

DIPLOMA IN COMPUTER ENGINEERING

(Three Years Full Time) w.e.f. – July, 2012

Autonomous Course, Multi Point Entry & Credit System,

Non Sandwich Pattern

OBJECTIVES

- 1) Impart knowledge to the students in the field of Computer.
- 2) Make the students enable to persue higher education if they wish.
- 3) Make the students eligible to be absorbed by industry at supervisory level.
- 4) Incorporate the knowledge of emerging technology as per the requirement.

C U R R I C U L U M

Shri Bhagubhai Mafatlal Polytechnic started 3/4 Years Diploma courses and was affiliated to the Board of Technical Examinations, Maharashtra State, in 1963. Since 1969, academic freedom was granted to the Polytechnic. Since 1978 – 79 academic freedom was extended to all the full-time diploma courses. In 1989 –90, full autonomy was granted to all seven full time diploma courses.

As a further development to the above, the multi-point entry and credit system (MPECS) was initiated in 1981 on progressive basis. In this scheme students can regulate their pace of studies within the rules prescribed.

From 1993-94, full academic autonomy was extended to all the 19 courses, which includes full-time diploma, part-time diploma, and post-diploma courses. The students have to qualify for appearing in the final examinations are conducted by the institute and the final diploma is awarded by the institute at the convocation function.

Shri Vile Parle Kelavani Mandal's

Shri Bhagubhai Mafatlal Polytechnic

Natakkar Ram Ganesh Gadkari Marg,

Vile Parle (West), Mumbai – 400 056.

DIPLOMA IN COMPUTER ENGINEERING

The Course is Three Years Full Time Diploma in Computer Engineering (Un-aided) with Non-Sandwich Semester-Pattern having Multipoint Entry & Credit System. The emphasis of the course is on Computer Education at a Technician Level covering Knowledge of Software: Programming Languages, System Analysis and Design, Database, Concepts of Operating Systems, Hardware: Maintenance & Servicing of Electronic Circuits, PC Architecture, Basics of Computer Technology, Maintenance & Servicing of Computer, Peripheral Devices and Instruments at higher semesters along with basic Science Subjects – Mathematics, Physics, Communication Skill / English – in first and second semester. The Students learn the fundamentals of Computer Maintenance and Servicing leading to become

- A Hardware Engineer
- Assistant Programmer in software Industry
- A Computer Programmer
- Network & System Administrator
- Database Administrator & Maintenance

For Award of Diploma under Multipoint Entry & Credit System, the student/candidate has to earn total 180 credits including compulsory subjects out of total available 211 credits from 36 subjects. The examination pattern /scheme will be same as per the other diploma examination of this institute. The Final Award of Grade will be given on the basis of marks obtained in the final year of Computer Engineering i.e. Vth & VIth Semester under grade point average scheme/criteria/norms as laid down in the MPE&C System.

Full Time Diploma in Computer Engineering Course is approved by All India Council For Technical Education (AICTE) vide file no. 740-89-124(E)/RC/95 and by Department of Higher and Technical Education, Government of Maharashtra vide PTI 202K/ (331/2000)/TE-2.

The Course is approved by AICTE vide their reference each F.No. 740-89-007/E/RC/95/TME-1963 dated:13/08/2004. The approval of equivalence to Diploma is granted by Maharashtra State Board of Technical Education vide their Certificate No. MSBTE/ D-53/ SBMP EQU/2004/5989 dated: 30/07/2004.

Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

TEACHING AND EXAMINATION SCHEME

DISCIPLINE: COMPUTER
ENGINEERING
SEMESTER: I

w.e.f. Batch admitted in June, 2012
(progressively)

| S R. N o. | SUBJECT NAME/ SUBJECT CODE | Pre- requisi te Subjec t Code | SCHEME OF INSTRUCTION AND PERIODS PER WEEK | | | | | THEORY PAPER DURATION AND MARKS | | SCHEME OF EXAMINATION | | | | | | G r | SCHEM E L/P/Cr |
|--------------------|------------------------------------|---|---|----|----|----|----|--|-----|-----------------------|--------------|---------|----------|----------|-----------|--------|-------------------|
| | | | L | P | D | T | Cr | Hrs | Mks | SS L @ | PAPE R ** | T W | PR ** | OR ** | TOT AL | | |
| 1 | Basics of Computer System (128901) | -- | 2 | 2 | -- | -- | 4 | -- | -- | -- | -- | 50 @ | 50 ** | -- | 100 | C * | 224 |
| 2 | Engineering Mathematics (128902) | -- | 3 | -- | -- | 1 | 4 | 3 | 80 | 20 | 80 | -- | -- | -- | 100 | B * | 404 |
| 3 | Physics (128903) | -- | 4 | 2 | -- | -- | 6 | 3 | 80 | 20 | 80 | 50 @ | 50 ** | -- | 200 | B * | 426 |
| 4 | Electronic Workshop (120801) | -- | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 50 @ | 50 ** | -- | 200 | C * | 325 |
| 5 | Development of Life Skill (128904) | -- | 2 | -- | -- | 1 | 3 | 3 | 80 | 20 | 80 | 50 @ | -- | 50 ** | 200 | B * | 303 |
| 6 | Web Programming (128905) | -- | 3 | 2 | -- | 1 | 6 | 3 | 80 | 20 | 80 | 50 @ | 50 ** | -- | 200 | C * | 426 |
| TOTAL | | | 17 | 8 | -- | 3 | 28 | No.of papers = 05 | | 100 | 400 | 25 0 | 200 | 50 | 1000 | | |
| | | | TOTAL PERIODS=28 | | | | | TOTAL MARKS= | | | | | 1000 | | | | |

* Compulsory, # Award Winning. ** Assessed by Internal and External Examiners Jointly, @ Assessed by Internal Examiner only
L- Lecture Period, P- Practical Period, D-Drawing Practice Period, T- Tutorial, Cr-Credit, SSL-Sessional, TW- Term Work
PR-Practical, OR-Oral
GR- Group, B-Basic, C-Core, A-Application, M-Management

Basics of Computer Systems (128901)

(T.W. = 50 Marks, Pr. = 50 Marks, Lecture 2/week, Practical 2/week, Credit: 4)

SUBJECT DETAILS:

| | |
|--|---------------------|
| Course: Computer Engineering | Semester: I |
| Subject: Basics of Computer Systems | Code: 128901 |
| Group: C* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|----------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Basics of Computer Systems | 2 | 2 | -- | -- | -- | -- | 50 | 50 | -- | 100 | C* | 128901 | 224 |

Rationale:

This subject envisages making the students know the fundamentals of computer systems and its organisation. It will enable the students to comprehend the organisation and working of various units of personal computer system for storing and processing information. It will also help the students to have hands on experience of operating systems and different application software used for office automation, day to day problems sharing in particular for creating business documents, data analysis graphical representations and business presentations. It also deals with basics of Internet technology available services internet connectivity and accessing information on internet.

The student will also familiarize themselves with case study on Linux operating System., its design architecture, command structures.

