase rule equation and its application to one component system - water system. Condensed phase rule and two components system - Pb-Ag system. Pattinson's process of desilverization of lead. Copper –Nickel(Cu-Ni) system. Safety fuses and Solders.

Unit–III

WATER CHEMISTRY: Hardness of water – Types-units of hardness, estimation of temporary and permanent hardness of water by EDTA method. Alkalinity of water

and its determination. Water softening by Ion exchange and Reverse Osmosis methods. Boiler troubles-scale and sludge formation-causes, effects and prevention. Priming and foaming. Specifications of potable water. Water treatment for drinking purpose-coagulation, sedimentation, filtration, sterilization by a) Chlorination b) Ozonisation. Concept of break point chlorination. Numerical problems.

Unit–IV

POLYMER CHEMISTRY: Definition of the terms-monomer, polymer, homo, co, homo-chain, hetero-chain and graft Co-polymers. Classification - natural and synthetic polymers, Addition and condensation polymers, thermo-plastic and thermosetting polymers.

Preparation, properties and engineering applications of the following polymers:

a) **Plastics:** PVC and Bakelite

b) **Fibers**: polyesters and polyamides- Nylon-6,6 and Kevlar

c) **Elastomers**: Natural rubber and its chemical structure, vulcanization of rubber and its significance. Buna-S and Butyl rubbers.

Conducting polymers-Introduction, mechanism of conduction in polymers. Intrinsic conducting polymers: Poly-acetylene and poly-aniline. Applications of conducting polymers.

Unit–V

ENGINEERING MATERIALS Lubricants: Definition,mechanism of lubrication. Hydrodynamic, Boundary and Extreme pressure lubrication. Classification of lubricants –solid, semi-solid and liquid lubricants- properties of lubricants: viscosity, viscosity index, saponification number and acid value.

Refractories- Definition –classification- Requirements of a good refractory material. Properties of Refractories: i) Refractoriness ii) Refractoriness under Load (RUL) iii) Porosity iv) Thermal Spalling.

Clay Products- Whitewares-manufacture, purpose and method of glazing.

Suggested Reading:

1. Principles of Physical Chemistry by Puri, Sharma and Pathania Vishal Publishing Co., Jhalandar, 44th edn (2011)
2. Engineering Chemistry by P.C Jain & Monica Jain, , Dhanapathi Rai publishing Co. (2008)

3. Text book of Engineering Chemistry by Shashi Chawla, Dhanapathi Rai publishing Co. (2008)
4. Engineering Chemistry C. Parameshwara Murthy, CV Agarwal, Andra Naidu-, BS Publcations
5 Engineering Chemistry by O.G. Palanna, TMH edn. New Delhi

Course Code	Course Title						Core/Elective
ES 104 CE	ENGINEERING MECHANICS – I (Common to all branches)						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
NIL	3	1	0	0	30	70	3

Course Objectives:

- To understand the resolution of forces, equilibrium and compatibility conditions of static loads
- To determine the various forces in the members, and analyze the sections using various methods
- To obtain friction, centroid, and moment of Inertia for various regular and irregular bodies

UNIT - I

Force Systems: Resultant of collinear, parallel, coplanar and non-coplanar concurrent and non-concurrent force systems. Resolving a planar or non-coplanar force system into different directions. Moment of force and its applications, Couples and Wrench of a force system.

UNIT – II

Equilibrium of Force Systems: Free body diagram, Equations of equilibrium, Equilibrium of planner and spatial system.

UNIT - III

Analysis of structures: Analysis of trusses by method of joints and method of sections, Analysis of frames by method of members.

UNIT - IV

Friction: Laws of friction. Application to simple systems, connected systems and belt friction. Wedge friction.

UNIT - V

Centroid and Moment of Inertia: Centroids of lines, areas and volumes, Areas and volumes of revolution, Pappu's theorems and their applications, Area moment of inertia, Product moment of Inertia, Composite areas, radius of gyration.

