# UNIVERSITY DEPARTMENTS
ANNA UNIVERSITY, CHENNAI – 600 025
R - 2012
CURRICULUM & SYLLABUS
(Common to all branches of B.E. / B. Tech. Programmes)

SEMESTER I

<table>
<thead>
<tr>
<th>CODE NO</th>
<th>COURSE TITLE</th>
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OBJECTIVES

- To enable all students of engineering and technology develop their basic communication skills in English.
- To give special emphasis to the development of speaking skills amongst the students of engineering and technology students.
- To ensure that students use the electronic media such as internet and supplement the learning materials used in the classroom.
- To inculcate the habit of reading for pleasure.

UNIT I

Listening - Introducing learners to GIE - Types of listening - Listening to audio (verbal & sounds); Speaking - Speaking about one’s place, important festivals etc. – Introducing oneself, one’s family / friend; Reading - Skimming a reading passage – Scanning for specific information - Note-making; Writing - Free writing on any given topic (My favourite place / Hobbies / School life, etc.) - Sentence completion - Autobiographical writing (writing about one’s leisure time activities, hometown, etc.); Grammar - Prepositions - Reference words - Wh-questions - Tenses (Simple); Vocabulary - Word formation - Word expansion (root words / etymology); E-materials - Interactive exercises for Grammar & Vocabulary - Reading comprehension exercises - Listening to audio files and answering questions.

UNIT II

Listening - Listening and responding to video lectures / talks; Speaking - Describing a simple process (filling a form, etc.) - Asking & answering questions - Telephone skills – Telephone etiquette; Reading – Critical reading - Finding key information in a given text - Sifting facts from opinions; Writing - Biographical writing (place, people) - Lab descriptions (general/specific description of laboratory experiments) - Definitions - Recommendations; Grammar - Use of imperatives - Subject-verb agreement; Vocabulary - Compound words - Word Association; E-materials - Interactive exercises for Grammar and Vocabulary - Listening exercises with sample telephone conversations / lectures – Picture-based activities.

UNIT III

Listening - Listening to specific task - focused audio tracks; Speaking - Role-play – Simulation - Group interaction - Speaking in formal situations (teachers, officials, foreigners); Reading - Reading and interpreting visual material; Writing - Jumbled sentences - Coherence and cohesion in writing - Channel conversion (flowchart into process) - Types of paragraph (cause & effect / compare & contrast / narrative / analytical) - Informal writing (letter/e-mail/blogs) - Paraphrasing; Grammar - Tenses (Past) - Use of sequence words - Adjectives; Vocabulary - Different forms and uses of words, Cause and effect words; E-materials - Interactive exercises for Grammar and Vocabulary - Excerpts from films related to the theme and follow up exercises - Pictures of flow charts and tables for interpretations.

UNIT IV

Listening - Watching videos / documentaries and responding to questions based on them; Speaking - Responding to questions - Different forms of interviews - Speaking at different types of interviews; Reading - Making inference from the reading passage - Predicting the content of a reading passage; Writing - Interpreting visual materials (line graphs, pie charts etc.) - Essay writing – Different types of essays; Grammar - Adverbs – Tenses – future time reference; Vocabulary - Single word substitutes - Use of abbreviations & acronyms; E-materials - Interactive exercises for Grammar and Vocabulary - Sample interviews - film scenes - dialogue writing.
UNIT V
Listening - Listening to different accents, Listening to Speeches / Presentations, Listening to broadcast & telecast from Radio & TV; Speaking - Giving impromptu talks, Making presentations on given topics; Reading - Email communication - Reading the attachment files having a poem/joke/proverb - Sending their responses through email Writing - Creative writing, Poster making; Grammar - Direct and indirect speech; Vocabulary - Lexical items (fixed / semi fixed expressions); E-materials - Interactive exercises for Grammar & Vocabulary - Sending emails with attachment – Audio / video excerpts of different accents, - Interpreting posters

TEXT BOOKS:

REFERENCE BOOKS:

EXTENSIVE READERS

WEBSITE RESOURCES
1. www.uefap.com
2. www.eslcafe.com
3. www.listen-to-english.com
4. www.owl.english.purdue.edu
5. www.chompchomp.com

MA8151 MATHEMATICS – I (Common to all branches of B.E. / B.Tech. Programmes) 3 1 0 4

OBJECTIVES:
- To develop the use of matrix algebra techniques this is needed by engineers for practical applications.
- To make the student knowledgeable in the area of infinite series and their convergence so that he/ she will be familiar with limitations of using infinite series approximations for solutions arising in mathematical modeling.
• To familiarize the student with functions of several variables. This is needed in many branches of engineering.
• To introduce the concepts of improper integrals, Gamma, Beta and Error functions which are needed in engineering applications.
• To acquaint the student with mathematical tools needed in evaluating multiple integrals and their usage.