Objective:

The student will be able to:

1. Get familiarized with computerisation.
2. Utilise computers in engineering /technical field.
3. Use computer concepts for Microsoft applications
4. Promote Computer Literacy.
5. Awareness of Open Source technology: Linux OS
6. Familiar with ERP.
7. Learn networking concepts
8. Operate Internet/e-mail facility

Theory Contents:

- 1. Fundamentals of Computer concepts: (Periods-5 hrs)**
 - 1.1. Computer specifications PC, PC-XT , PC-AT, Pentium, net book, notebook, Hand held devices and its applications,
 - 1.2. General architecture of computers; Computer peripherals (I/O Device),
 - 1.3. Storage DEVICES,
 - 1.4. Printers and output peripherals;
 - 1.5. General computer terms, computer software, system software, applications software, operating systems, and advantages of software and application packages.
- 2. Introduction to Windows: (Periods-2 hrs)**
 - 2.1. Structure of a Window,
 - 2.2. Basic techniques for working in Windows Using Menus;, folder, files ,users management,
 - 2.3. Working with A dialogue box, Type of Options ; Starting Windows , Task Bar, Start Menu.
- 3. Introduction to Computer Network (Periods-3 hrs)**

Network Goals, Devices, Topologies, Cables and connectors, Addressing
- 4. Introduction to MS-Office**
 - 4.1. Introduction to WORD package (Periods-3 hrs)**
 - 4.1.1. Starting Word Document ; Typing and Editing text, Copying and Moving, Typing Special Characters (Symbols);
 - 4.1.2. Some common features : Changing the case of text, Moving & copying text with drag and drop, Justifying text, inserting bulleted & numbered lists ,
 - 4.1.3. Arranging and moving between open documents; Finding and replacing,
 - 4.1.4. Formatting ; Using the spell checker , Checking grammar, mail merging
 - 4.2. Concepts of POWER POINT (Periods-3 hrs)**
 - 4.2.1. How to make an effective presentation, Physical aspects of presentation ; A Presentation Graphics package

4.2.2. Creating a presentation : creating a Title slide, Creating a Graph, Creating Tables, Make Organization Chart, To Save and close presentation;

4.2.3. Working with Tools: Create , Edit, Move, Delete , Resize , Format text object,

4.2.4. Working with Graphics tools; Slide show

4.3. Fundamentals of EXCEL

(Periods-4 hrs)

4.3.1. Starting EXCEL: What is a spreadsheet, creating & editing spreadsheet, modifying the sheet.

4.3.2. Study of Toolbars, Formula bar and Status bar.

4.3.3. Inserting Header and footer, cells, rows, columns, worksheet, formatting individual cells row, column, sheet, manipulating Data by using Sort.

4.3.4. Saving and Retrieving saved worksheet.

5. LINUX as Operating System

(Periods-6 hrs)

5.1. Linux Fundamentals

5.1.1. Introduction to open source technology, advantages of linux, Basics of Unix & Linux,

5.1.2. Multi-user & Multitasking capabilities of Linux change of password, the file types, structures of file system, important directories of the file system.

6. Introduction to INTERNET:

(Periods-4 hrs)

6.1. What is INTERNET , intranet, client-server architecture ,various file formats ,

6.2. Application of INTERNET: E-mail, WWW,

6.3. Study of various search engine using LYNX, LOGIN PROCEDURE,

6.4. Study of INTERNET EXPLORER, Creating mailing account, Surfing using WORLD WIDE WEB information relating to employment, education, alumni, social networking .

7. Introduction to Enterprise resource planning

(Periods-02hrs)

7.1. Introduction, ERP modules ,

7.2. ERP Vendors , Software,

7.3. case studies : SAP.

Total Theory Hrs.= 32 hrs

Total Practical Hrs. = 32 hrs.

List of practical:

1) Study of Computer hardware and peripherals

2) Study of Networking Topologies and commands ipconfig,ping,netconfig etc.

3) i) Getting started with Windows by using different menus and working with dialogue box

ii) Working of Control panel, Screen saver and Help commands using Windows

4) i) Creating, Editing and Saving a document , Table using Word package

ii)Creating Document with Table, editing using special characters & saving.

iii) Using tool bar menus like Standard , Formatting , Tables and Borders

iv) Performing functions spell check , find , replace , go to , page setup , print preview and print commands.

5) i) Creating a new presentation and getting acquainted with various menus like FILE, EDIT, VIEW, INSERT, FORMAT, TOOLS, SLIDESHOW

ii) Choosing Auto Layout and working with tools and to prepare a slide show

iii) To Perform special effects using one slide show demonstration

6) Creating Spread Sheet for various combinations of computational tables.

7) LINUX basic commands.and Advanced commands.

8) Creating file using Vi editor, editing, saving file & quit from Vi editor.

9) Creating an internet account ,Internet terms, Use of Shell account and study of mailing , Software to send & receive mail on Hard Disk.

10) Use of Internet explorer package ,search Engine & retrieve education related information from TCP/IP account and downloading procedure

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and
- Conducting tutorials on various packages ,Power Point, MS-word ,Excel sheets
- Assignment to practice at home.
- Hands on practice in Lab with atleast 02 problem definition on each package.

Reference Books:

1. Computer and Common sense by Hunt & Shelly.
2. Computer Fundamentals by V. Rajaraman (Prentice hall)
3. PC Guide for Windows (ITC Publication/Galgotia publication)
4. Learning Word 6.0 for Windows step-by-step, Galgotia.
5. Linux: TheComplete reference - 5/E by petterson
6. Unleashed Linux

Additional References:

1. Mastering MS Office (BPP Publication)
2. Data Communications and Distributed Networks, U.D. Black, Prentice-Hall

Web References:

1. www.linux.org
2. www.mocrosoft.com
3. www.cisco.com

ENGINEERING MATHEMATICS (128902)

(One Paper- 3 Hrs. Theory = 80 Marks, Lectures: 3/Week; Tutorial: 1/Week, Credit: 4)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: I |
| Subject: Engg. Mathematics | Code: 128902 |
| Group: B* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|-------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Engg. Mathematics | 3 | -- | 1 | 1, 3 Hrs., 80 Mks. | 20 | 80 | -- | -- | -- | 100 | B* | 128902 | 404 |

Rationale:

This subject intends to teach student basic facts, concepts, principle and procedure of Mathematics as a tool analyse Engineering problems and as such down foundation for the understanding of engineering and core technology subject.

Objective:

1. Understand basic facts of mathematics in the field of analysis – algebra, trigonometry, co-ordinate geometry, graph, functions etc.
2. Understand basic concepts about scientific phenomena in the field of mathematics.
3. Understand the basic techniques in mathematical process: solving algebraic equations, synthesis and analysis of trigonometric equations, graphical solutions, and problems on functions.
4. Understand importance of above knowledge in the context of core technology and technology area.