Suggested Reading:

1. Ferdinand L. Singer (1975). "Engineering Mechanic" Collins, Singapore.
2. Timoshenko, S.P. and D.H. Young. (1983). "Engineer McGraw-Hill International Edition.
3. Rajeshakharam, S. and Sankarasubrahmanyam, G. (2002). Mechanics." Vikas Publications.
4. Junarkar, S.B. and H.J. Shah. (2001). "Applied Mechanics, Publishers, 2001.
5. Shames, J.H (1987). "Engineering Mechanics", Prentice Hall.
6. Bhattacharyyya, B. (2015). "Engineering Mechanics." Oxford Higher Education.

Course Code	Course Title						Core/Elective
ES 105 CS	COMPUTER PROGRAMMING AND PROBLEM SOLVING (Common to all branches)						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
NIL	3	0	0	0	30	70	3

Course Objectives:

- To acquire problem solving skills
- To be able to develop flowcharts
- To understand structured programming concepts
- To be able to write programs in C Language

UNIT – I

Introduction to Computers: Computer Systems, Computing Environments, Computer Languages, Creating and Running Programs, Software Development, Flow charts. **Number Systems**: Binary, Octal, Decimal, Hexadecimal

Introduction to C Language - Background, C Programs, Identifiers, Data Types, Variables, Constants, Input / Output Statements

Arithmetic Operators and Expressions: Evaluating Expressions, Precedence and Associativity of Operators, Type Conversions.

UNIT-II

Conditional Control Statements: Bitwise Operators, Relational and Logical Operators, If, If-Else, Switch-Statement and Examples. Loop Control Statements: For, While, Do-While and Examples. Continue, Break and Goto statements

Functions: Function Basics, User-defined Functions, Inter Function Communication, Standard Functions, Methods of Parameter Passing. **Recursion-** Recursive Functions.. **Storage Classes:** Auto, Register, Static, Extern, Scope Rules, and Type Qualifiers.

UNIT – III

Preprocessors : Preprocessor Commands

Arrays - Concepts, Using Arrays in C, Inter-Function Communication, Array Applications, Two- Dimensional Arrays, Multidimensional Arrays, Linear and Binary Search, Selection and Bubble Sort.

UNIT - IV

Pointers - Introduction, Pointers for Inter-Function Communication, Pointers to Pointers, Compatibility, Lvalue and Rvalue, Arrays and Pointers, Pointer Arithmetic and Arrays, Passing an Array to a Function, Memory Allocation Functions, Array of Pointers, Programming Applications, Pointers to void, Pointers to Functions, Command-line Arguments.

Strings - Concepts, C Strings, String Input/Output Functions, Arrays of Strings, String Manipulation Functions.

UNIT - V

Structures: Definition and Initialization of Structures, Accessing Structures, Nested Structures, Arrays of Structures, Structures and Functions, Pointers to Structures, Self Referential Structures, Unions, Type Definition (typedef), Enumerated Types.

Input and Output: Introduction to Files, Modes of Files, Streams, Standard Library Input/Output Functions, Character Input/Output Functions.

Suggested Reading:

1. B.A. Forouzan and R.F. Gilberg, *"A Structured Programming Approach in C"* , Cengage Learning, 2013
2. Kernighan BW and Ritchie DM, *"The C Programming Language"*, 2nd Edition, Prentice Hall of India, 2006.
3. PradipDey, Manas Ghosh, *Programming in C*, Second edition, Oxford University Press, 2015.
4. Rajaraman V, *"The Fundamentals of Computer"*, 4th Edition, Prentice-Hall of India, 2006.
5. George S.Tselikis Nikolaos D.Tselikas ,*"C From Theory to Practice",First Edition CRC Press,* 2016

Course Code	Course Title						Core/Elective
MC 106 EG	ENGINEERING ENGLISH (Common to all branches)						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
NIL	3	0	0	0	30	70	3

Course Objectives:

- To communicate clearly, accurately and appropriately
- To know and use verbal and non-verbal communication appropriately
- To infer information from texts
- To learn basic grammar of the English language
- To use appropriate idiomatic expressions, one word substitutes etc.