UNIT I MATRICES 9+3

UNIT II INFINITE SERIES 9+3

UNIT III FUNCTIONS OF SEVERAL VARIABLES 9+3

UNIT IV IMPROPER INTEGRALS 9+3

UNIT V MULTIPLE INTEGRALS 9+3

TOTAL : 60 PERIODS

TEXT BOOKS:

REFERENCES:
OBJECTIVE:
To introduce the basic physics concepts relevant to different branches of Engineering and Technology.

UNIT I  PROPERTIES OF MATTER  9

UNIT II  ACOUSTICS AND ULTRASONICS  9

UNIT III  THERMAL PHYSICS  9

UNIT IV  APPLIED OPTICS  9

UNIT V  SOLID STATE PHYSICS  9
Nature of bonding - growth of single crystals (qualitative) - crystal systems - crystal planes and directions - expressions for interplanar distance - coordination number and packing factor for simple structures: SC, BCC, FCC and HCP - structure and significance of NaCl, ZnS, diamond and graphite - crystal imperfections: point defects, dislocations and stacking faults - unit cell, Bravais space lattices - miller indices.

TOTAL : 45 PERIODS
**TEXT BOOKS:**

**REFERENCES:**

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**CY8151 ENGINEERING CHEMISTRY**

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(Common to all branches of B.E. / B. Tech. Programmes)

**UNIT I**

Second law: Entropy - entropy change for an ideal gas, reversible and irreversible processes; entropy of phase transitions; Clausius inequality. Free energy and work function: Helmholtz and Gibbs free energy functions; Criteria of spontaneity: Gibbs-Helmholtz equation; Clausius-Clapeyron equation; Maxwell relations – Van’t Hoff isotherm and isochore. Chemical potential; Gibbs-Duhem equation – variation of chemical potential with temperature and pressure.

**UNIT II**

POLYMER CHEMISTRY

Introduction: Classification of polymers – Natural and Synthetic; Thermoplastic and Thermosetting. Functionality – Degree of polymerisation. Types and mechanism of polymerisation: Addition (Free Radical, cationic, anionic and living); condensation and copolymerisation. Properties of polymers: Tg, Tacticity, Molecular weight – weight average, number average and polydispersity index. Techniques of polymerisation: Bulk, emulsion, solution and suspension.

**UNIT III**

KINETICS AND CATALYSIS


**UNIT IV**

PHOTOCHEMISTRY AND SPECTROSCOPY

UNIT V  NANOCHEMISTRY  

TOTAL : 45 PERIODS

TEXT BOOKS:

REFERENCE BOOKS:

GE8151  COMPUTING TECHNIQUES  
(L T P C)
(Common to all branches of B.E. / B. Tech. Programmes)  3 0 0 3

UNIT I  INTRODUCTION  

UNIT II  C PROGRAMMING BASICS  

UNIT III  ARRAYS AND STRINGS  

UNIT IV  FUNCTIONS AND POINTERS  
UNIT V  STRUCTURES AND UNIONS
Introduction – need for structure data type – structure definition – Structure declaration – Structure within a structure - Union - Programs using structures and Unions – Storage classes, Pre-processor directives.

TOTAL: 45 PERIODS

TEXTBOOKS

REFERENCES

GE8152  ENGINEERING GRAPHICS (Common to all branches of B.E. / B. Tech. Programmes)  2 0 3 4

OBJECTIVES
To develop in students, graphic skills for communication of concepts, ideas and design of engineering products and expose them to existing national standards related to technical drawings.

Concepts and conventions (Not for Examination)  1
Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.

UNIT I  PLANE CURVES AND FREE HAND SKETCHING  14
Basic Geometrical constructions, Curves used in engineering practices

Visualization concepts and Free Hand sketching: Visualization principles –Representation of Three Dimensional objects – Layout of views- Free hand sketching of multiple views from pictorial views of objects
UNIT II  PROJECTION OF POINTS, LINES AND PLANE SURFACES  14
Orthographic projection- principles-Principal planes-First angle projection-Projection of points. Projection of straight lines (only First angle projections) inclined to both the principal planes - Determination of true lengths and true inclinations by rotating line method and trapezoidal method and traces Projection of planes (polygonal and circular surfaces) inclined to both the principal planes by rotating object method.

UNIT III  PROJECTION OF SOLIDS  14
Projection of simple solids like prisms, pyramids, cylinder, cone and truncated solids when the axis is inclined to one of the principal planes by rotating object method and auxiliary plane method.

UNIT IV  PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES  14
Sectioning of above solids in simple vertical position when the cutting plane is inclined to the one of the principal planes and perpendicular to the other – obtaining true shape of section. Development of lateral surfaces of simple and sectioned solids – Prisms, pyramids cylinders and cones. Development of lateral surfaces of solids with cut-outs and holes

UNIT V  ISOMETRIC AND PERSPECTIVE PROJECTIONS  15
Principles of isometric projection – isometric scale –Isometric projections of simple solids and truncated solids - Prisms, pyramids, cylinders, cones- combination of two solid objects in simple vertical positions and miscellaneous problems. Perspective projection of simple solids-Prisms, pyramids and cylinders by visual ray method and vanishing point method.