Theory Contents:

- 1. Logarithms** (Periods-02 hrs, Mks-08)
 - 1.1. Definition of Logarithm (Natural & Common Logarithm)
 - 1.2. Laws of Logarithm
- 2. Partial Fractions** (Periods-04 hrs, Mks-08)
 - 2.1. Non repeated linear factors
 - 2.2. Repeated linear factors
 - 2.3. Irreducible non repeated quadratic factors
- 3. Trigonometry** (Periods-14 hrs, Mks-12)
 - 3.1. Trigonometric ratios
 - 3.2. Fundamentals identities
 - 3.3. Trigonometric ratios of compound, allied multiple angles
 - 3.4. Factorization and defactorization
 - 3.5. Inverse trigonometric ratios
- 4. Functions** (Periods-04 hrs, Mks-12)

Value of function and type of function
- 5. Limits** (Periods-06 hrs, Mks-10)
 - 5.1. Algebraic limits
 - 5.2. Method of factorization, rationalisation
 - 5.3. Infinity type
 - 5.4. Limits based on formula
 - 5.5. Trigonometric limits
- 6. Derivatives** (Periods-14 hrs, Mks-20)
 - 6.1. Derivatives – basic formulas, rules
 - 6.1.1. Derivatives for exponential, logarithmic, implicit, inverse, parametric, composite functions.
 - 6.1.2. Derivative of one function with respect to other
 - 6.1.3. Double derivative
- 7. Application of Derivative** (Periods-04 hrs, Mks-10)

- 7.1. Slope of tangent and normal
- 7.2. Equation of tangent and normal
- 7.3. Maxima & minima

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|---------------------------|---------------------|-----------|-------------|-------------|
| 1. | Logarithms | 02 | 08 | 04 | E |
| 2. | Partial Fractions | 04 | 08 | 08 | E |
| 3. | Trigonometry | 14 | 12 | 30 | M |
| 4. | Functions | 04 | 12 | 08 | D |
| 5. | Limits | 06 | 10 | 12 | E |
| 6. | Derivatives | 14 | 20 | 30 | M |
| 7. | Application of Derivative | 04 | 10 | 08 | D |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Logarithms
2. Partial Fractions
3. Trigonometry
4. Functions

Section II

5. Limits
6. Derivatives
7. Application of Derivative

Total Theory Hours = 48 hrs.

IMPLEMENTATION STRATEGY (PLANNING)

1. Conducting lectures as per the teaching plan
2. Conducting tutorials by giving more problems to solve.

Reference Books:

- (1) Mathematics for polytechnic students, by S.P. Deshpande.
- (2) Engg. Mathematics-I by G.V. Kumbhojkar

Additional References:

- (1) Engg. Mathematics (1 st year), by Patel Rawal.

Web References:

1. www.mic-mathematics.com
2. www.math.com
3. www.lenerstv.com
4. www.onlinetutorials.com
5. www.archieves.math.utk.edu

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

PHYSICS (128903)

(One Paper-3 Hrs, Theory 80 Marks. Pract.– 50 Marks, T.W.=50Marks, Week ,Lecture : 4/Week, Pract.:2 /Week, Credit:6)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: I |
| Subject: Physics | Code: 128903 |
| Group: B* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|---------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Physics | 4 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 50 | 50 | -- | 200 | B* | 128903 | 426 |

Rationale :

To develop the basic concepts, facts, principles of scientific phenomena in the field of Physics and material properties and Applications. Also it will help to develop the laboratory skill.

Objectives:

Students will be able to:

- Understand the basic facts about field of Physics, viz., heat light magnetism and electricity in the area of Physics: Elasticity, Heat conduction, Sound, photo electricity, Properties of light
- Understand the basic concepts of advanced topics in physics: Nano Technology, X-rays
- Understand the importance of above knowledge in the context Core Technology and Technology areas.
- Develop laboratory skill of investigation for use in actual production system.

Theory Contents:

- GENERAL PHYSICS** (Periods-10hrs. Mks-10)
 - Elastic limit, Hooke's law. Types of deformation, definitions of Bulk, Rigidity and Young's modules,
 - Determination of "Y" by Searle's method, behaviour of a wire under continuously increasing stress, yield point, Breaking stress, Factor of safety
 - Definition and explanation of viscosity, co-efficient of viscosity, determination of viscosity by Poiseuilles method (Derivation of formula not necessary), Stokes' law (derivation not necessary) viscosity of a liquid by Stokes' law, application of viscosity, critical velocity, Reynolds' number
- HEAT** (Periods-08 hrs. Mks-12)
 - Statement of Boyle's Law, Charle's Law, Gay Lussac's Law, concept of absolute zero.
 - Kelvin scale of temperature general gas equation, gas constant, Universal gas constant definitions of specific heat of gas at constant, pressure and at constant volume.
 - Relation between Cp & Cv, ratio of Cp and Cv, adiabatic and isothermal expansion of gases, isothermal and Adiabatic elasticity of gases.
 - Conduction along a bar, steady state of temperature. Coefficient of expansion
- Properties of light and Fiber Optics** (Periods-08hrs.,Mks-10)
 - Reflection, refraction, snell's law, physical significance of refractive index,
 - definition of dispersion, polarization and diffraction of light along with ray diagram,
 - principle of superposition of waves, interference of light, constructive and destructive interference.
 - Total internal reflection ; wave guide for light, Optical fibre- Step index, Graded index ; Applications.
- SOUND** (Periods-08hrs.,Mks-08)
 - Sound as a longitudinal wave, equation of a progressive wave,
 - Newton's formula for velocity of sound, Laplace's correction, effect of temperature, pressure and humidity on velocity of sound, resonance tube, application in brief.
 - Echo, Reverberation, Sabine's formula (derivation not necessary), factors affecting reverberation time, acoustical planning of a building.
 - Ultrasonic waves & their application

5. **ELECTROSTATICS** (Periods-08 hrs. Mks-12)
 5.1. Coulomb's inverse square law, unit charge electric field, intensity of electric field,
 5.2. definition and properties of electric lines of force, electric flux, electric flux density relation between flux density and intensity, electric flux due to a given charge.
 5.3. Electric potential, potential difference, difference absolute potential at a point. Capacitance principle of capacitor, capacitors in series and parallel
6. **Photo electricity** (Periods-10 hrs. Mks-12)
 6.1. Concept of photon, Plank's hypothesis, properties of photon,
 6.2. photo electric effect, Characteristics of photoelectric effect, work function, Einstein's photoelectric equation (no derivation), photoelectric cell-construction ,working and applications. (Numericals on Energy of photon, work function)
7. **X rays** (Periods-6 hrs. Mks-08)
 7.1. X-rays Coolidge tube, continuous x-ray spectrum,
 7.2. minimum wavelength, use of x-rays.
8. **Nano Technology** (Periods-6 hrs. Mks-08)
 8.1. Definitions of nanoscale, nanometer,nano particle.
 8.2. Concept of manipulating matter on an atomic and molecular scale and of new new materials with dimensions on the nanoscale applications (electronics, automobile, medical, environmental, space and defence, etc

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D | |
|---------|---------------------|---------------------|-----------|-------------|-------------|----------|
| 1. | GENERAL PHYSICS | 10 | 10 | 16 | M | |
| 2. | HEAT | 08 | 12 | 12 | E | |
| 3. | Properties of light | 08 | 10 | 12 | E | |
| 4. | SOUND | 08 | 08 | 12 | D | |
| 5. | ELECTROSTATICS | 08 | 12 | 12 | E | |
| 6. | Photo electricity | 10 | 12 | 12 | M | |
| 7. | X rays | 06 | 08 | 12 | D | |
| 8. | Nano Technology | 06 | 08 | 12 | E | |
| | | Total | 64 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- GENERAL PHYSICS
- Heat
- Properties of Light
- Sound

Section II

- Electrostatics
- Photo electricity
- X-rays
- Nano Technology

Total Theory Hrs. = 64 Hrs.,
Total practical hours = 32 hrs.