UNIT – I

Effective communication: Role and importance of communication; Features of human communication; Process of communication; Importance of listening, speaking, reading, and writing, Types of listening, Tips for effective listening, Types of communication: Non-verbal communication, Verbal – Formal versus informal communication, One-way versus two-way communication; Barriers to communication

UNIT – II

Remedial English : Common errors, Tense and aspects, Connectives and correlative conjuncts, Simple, complex and compound sentences, Voice, concord, Direct and indirect speech, Degrees of comparison, Question tags, Punctuation

UNIT - III

Written Communication : Paragraph writing, Précis writing, Expansion, Essay writing, Personal Letters, General reports

UNIT – IV

Vocabulary: Technical vocabulary, Homonyms, Homophones, Synonyms, Antonyms, Words often confused, One-word substitutes, Idiomatic usage, Affixes

UNIT – V

Reading comprehension and reading strategies.

The following five lessons are prescribed:

1. Dr. A.P.J. Abdul Kalam
2. Sathya Nadella
3. Azim Premji
4. Sachin Tendulakar
5. Sam Pitroda

Suggested Reading:

1. E. Suresh Kumar, *Engineering English,* Orient Blackswan, 2014.
2. E. Suresh Kumar et al., *Communication Skills and Soft Skills,*Pearson, 2011.
3. Sanjay Kumar and Pushp Lata, *Communication Skills, OUP, 2011.*
4. Kavita Tyagi and Padma Misra, *Professional Communication,* PHI, 2011.
5. Meenakshi Raman and Sangeeta Sharma, *Technical Communication: Principles and Practice, OUP, 2011.*

Course Code	Course Title						Core/Elective
BS 151 PH	ENGINEERING PHYSICS LAB – I (Common to all branches)						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
NIL	0	0	0	2	25	50	1

List of Experiments:

1. **Biprism**: To determine the wavelength (λ) of the given monochromatic source of light using Fresnel's Biprism.
2. **Diffraction Grating**: To determine the wavelength of a spectral line by a plane transmission diffraction grating.
3. **Laser:**To determine the wavelength of laser using diffraction grating.
4. **Polarimeter:** To determine the specific rotation of sugar solution using Polarimeter.
5. **Ultrasonics** :To find the ultrasonic velocity in the given liquid using Debye Sears method.
6. **Fiber Optics-I:** (a) To determine the numerical aperture (NA) of the Optical Fiber.
   (b) To determine the losses in optical fiber due to i) bending and ii) coupling.
7. **Newton's Rings:** To determine the radius of curvature of a plano convex lens using Newton's rings experiment.
8. **e/m of an electron:** To determine the specific charge (e/m) of an electron by J.J. Thomson's method.
9. **Double Refraction** :To study the double refraction characteristics of a crystal.
10. **Diffraction – Single slit**:To determine the wavelength of light used.
11. Malus law

Course Code	Course Title						Core/Elective
BS 152 CH	ENGINEERING CHEMISTRY LAB – I (Common to all branches)						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
NIL	0	0	0	2	25	50	1

List of Experiments:

VOLUMETRIC ANALYSIS

1. Introduction to Volumetric Analysis.
2. Techniques of Weighing and usage of analytical balance

PERMANGANOMETRY

3. Preparation of a standard solution of Oxalic acid or Sodium oxalate and standardization of KMnO4 solution
4. Preparation of standard solution of Mohr salt, standardization of $KMnO_4$ solution and estimation of ferrous Iron in the given solution

DICHROMETRY

5. Preparation of a standard solution of potassium dichromate, standardization of Mohr salt solution and estimation of dichromate in the given solution.
6. Estimation of ferrous and ferric ions in the given mixture by using standard $K_2Cr_2O_7$ solution
7. Preparation of a standard solution of Potassium dichromate – Standardization of Mohr salt solution-determination of chemical oxygen demand.