COMPUTER AIDED DRAFTING (DEMONSTRATION ONLY)  3
Introduction to drafting packages and demonstration of their use.

TOTAL: 75 PERIODS

TEXT BOOKS:

REFERENCES:
**Publications of Bureau of Indian Standards:**

**Special Points applicable to University Examinations on Engineering Graphics:**
1. There will be five questions, each of either or type covering all units of the syllabus.
2. All questions will carry equal marks of 20 each making a total of 100.
3. The answer paper shall consist of drawing sheets of A3 size only. The students will be permitted to use appropriate scale to fit solution within A3 size.
4. The examination will be conducted in appropriate sessions on the same day.

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**PH8161 PHYSICS LABORATORY**

(Common to all branches of B.E./B.Tech. Programmes)

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1. Torsional pendulum – Determination of rigidity modulus of wire and moment of inertia of disc
2. Non–uniform bending – Determination of young’s modulus
3. Lee’s disc – Determination of thermal conductivity of a bad conductor
4. Potentiometer– Determination of thermo e.m.f. of thermocouple
5. Air wedge – Determination of thickness of a thin sheet of paper
6. i. Optical fibre- Determination of Numerical Aperture and acceptance angle
   ii. Compact disc – Determination of width of the groove using laser
7. Acoustic grating – Determination of velocity of ultrasonic waves in liquids
8. Post office box – Determination of Band gap of a semiconductor
9. Spectrometer – Determination of wavelength using grating
10. Viscosity of liquids– Determination of co-efficient of viscosity of a liquid by Poiseuille’s flow

**TOTAL : 30 PERIODS**
1. Estimation of HCl using Na₂CO₃ as primary standard and Determination of alkalinity in water sample.
2. Determination of total, temporary & permanent hardness of water by EDTA method.
3. Determination of DO content of water sample by Winkler’s method.
4. Determination of chloride content of water sample by argentometric method.
5. Estimation of copper content of the given solution by Iodometry.
6. Determination of strength of given hydrochloric acid using pH meter.
7. Determination of strength of acids in a mixture of acids using conductivity meter.
8. Estimation of iron content of the given solution using potentiometer.
9. Estimation of iron content of the water sample using spectrophotometer (1,10-phenanthroline / thiocyanate method).
10. Estimation of sodium and potassium present in water using flame photometer.
14. Determination of CMC.
15. Phase change in a solid.

TOTAL : 30 PERIODS

REFERENCES:

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LIST OF EXPERIMENTS:
1. Search, generate, manipulate data using MS office/ Open Office
2. Presentation and Visualization – graphs, charts, 2D, 3D
3. Problem formulation, Problem Solving and Flowcharts
4. C Programming using Simple statements and expressions
5. Scientific problem solving using decision making and looping.
6. Simple programming for one dimensional and two dimensional arrays.
7. Solving problems using String functions
8. Programs with user defined functions
9. Program using Recursive Function and conversion from given program to flow chart.
10. Program using structures and unions.

TOTAL: 45 PERIODS
OBJECTIVES:
To expose the students with practical knowledge by hand practice on various basic engineering practices in Civil, Mechanical, Electronics, Electrical Engineering.

Group – A (Civil & Electrical)

1. CIVIL ENGINEERING PRACTICE

Plumbing Practice:
1. Study of pipe joints & functions and house hold fitting such as valves, taps, couplings, unions, reducers, elbows
2. Study of plumbing requirements for pumps
3. Preparation of line sketches for domestic water supply
4. Hands on practical exercise in
   a. Basic pipe connections with different pipe fittings
   b. Pipe connections with mixed components

Wood Work Practice:
1. Study of joints for door panels, door frames, furniture and trusses
2. Hands on practice in making wooden joints, lap, mortise & Tenon and Dovetail joint

2. ELECTRICAL ENGINEERING PRACTICE

1. Study of house wiring using switches, fuse, lamp and energy meter
2. Preparation of wiring diagram and wiring of
   a. Stair case wiring
   b. Fluorescent lamp wiring
3. Measurement of energy and resistance to earth of an electrical equipment

Group B (Mechanical & Electronics)

3. MECHANICAL ENGINEERING PRACTICE

1. Welding:
   a. Preparation of butt, lap, tee joints by arc welding
   b. Gas welding practice
2. Basic Machining
   a. Simple turning and taper turning operations
   b. Drilling and tapping practice
3. Sheet Metal work
   a. Study of various sheet metal joints and applications
   b. Preparation of simple models – Trays, funnels
4. Machine Assembly practice
   Study and assembly of Machine Vice
5. Demonstration on
   a. Smithy operations
      i. upsetting, Swaging, Bending
   b. Foundry operations
      i. Preparation of Sand mould for spur gear / cone pulley
   c. Fitting Practice – Square fitting
ELECTRONICS ENGINEERING PRACTICE

a) Study of Electronic components – Resistor, color coding, capacitors etc
b) Soldering practice – components soldering in simple electric circuit & testing continuity
c) Generation of Clock Signal

TOTAL: 45 PERIODS