List of Practicals:

- Know your Physics Lab
- Use of Vernier Callipers and Micrometer screw gaug
- Verification of Boyle's Law.
- Determination of Young's Modulus by Searle's method.
- Determination of coefficient of viscosity by Poiseuille's method.
- Determination of coefficient of viscosity by Stokes' method.
- Determination of coefficient of thermal conductivity of a good conductor by Searle's method.
- Refractive index of material of the prism by using spectrometer.
- Determination of Refractive index of prism by minimum deviation – Pin method.
- Determination of Velocity of sound by Resonance Tube.
- To verify characteristics of photoelectric cell
- Use of Thermocouple as a thermometer for the measurement of unknown temperature(Boiling Point of Water)
- Determination of elastic constants by Searle's method
- Determination of coefficient of thermal conductivity of a poor conductor by Lee's method
- Determination of ratio of specific heats Cp/Cv of a gas
- Determination of velocity of sound in a liquid by using ultrasonic waves.
(Minimum 12 experiments to be completed for the term grant)

IMPLEMENTATION STRATEGY (PLANNING) :

1. Conducting Theory Lectures as per Teaching/ Lesson Plan
2. Practical – Scheme of marking for T/W; Scheme of assessment for Practical Exam.

Reference Books:

1. Applied Physics for Polytechnic by B.G. Dhande.
2. Applied Physics by B.G. Bhandarkar.
3. Engineering Physics by R.K.Gaur and S.L.Gupta Dhanpat Rai Publication

Additional References:

1. Applied Physics by Umrani, Joshi and Deshpande.
2. Physics-I by V. Rajendran Tata McGraw- Hill raw- Hill,publication, New Delhi

Web References:

1. www.physicsclassroom.com
2. <http://physics.about.com>

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

ELECTRONIC WORKSHOP (120801)

(Paper – 3 Hrs, Marks: 80, Lect.–3 /week, Practical – 2/W, T.W-50Marks, Pr. – 50 Marks, Credit: 5)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: I |
| Subject: Electronic Workshop | Code: 120801 |
| Group: C* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|----------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Electronic Workshop | 3 | 2 | -- | 1, 3Hrs, 80Mks | 20 | 80 | 50 | 50 | -- | 200 | C* | 120801 | 325 |

Rationale:

This subject is intended to develop skills of soldering, fabrication of small chassis, transformer winding, preparation of P.C.B. from artwork and assembly of unit. These skills are required to develop prototype designs, maintenance and troubleshooting in the industry.

Objectives: The students will be able to:-

1. Identify the different components & classify them.
2. Awareness of soldering.
3. Fabrication of PCB.

Theory Contents:**1. Solder and soldering techniques:****(Periods-13 hrs, Mks-20)**

1. Principles of solder connections
2. Solder alloys
3. Solder fluxes
4. Forming techniques
5. Soldering techniques
6. Solder mask
7. Reflow soldering techniques
8. Resting & Quality control

2. Inter Connection Techniques**(Periods-8 hrs, Mks-15)**

1. BNC connection
2. D-type connection
3. FRC connector
4. Cable forming – Harnessing
5. Wire wrapping tool and wire wrapping
6. Crimping

3. Wound components**(Periods-06 hrs, Mks-10)**

1. Different types of core and their characteristics
2. Testing coils and transformers
3. Manual and automatic winding machines

4. PCB fabrication**(Periods-13 hrs, Mks-20)**

- Film master production
1. Properties of copper clad laminitis
 2. Board clearing before pattern transfer
 3. Photo printing
 4. Screen printing
 5. Plating
 6. Etching
 7. Testing

8. Introduction to multiplayer PCB

5. Surface mount devices and technology

(Periods-08 hrs, Mks-15)

1. Introduction to surface mount technology
2. Advantage of SMT
3. Type of SMT assemblies
4. SMD's types
5. Costing of SMT equipments and assembly
6. Inspection methods and rework stations in SMT.

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|--------------------------------------|---------------------|-----------|-------------|-------------|
| 1. | Solder and soldering techniques | 13 | 20 | 18 | E |
| 2. | Inter Connection Techniques | 08 | 15 | 17 | E |
| 3. | Wound components | 06 | 10 | 20 | M |
| 4. | PCB fabrication | 13 | 20 | 25 | M |
| 5. | Surface mount devices and technology | 08 | 15 | 20 | E |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Solder and soldering techniques
2. Inter Connection Techniques
3. Wound components
Different types of core and their characteristics
Testing coils and transformers

Section II

3. Wound components
Manual and automatic winding machines
4. PCB fabrication
5. Surface mount devices technology

Total Theory Hours = 48hrs,

Total Practical Hours = 32hrs

Practical List: Following jobs to be carried out:

1. Forming and soldering
2. Desoldering
3. NC or D type connecting wiring
4. Cable forming and Harnessing
5. Wire wrapping and crimping
6. Coil or transformer winding
7. One exercise of PCB fabrication for single side or double side PTH starting from phototool generation

Implementation Strategy (Planning) :

- Conducting the lectures and tutorials as per the teaching plan.
- Conducting the periodical test.
- Use of Powerpoint presentations during theory class.
- Assessing the students in the class with their understanding ability to improve their performance.
- Giving sufficient practice on topics in practical list.

Reference Books:

1. Printed Circuit Boards – Design & Technology by Walter C Bosshart – TMH Publication.
2. Production Technology of Electronic equipments Vol.-I and Vol.-II – NEC Bangalore

Additional References :

PCB Design and fabrication – NEC Bangalore.

Web References:

1. <http://nearsys.com/dissertation/notes.pdf>
2. http://www.elecraft.com/TechNotes/NOSS_SolderNotes/NOSS_SolderNotesV6.pdf

3. <http://farside.ph.utexas.edu/teaching/3021/lectures/node106.html>
4. http://vlab.ee.nus.edu.sg/~bmchen/courses/EG1108_Transformers.pdf

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

DEVELOPMENT OF LIFE SKILLS (128904)

(One Paper-03 Hrs, Theory=80 Marks, Lecture 3/week & 1 Practical 1/Week, TW = 50, OR=50, Credit-4)

SUBJECT DETAILS:

| | |
|--|---------------------|
| Course: Computer Engineering | Semester: I |
| Subject: Development of Life Skills | Code: 128904 |
| Group: B* | |

Teaching and Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|----------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-----------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Practical | Oral | Total | | | |
| Development of Life Skills | 3 | -- | -- | -- | 20 | 80 | 50 | -- | 50 | 200 | B* | 128904 | 303 |

Rationale:

Human resource is the most important resource. Until this resource is motivated and utilized to the maximum, organizational effectiveness cannot be achieved. There is need to help students in the overall growth of personality and train them in organizational requirements their workplace. Students coming from various rural and cultural backgrounds face variety of complexities to faction globally, as they lack in interpersonal skills, self motivations, leadership and business ethics. Thus learning basic life skills, self-motivations, leadership, conflict Management Negotiation and Decision making will imbibe social adaptability and human sensibility as an integral part of their mind set.

Objectives:

1. Students will learn various life skills to increase his/her efficiency and utility at workplace.
2. The student will learn to perform the given task with innovative ideas.
3. The student will learn to express his/ her view and experiences on various topics.
4. The student will learn to make maximum use of time for more creative and constructive work.
5. Students will learn how to cope with stress of study and work.

Theory Contents:**1. AREA OF SELF DEVELOPMENT****(Periods-02 hrs. Mks-05)**

- 1.1 Introduction
- 1.2 Areas of self development,
- 1.3 Self Analysis

2. TIME MANAGEMENT**(Periods-02 hrs. Mks-05)**

- 2.1 Introduction
- 2.2 Time planning, how to plan time
- 2.3 Time wasters , Time Management
- 2.4 The Matrix etc.