ACIDMETRY

8. Preparation of a standard sodium carbonate solution and standardization of hydrochloric acid and estimation of carbonate and bicarbonate in the given mixture.
9. Estimation of alkalinity of Water.

COMPLEXOMETRY

10. Preparation of standard magnesium sulphate solution and standardization of EDTA solution and estimation of total hardness in the given sample of water.

11. Estimation of temporary and permanent hardness of water by the EDTA method.

Suggested Reading:

1. "Vogel's Text book of quantitative chemical analysis" J. Mendham and Thomas, Person education Pvt. Ltd. New Delhi 6th ed. 2002.

Course Code	Course Title						Core/Elective
ES 157 ME	ENGINEERING DRAWING - I						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
NIL	0	0	2 x 2	0	50	50	1

Course Objectives:

- To learn the engineering graphics through CAD Software
- To evaluate the language of the drawing for-geometric constructions and to understand the engineering perspective of drawings.
- To understand projection of points and lines using 2-Dimensional drawing tools
- To learn the section of solids or object from various views / angles etc.,

UNIT-I

Introduction to Engineering drawing: Size of Drawing Sheet, Drawing sheet format, Types of lines, lettering, types of dimensioning, Title Block, Engineering Scales. Free hand sketches: Sketch straight line, circles, arcs, and fillet.

Introduction to CAD: Initial setup commands, utility commands, function keys, entity draw commands, display commands, edit commands, setting limits of sheet size, dimensioning and dimension style, Tile Block.

UNIT-II

Engineering curves: Conic sections, Cycloids, Involutes.

Projections: Elements of projections, multi view projections, principal plane of projections, Methods of projections, first angle and third angle projection methods.

UNIT-III

Orthographic projections: Concept of quadrant, projection of point, projection of a line inclined to one plane and parallel to other plane, line inclined to both the planes, lines parallel to profile plane, Traces of line.

UNIT-IV

Projection of Planes: Introduction, Types of planes, Traces of a planes, Projection

of a planes parallel to one reference planes, projections of planes inclined to one reference planes and perpendicular to the other, projections of oblique planes.

Auxiliary projections: Types of auxiliary projection planes, Single and double auxiliary views.

UNIT-V

Projection of Solids: Introduction, Types of solids, Projection of solids in simple positions, Projections of solids axes inclined to one of the reference planes and parallel to the other, Axis inclined to the V.P. and parallel to the H.P, Axis inclined to the H.P. and parallel to the H.P. and parallel to the V.P., Transfer of point from one view to other.

Suggested Reading:

1. Butt,N.D. (2011). " Engineering Drawing." *5th Edition, Charotar publishing house Pvt. Ltd.*
2. Kulkarni, D.M., Rastogi, A.P. and Sarkar, A.K. (2013). "Engineering Graphics with AutoCAD." *PHI publications*, New Delhi.
3. *Trymbaka Murthy. S, "Computer-Aided Engineering Drawing"Unveristies Press, New Delhi, 2015i*
4. Sham Tickoo. (2011). "AutoCAD 2011: A Problem solving approach" *Autodesk Press*, USA
5. Venugopal, K. (1998). "Engineering Drawing and Graphics + Autocad", *New Age International Ltd.*, New Delhi.

Course Code	Course Title						Core/Elective
ES 154 CS	COMPUTER PROGRAMMING LAB						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
NIL	0	0	0	2	25	50	1

Course Objectives:

- To be able to understand the fundamentals of programming in C Language
- To be able to write, compile and debug programs in C
- To be able to formulate problems and implement in C.
- To be able to effectively choose programming components to solve computing problems in real-world.