3. STRESS MANAGEMENT**(Periods-02 hrs. Mks-07)**

- 3.1 Definition of stress
- 3.2 Types of personality and stress,
- 3.4 Stress busters
- 3.5 Psychological reaction to stress
- 3.6 Yoga and stress control

4. EMOTION**(Periods-03hrs. Mks-05)**

- 4.1 Emotional Maturity
- 4.2 Emotional Stability and Emotional Intelligence
- 4.3 How to control emotions

5. FRUSTRATION**(Periods- 03hrs. Mks-05)**

- 5.1 Definition of frustration
- 5.2 Anatomy of frustration
- 5.3 Causes of frustration
- 5.4 Effects of frustration
- 5.5 Handling of frustration

- 6. MOTIVATION** (Periods- 02hrs. Mks-06)
 6.1 Introduction to Motivation
 6.2 Self Motivation
 6.3 Attitude and Aptitude etc.
- 7. INTERPERSONAL SKILLS** (Periods-03 hrs. Mks-07)
 7.1 Interpersonal Relations
 7.2 Factors of Attractions
 7.3 Personal effectiveness, Assertiveness/ Non-assertiveness
 7.4 Empathy
- 8. CONFLICT MANAGEMENT** (Periods-02 hrs. Mks-07)
 8.1 Definition of Conflict
 8.2 Sources of Conflict
 8.3 Types of Conflict
 8.4 Conflict Resolution
 8.5 Steps in Conflict resolution
- 9. SWOT ANALYSIS** (Periods-02 hrs. Mks-06)
 9.1 Concept of SWOT
 9.2 Scope of SWOT
 9.3 SWOT as decision making tool
 9.4 How to go about SWOT
- 10. ETHICS** (Periods-02 hrs. Mks-05)
 10.1 What are ethics?
 10.2 values and value formation
 10.3Moral development
 10.4Decision making
- 11. GROUP DISCUSSION & INTERVIEW TECHNIQUES** (Periods-04 hrs. Mks-07)
 11.1 Importance of Objective GD
 11.2 Procedure for GD
 11.3 Evaluation criteria for GD
 11.4 Types of Interviews
 11.5 Preparation for Interview
 11.6 Some DO's and DON'T's for interview
 11.7 FAQ on interview
- 12. STUDY HABITS** (Periods-02 hrs. Mks-05)
 12.1 Establishment of good study habits
 12.2 Efficient use of Time
 12.3 Prioritize the work
 12.4 power of concentration
 12.5 setting comfortable place for study
 12.6 visiting library
 12.7 staying alert
 12.8 Review of Class notes
 12.9 Study can be funny
- 13. WORKING IN TEAM** (Periods-02 hrs. Mks-05)
 13.1 Definition of Team
 13.2 Importance and necessity in working team
 13.3 Team Dynamics
 13.4 Transforming Group into Teams
- 14. TASK MANAGEMENT** (Periods-02 hrs. Mks-05)
 14.1 Definition of Task
 14.2 Task Characteristic
 14.3 Task sponsor and Task stake holder
 14.4 Planning the Task
 14.5 Task Evaluation

| Sr. No. | Main Topics | No. Of Contact Hours | Marks | Weightage (%) | # M / E / D |
|---------|--------------------------|----------------------|-------|---------------|-------------|
| 1. | AREA OF SELF DEVELOPMENT | 02 | 05 | 6 | E |
| 2. | TIME MANAGEMENT | 02 | 05 | 7 | E |
| 3. | STRESS MANAGEMENT | 02 | 07 | 10 | M |
| 4. | EMOTION | 03 | 05 | 6 | E |
| 5. | FRUSTRATION | 02 | 05 | 6 | E |

| | | | | | |
|-----|--|-----------|-----------|-------------|----------|
| 6. | MOTIVATION | 02 | 06 | 8 | E |
| 7. | INTERPERSONAL SKILLS | 03 | 07 | 10 | M |
| 8. | CONFLICT MANAGEMENT | 02 | 07 | 10 | E |
| 9. | SWOT ANALYSIS | 02 | 06 | 10 | M |
| 10. | ETHICS | 02 | 05 | 6 | E |
| 11. | GROUP DISCUSSION & INTERVIEW TECHNIQUES | 04 | 07 | 10 | E |
| 12. | STUDY HABITS | 02 | 05 | 6 | E |
| 13. | WORKING IN TEAM | 02 | 05 | 7 | E |
| 14. | TASK MANAGEMENT | 02 | 05 | 6 | D |
| | TOTAL | 32 | 80 | 100% | # |
| | (# M=Most Essential, E=Essential, D=Desirable) | | | | |

Section I

1. AREA OF SELF DEVELOPMENT
2. TIME MANAGEMENT
3. STRESS MANAGEMENT
4. EMOTION
5. FRUSTRATION
6. MOTIVATION
7. INTERPERSONAL SKILLS

Section II

8. CONFLICT MANAGEMENT
9. SWOT ANALYSIS
10. ETHICS
11. GROUP DISCUSSION & INTERVIEW TECHNIQUES
12. STUDY HABITS
13. WORKING IN TEAM
14. TASK MANAGEMENT

Total Theory Hours: 32 Hrs.

List of Assignments:

1. Identify your areas of self development and plan strategies to improve it.
 2. Enlist your time-wasters. And write down how you use your time on any average day, and see how you can improve time utility.
 3. Expose yourself to situations that irritate and make you angry. Enlist the thing you will do remain calm.
 4. Look back in your life and list five occasions, when you were frustrated, Recall the strategies you used to overcome that frustration.
 5. What are the things that motivate you (Friendliness, Warmth, Honesty, Appreciation) and Things that De motivate you (rejection, Criticisms, Fear of Failure, insult)
 6. Enlist the ten various sources of interpersonal conflicts, and Methods to resolve it.
 7. Listen to lecturer on particular topic and take down notes and check how good you were in capturing the structure, hierarchy of concepts and essence of speech.
 8. What are the things you would do, if you have only one week to live?
 9. Make a general purpose SWOT analysis to discover your strength and learning areas and on the basis of that decide a carrier.
 10. Identify some negative attitudes you have and find solution for replacing it
 11. Identify your values and prepare a code of ethics for yourself.
- (Note: Teacher will do the necessary changes in the assignments as per requirement)

IMPLEMENTATION STRATEGY (PLANNING):

1. Conducting Theory Lectures as per Teaching plan / Scheme
2. Assignments as per requirement of theory contents
3. Seminars/ Presentations on some certain topics as per requirement

Reference Books:

- 1) *Organizational Behavior By Fred Luthans*
- 2) *Basic managerial skill For all By E.H. Megrath*
- 3) *Managing Time First By Dr. R. L. Bhatia*
- 4) *Development of Generic Skill – I & Development of Generic Skill – II By K. Sudesh*
- 5) *How to motivate people By Patrick Forthsayth*

URL:

1. http://wikieducator.org/Life_Skills_Development,
2. <http://www.essentiallifefskills.net/>,
3. <http://www.thechangeagency.org>,
4. <http://www.time-management-solutions.com/>,
5. <http://www.unicef.org/lifefskills/>

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

WEB PROGRAMMING (128905)

(T.W. = 50 Marks, Pr. = 50 Marks, Lecture 3/week, Practical 2/week, Tutorial 1/week, Credit: 6)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: I |
| Subject: Web Programming | Code: 128905 |
| Group: C* | |

Teaching and Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|-----------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Web Programming | 3 | 2 | 1 | 1, 3, 80 Mks. | 20 | 80 | 50 | 50 | -- | 200 | C* | 128905 | 426 |

Rationale:

The internet based applications are used in various sectors such ticket booking, banking, government agencies etc. This subject gives introduction to client servers programming. It also gives students the practical exposure to widely used web technologies to write web pages.

Objective:

The student will be able to

1. Design simple Web pages - using HTML
2. Organize information using Tables, collect information from users using forms & present information using Frames.
3. Use style sheets to gain full control of formatting within Web page.
4. Include JavaScript within Web pages.
5. Embed multimedia to Web pages.
6. Integrate all above to develop Web sites.

Theory Contents:

- 1. Introduction to Web Programming (Periods-7 hrs, Mks-12)**
 - 1.1. Use of Internet, Terminologies used in internet,
 - 1.2. Web client-sever computing, Client-Server Architecture, various types of server, Types of server, server side coding, client side coding,
 - 1.3. Introduction to Markup languages and Scripting languages, Search Engine
- 2. HTML (Periods-5 hrs, Mks-10)**
 - 2.1. Introduction to HTML, Components of HTML: Tags – closed tags and open tags, Attributes, Elements,
 - 2.2. Structure Tags: !DOCTYPE, HTML, HEAD, TITLE, BODY tags.
 - 2.3. Block Level Elements: Headings, Paragraphs, Breaks, Divisions, Centered Text, Block Quotes, reformatted text, Address.
 - 2.4. Text Level Elements: Bold, Italic, Teletype, Underline, Strikethrough, Superscript, subscript, Horizontal Rules, special characters
 - 2.5. Adding comments, The Meta tag. Creating Lists, Ordered Lists, Unordered Lists, Definition Lists, Nested Lists
 - 2.6. Linking HTML Documents URL: Types of URLs, Absolute URLs, Relative URLs,
 - 2.7. The Anchor Tag, Linking : To document in the same folder, To document in the different folder, To document on the web, To specific section within the document
- 3. IMAGES, COLORS AND BACKGROUNDS (Periods-5 hrs, Mks-10)**
 - 3.1. Images Image formats : gif, jpeg, png, The inline image : an IMG tag, alternate text, image alignment, buffer space – HSPACE, VSPACE, wrapping text, height and width of images, Image as a link,
 - 3.2. Image maps : Server side image maps, Client side image maps,
 - 3.3. Colors and Backgrounds, The text color : color attribute of FONT tag, text attribute of BODY tag, Background color : bgcolor attribute of BODY tag,
 - 3.4. Background images : background attribute of BODY tag, Changing link colors : link, alink, vlink attributes of BODY tag
- 4. TABLES, FRAMES AND FORMS (Periods-10 hrs, Mks-16)**
 - 4.1. Tables, Creating basic tables : TABLE, TR, TH, TD tags., Formatting tables: border, cellspacing, cellpadding, width, align, bgcolor attributes, Adding captions : CAPTION tag. ,
 - 4.2. Formatting contents in the table cells : align, valign, bgcolor, height, width, nowrap attributes, Spanning rows and coloums : rowspan and colspan attributes.

- 4.3. Frames: Introduction to frames : What is frame?, Advantages and disadvantages of using frames. Creating frames: FRAMESET tag – rows, cols attributes, FRAME tag –name, frameborder, marginheight, marginwidth, src, resize, scrolling, attributes. Use of NOFRAMES tag Frame targeting.
- 4.4. Forms creating basic form: FORM tag, action and method attributes. Form fields: Single line text field, password field, multiple line text area, radio buttons, check boxes, Pull down menus: SELECT and OPTION tags. Buttons: submit, reset and generalized buttons. Formatting technique: Using table to layout form.

5. STYLE SHEETS

(Periods-5 hrs, Mks-10)

- 5.1. Adding style to the document: Linking to style sheets, Embedding style sheets, Using inline style.
- 5.2. Selectors: CLASS rules, ID rules.
- 5.3. Style sheet properties: font, text, box, color and background properties.

6. INTRODUCTION TO JAVASCRIPT

(Periods-10 hrs, Mks-12)

- 6.1. Embedding JavaScript in HTML document, Variables, Constants, Adding comments,
- 6.2. Operators: Assignment, Arithmetic and Comparison operators,
- 6.3. Control structures and looping: if, if..else, for, for..in, while, do..while, break and continue. Event handlers: onClick, onMouseOver, onMouseOut, onSubmit, onReset, onFocus, onBlur, onSelect.

7. ANIMATION

(Periods-6 hrs, Mks-10)

- 7.1. Creating a gif animation using gif animator, Controlling gif animation through internal setting of gif animator,
- 7.2. Creating banner using gif animation, Creating smooth transition between gif animation frames using twinning.

| Sr. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | #M/E/D |
|--------------|---------------------------------|---------------------|-----------|-------------|----------|
| 1. | Introduction to Web Programming | 07 | 12 | 15 | M |
| 2. | HTML | 05 | 10 | 10 | E |
| 3. | Images, Colors And Backgrounds | 05 | 10 | 10 | D |
| 4. | Tables, Frames And Forms | 10 | 16 | 20 | M |
| 5. | STYLE SHEETS | 05 | 10 | 10 | E |
| 6. | Introduction to JAVASCRIPT | 10 | 12 | 20 | E |
| 7. | Animation | 06 | 10 | 15 | D |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- Introduction to Web Programming
- HTML
- Images, Colors and Backgrounds
- Tables, Frames and Forms (Table, Frames)

Section II

- Tables, Frames and Forms (Forms)
- Style Sheets
- Introduction to Javascript
- Animation

Total Theory Hrs. = 48 hrs

Total Practical Hrs. = 32 hrs.

List of practical:

- To study important concepts of Internet
- To create web page to implement block level tags
- To create webpage to implement text level tags (part 1)
- To create webpage to implement text level tags (part 2)
- To study how to link documents
- To write an HTML code to create tables
- To create HTML frames and apply various formatting tags
- To create web page to display background colour & image
- To study basic concept of JavaScript
- To study internal and external style sheet

Mini Project:

Design a website using all topics mentioned in syllabus.

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

1. Thomas Powell HTML and XHTML –
2. The complete reference Tata McGraw Hill, New Delhi.
3. Jamsa, King, Anderson HTML and Web Design –
4. Tips and Techniques Tata McGraw Hill, New Delhi.