List of Exercises:

1. Finding the maximum and minimum of given set of numbers
2. Finding Roots of a Quadratic Equation
3. Sin x and Cos x values using series expansion
4. Conversion of Binary to Decimal, Octal, Hexa and Vice versa
5. Generating a Pascal triangle and Pyramid of numbers
6. Recursion: Factorial, Fibonacci, GCD
7. Matrix addition and multiplication using arrays
8. Bubble Sort, Selection Sort
9. Programs on Linear Search and Binary Search using recursive and non-recursive procedures.
10. Functions for string manipulations
11. Finding the No. of characters, words and lines of given text file
12. File Handling programs.

Course Code	Course Title				Core/Elective		
ES 155 ME	ENGINEERING WORKSHOP-I (Common to all branches)				Core		
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
NIL	0	0	0	2	25	50	1

Course Objectives:

- To understand the usage and applications of hand tools.
- To acquire the skills in pattern/model making.
- To familiarize with various work materials and tool materials.

List of Exercises / Experiments:

FITTING

1. Cutting and Filing
2. Matching of two parts Including Scrapping
3. Drilling and Tapping

HOUSE WIRING

4. Single Lamp Controlled by Single Switch
5. Two Lamps Series and parallel Connection
6. Stairs Case Wiring Connection

CARPENTRY

7. Half lap Joint
8. Dove Tail Joint
9. Briddle Dove Tail Joint

SHEET METAL WORKS

10. Making a Funnel with G.I. Sheet
11. Making a tray with G.I. Sheet
12. Making Tee Joint with Metal Tubes

Suggested Reading:

1. Venugopal,K, "Workshop manual", Anuradha Publications, Kumbakonam, TN, 2012
2. K.C. John, "Mechanical Workshop" 2nd Edn., PHI, 2010.
3. Hajra Choudary, "Elements of Workshop Technology-Vol. 1, Asian Publishers, 6th Edn., 1993.
4. G.S. Sawhney, "Mechanical Experiments and Workshop Practice", I.K. International Publishing House, New Delhi, 2009.

Course Code	Course Title						Core/Elective
MC 156 EG	ENGINEERING ENGLISH LABORATORY (Common to all branches)						Core
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
NIL	0	0	0	2	25	50	1

Course Objectives:

- To learn the sound systems of English
- To learn the word stress in English
- To learn the rhythm and intonation of English
- To improve their articulation skills and participation skills

Notes:

a. While teaching the following items, emphasis may be laid on intensive practice in the language lab. Lecturing may be avoided as far as possible.

b. Lab manual recommended.

1. **Introduction to English Phonetics**: Organs of Speech: the respiratory, articulatory and phonatory systems
2. **Sounds of English**: Phonemic sounds, Introduction to International Phonetic Alphabet, Classification and description of English phonetic sounds; Minimal pairs; The syllable
3. **Word Stress**: Primary stress, Secondary stress, Functional stress, Rules of word stress
4. **Aspects of Connected Speech**: Strong forms, Weak forms, Contracted forms, Elision
5. **Rhythm and Intonation**: Introduction of rhythm and intonation; Major patterns of intonation in English with their semantic implications; Difficulties of Indians speakers with stress and intonation

6. **Use of Dictionary and Thesaurus**: Advantages of using a dictionary and a thesaurus, Effective use of a dictionary and a thesaurus
7. **Speaking Activities**: JAM, Picture perception
8. **Listening Activities**: Activities based on listening
9. **PowerPoint Presentations**: General topics

Suggested Reading

1. E. Suresh Kumar. *A Handbook for English Language Laboratories (with CD).* Revised edition, Cambridge University Press India Pvt. Ltd. 2014
2. T. Balasubramanian. *A Text book of English Phonetics for Indian Students.* Macmillan, 2008.
3. Edgar Thorpe. *Winning at Interviews*. Pearson Education, 2006.
4. J. Sethi et al., *A Practical Course in English Pronunciation (with CD).* Prentice Hall of India, 2005.
5. Hari Mohan Prasad. *How to Prepare for Group Discussions and Interviews*. Tata McGraw Hill, 2006.