Web References:

1. www.vogella.com/
2. www.w3schools.com/

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC**TEACHING AND EXAMINATION SCHEME**

DISCIPLINE: COMPUTER
ENGINEERING
SEMESTER: II

w.e.f. Batch admitted in June, 2012 (progressively)

| SR No | SUBJECT NAME/ SUBJECT CODE | Pre- requisite Subject Code | SCHEME OF INSTRUCTION AND PERIODS PER WEEK | | | | | THEORY PAPER DURATIO N AND MARKS | | SCHEME OF EXAMINATION | | | | | | Gr | SCHEME L/P/Cr |
|----------|--|--------------------------------------|--|----|----|----|----|--|-----|-----------------------|--------------|---------|----------|----------|-----------|----|------------------|
| | | | L | P | D | T | Cr | Hrs | Mks | SSL @ | PAPE R ** | T W | PR ** | OR ** | TOTA L | | |
| 1 | Basics of Electrical Engineering (120802) | -- | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 25 @ | 50 ** | -- | 175 | B* | 325 |
| 2 | Applied Mathematics (128906) | -- | 3 | -- | -- | 1 | 4 | 3 | 80 | 20 | 80 | -- | -- | -- | 100 | B* | 404 |
| 3 | EDC-I (128907) | -- | 4 | 2 | -- | -- | 6 | 3 | 80 | 20 | 80 | 25 @ | 50 ** | -- | 175 | C* | 426 |
| 4 | Programming in C (128908) | -- | 3 | 2 | -- | 1 | 6 | 3 | 80 | 20 | 80 | 25 @ | 50 ** | -- | 175 | C* | 426 |
| 5 | Communication Skill (128909) | -- | 3 | -- | -- | 1 | 4 | 3 | 80 | 20 | 80 | 25 @ | -- | -- | 125 | B* | 404 |
| 6 | Engineering Graphics (128910) | -- | 2 | 2 | -- | -- | 4 | -- | -- | -- | -- | 50 @ | -- | 50 ** | 100 | C* | 224 |
| TOTAL | | | 18 | 8 | -- | 3 | 29 | No.of papers= 05 | | 100 | 400 | 150 | 150 | 50 | 850 | | |
| | | | TOTAL PERIODS= 29 | | | | | TOTAL MARKS= | | | | | 850 | | | | |

* Compulsory, # Award Winning. ** Assessed by Internal and External Examiners Jointly, @ Assessed by Internal Examiner only

L- Lecture Period, P- Practical Period, D-Drawing Practice Period, T- Tutorial, Cr-Credit, SSL-Sessional, TW- Term Work

PR-Practical, OR-Oral

GR- Group, B-Basic, C-Core, A-Application, M-Management

BASICS OF ELECTRICAL ENGINEERING (120802)

(One Paper-03 Hrs, Marks-80, Lecture 3/ Week, Practical 2, TW-25 Marks, Practical – 50 Marks , Credit-6)

SUBJECT DETAILS:

| | |
|--|---------------------|
| Course: Computer Engineering | Semester: II |
| Subject: Basics of Electrical Engineering | Code: 120802 |
| Group: B* | |

Teaching and Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|----------------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Basics of Electrical Engineering | 3 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 25 | 50 | -- | 175 | B* | 120802 | 325 |

Rationale:

This subject will help the students to comprehend the fundamentals of various facts, laws of Electrical Engineering. The subject will also familiarize the students with various measuring instruments and electrical machines.

Objective:

The students will be able to

1. Understand the basic facts of Electrical Engineering
2. Understand the principles of operation of different electrical machine.
3. Understand the effect of varying loads on operation of electrical machine.
4. Develop ability of selecting proper ranges of meters and electrical machines.

Theory Contents:**1. Fundamentals****(Periods-06hrs, Mks-10)**

- 1.1. Concept of Electric Potential, Potential Difference (P D) and Electro-Motive-Force (EMF).
- 1.2. Ohm's law, resistance in series and parallel, Concept of Resistivity and Conductivity, Effect of Temperature on Resistance, Temp.co-efficient of Resistance (simple numerical),
- 1.3. Wheatstone Bridge, Classification of Electric Current:- Direct Current (DC)- Alternating Current (AC) Sources of Electric Current (DC),
- 1.4. Concept of Electrical Work, Power and Energy.-Their SI units (simple numerical)

2. D.C. Circuits**(Periods-08hrs, Mks-15)**

- 2.1. Duality between Series and Parallel Circuits.
- 2.2. Definitions of terms Related to Electric Circuits, Circuit Parameters, Linear Circuit, Non-linear Circuit, Bi-lateral Circuit, Uni-lateral Circuit,
- 2.3. Electric Network, Passive Network, Active Network, Node, Branch, Loop, Mesh.
- 2.4. Kirchhoff's Laws -Kirchhoff's Current Law-Kirchhoff's Voltage Law (Simple Numerical)Mesh Analysis - (Simple Numerical with two equations)Nodal Analysis (Simple Numerical with two equations)Star/Delta and Delta/Star Transformation. Thevenine Theorem

3. Magnetic Circuits**(Periods-08 hrs, Mks-15)**

- 3.1. Concept of magnetic flux B ,Flux per unit pole ϕ , flux densityB, intensity of magnetization I, Magnetic field strength H, Susceptibility K, magneto motive force,
- 3.2. Absolute and Relative permeability, relation between B,H,I,K , Curie point ,
- 3.3. series magnetic circuit numerical based on it, comparison of electrical magnetic circuit, B.H. curve and hysteresis loop, hysteresis loss,
- 3.4. Rise and Decay of current in inductive circuits.

4. Electromagnetic Induction**(Periods-08 hrs, Mks-10)**

- 4.1. Relation Between Magnetism and Electricity.
- 4.2. Production of Induced E.M.F. and Current. Faraday's Laws of Electromagnetic Induction.Faraday's First Law, Faraday's Second Law
- 4.3. Induced E.M.F: Statically Induced E.M.F., Dynamically Induced E.M.F. (Simple Numerical), Direction of Induced E.M.F. and Currents,
- 4.4. Fleming's Right Hand Rule, Lenz's Law,
- 4.5. Mutual inductance , self inductance, coefficient of mutual induction and self inductance. inductance in series and parallel.

5. Electrostatics**(Periods-06hrs, Mks-08)**

- 5.1. Electric charge flux, flux-density,
- 5.2. Intensity, mmf permittivity, capacitance of parallel plate capacitor,Current and Voltage relation in capacitor, Charging – Discharging, capacitors in parallel & series,
- 5.3. Rise decay of current in R.C. Series (formula not to be derived)

6. A.C. Fundamentals**(Periods-06 hrs, Mks-08)**

- 6.1. A.C. Cycle, Frequency, period, phase, Phase difference,

- 6.2. rms value, maximum circuits average & values to current/voltage current voltage & power relations in purely resistive, inductive & capacitance circuits. (No mathematical treatment required)
- 6.3. concept of reactance, impedance, power factor, simple A.C. Circuits & numerical based on it. (Periods-04hrs, Mks-08)
7. **Single phase Transformer**
 7.1. Function and principle of operation, constructional features,
 7.2. types of transformer, derivation of EMF Equation of a transformer
8. **D.C. Machines** (Periods-02 hrs, Mks-06)
 8.1. Construction, working, Types, Characteristics,
 8.2. application of D.C. Motors,

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D | |
|---------|---------------------------|---------------------|-----------|-------------|-------------|----------|
| 1. | Fundamentals | 06 | 10 | 12 | M | |
| 2. | D.C. circuits | 08 | 15 | 18 | E | |
| 3. | Magnetic Circuits | 08 | 15 | 20 | M | |
| 4. | Electromagnetic Induction | 08 | 10 | 16 | D | |
| 5. | Electrostatics | 06 | 08 | 12 | E | |
| 6. | A.C. Fundamentals | 06 | 08 | 12 | E | |
| 7. | Single phase Transformer | 04 | 08 | 06 | D | |
| 8. | D.C. Machines | 02 | 06 | 04 | D | |
| | | Total | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Fundamentals
2. D.C. circuits
3. Magnetic circuits

Section II

4. Electromagnetic Induction
5. Electrostatics
6. A.C. Fundamentals
7. Single phase Transformer
8. D.C. Machines

Total Theory Hours.= 48 hrs.

Total Practical Hours = 32 hrs.

List of Practicals

- 1) Measurement of low resistance by Wheatstone's bridge
- 2) To Study effect of Temp. in resistance
- 3) Verification of KCL & KVL
- 4) To plot BH curve of magnetic material
- 5) Study of hysteresis loop its application and plotting the hysteresis loop
- 6) To plot charging curve of a capacitor
- 7) To determine R & L of a choke coil
- 8) RLC circuits in series
- 9) RLC circuits in parallel
- 10) To determine transformation ratio of single phase transformer
- 11) Speed control of DC shunt motor by
 - a) Flux control method.
 - b) Armature voltage control method.
- 12) Study of D.C. machine.

Implementation Strategy (Planning) :

- Conducting the lectures as per the teaching plan..
- Planning the Term work by assessing the practical performed by the students in the laboratory.
- Assignment to practice at home.
- Conducting the periodical test.
- Use of Powerpoint presentations during theory class.
- Assessing the students in the class with their understanding ability to improve their performance.
- Giving assignments to clear the concepts and solve numericals on various topic.

Reference Books :

1. Electrical Technology Volume 1 by B. L. Thearaja.
2. Electrical Technology Volume 2 by B. L. Thearaja.

Additional References :

Electrical Technology by Edward Hughes.

Web References:

1. <http://www.facstaff.bucknell.edu/mastascu/elessonsHTML/EEIndex.html>
2. http://lecturenotes.in/notes/engg/eee_1.html

3. <http://www.indianshout.com/electrical-engineering-eee-full-study-material-by-iit-professors/2180>
4. http://www.elect.mrt.ac.lk/pdf_notes.htm
5. http://faraday.ee.emu.edu.tr/eeng224/lecture_notes.htm

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

APPLIED MATHEMATICS (128906)

(One Paper- 3 Hrs. Theory =80, Lectures: 3/Week; Tutorial: 1/Week, Credit: 4)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: II |
| Subject: Applied Mathematics | Code: 128906 |
| Group: B* | |

Teaching And Examination Scheme :

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|----------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-----------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Applied Mathematics | 3 | -- | 1 | 1, 3 Hrs., 80 Mks. | 20 | 80 | -- | -- | -- | 100 | B* | 128906 | 404 |

Rationale:

This subject intends to teach student basic facts, concepts, principle and procedure of Mathematics as a tool analyse Engineering problems and as such down foundation for the understanding of engineering and core technology subject.

Objective:

1. Understand basic facts of mathematics in the field of analysis – algebra, trigonometry, co-ordinate geometry, graph, functions etc.
2. Understand basic concepts about scientific phenomena in the field of mathematics.
3. Understand the basic techniques in mathematical process: solving algebraic equations, synthesis and analysis of trigonometric equations, graphical solutions, and problems on functions.
4. Understand importance of above knowledge in the context of core technology and technology area.

Theory Contents:**1. Co-ordinate Geometry****(Periods-12 hrs, Mks-20)**

- 1.3. Point a Distance
 - 1.3.1. Distance formula, section formula
 - 1.3.2. Mid-point and centroid of triangle
 - 1.3.3. Condition of collinearity
 - 1.3.4. Area of triangle and quadrilateral
- 1.4. Straight line
 - 1.4.1. Slope and intercept of line
 - 1.4.2. Equation of straight line
 - 1.4.3. Angle between two straight lines
 - 1.4.4. Perpendicular distance
- 1.5. Circle
 - 1.5.1. Equation of circle
 - 1.5.2. In standard form
 - 1.5.3. Centre radius form
 - 1.5.4. Diameter form
 - 1.5.5. Two intersects form

2. Determinants and Matrices**(Periods-12 hrs, Mks-20)**

- 2.1. Expansion of determinants
- 2.2. Cramer's rule for 2 and 3 unknowns
- 2.3. Algebra of matrices- equality, addition, subtraction, multiplication
- 2.4. Adjoint and transpose of matrix
- 2.5. Inverse of matrix
- 2.6. Solution of simultaneous equation using matrix method

3. Integration**(Periods-14 hrs, Mks-20)**

- 3.1. Basic formulas
- 3.2. Using LIATE rule
- 3.3. Partial fraction, trigonometric, substitution method

- 3.4. Finding last term and solve
- 3.5. Definite Integrals
- 3.6. Properties of definite integrals
- 3.7. Application of definite integration- Area under the curve

4. **Complex Number**

(Periods-06 hrs, Mks-10)

- 4.1. Definition
- 4.2. Simple rules: addition, subtraction, multiplication, division
- 4.3. De-Moivre's theorem (without proof)
- 4.4. Roots of complex number
- 4.5. Evler's Formula

5. **Vectors**

(Periods-04 hrs, Mks-10)

- 5.1. Definition Algebra of vectors
- 5.2. Vector product
- 5.3. Scalar product
- 5.4. Work done and moment of force
- 5.5. Application of vector

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|---------------------------|---------------------|-----------|-------------|-------------|
| 1. | Co-ordinate Geometry | 12 | 20 | 25 | E |
| 2. | Determinants and Matrices | 12 | 20 | 25 | M |
| 3. | Integration | 14 | 20 | 30 | M |
| 4. | Complex Number | 06 | 10 | 12 | E |
| 5. | Vectors | 04 | 10 | 08 | D |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Co-ordinate Geometry
2. Determinants and Matrices

Section II

3. Integration
4. Complex Number
5. Vectors

Total Theory Hours = 48 hrs.

IMPLEMENTATION STRATEGY (PLANNING)

1. Conducting lectures as per the teaching plan
2. Conducting tutorials by giving more problems to solve.

Reference Books:

- (1) Mathematics for polytechnic students, by S.P. Deshpande.
- (2) Engg. Mathematics-I by G.V. Kumbhojkar

Additional References:

- (1) Engg. Mathematics (1 st year), by Patel Rawal.

Web References:

1. www.mic-mathematics.com
2. www.math.com
3. www.lernerstv.com
4. www.onlinetutorials.com
5. www.archieves.math.utk.edu

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

ELECTRONIC DEVICES AND CIRCUITS – I (128907)

(One Paper –3 Hrs, Theory=80 Marks, T.W. = 25 Marks, Pr. = 50 Marks, Lecture 4/Week, Practical 2/Week, Credit: 6)

SUBJECT DETAILS:

| | |
|--|---------------------|
| Course: Computer Engineering | Semester: II |
| Subject: Electronic Devices & Circuit – I | Code: 128907 |
| Group: C* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|---|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. Or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Electronic Devices & Circuit – I | 4 | 2 | - | 1, 3 Hrs., 80 Mks. | 20 | 80 | 25 | 50 | -- | 175 | C* | 128907 | 426 |

Rationale:

The students of C.S.E. come across many electronics devices in day to day life. This subject provides essential competency in understanding the electronics circuits. This introduces various electronic devices & their applications.

Objectives:

- 1) Identify the different Components & classify them.
- 2) Identity different Devices char, working.
- 3) Appreciate use of different Transistors, amplifier, oscillators.
- 4) Design simple circuits using above comp.

Theory Contents:**1. Semiconductors****(Periods-6 hrs, Mks-08)**

- 1.1. Conductor, Insulator, Semiconductor,
- 1.2. Intrinsic (Si, Ge) and Extrinsic semiconductors (P type, N type),
- 1.3. Doping, Energy level diagram, Energy Band diagram,
- 1.4. Electrons and holes in an intrinsic semiconductor,
- 1.5. Donor and acceptor impurities,
- 1.6. Diffusion, depletion, effect of temperature on intrinsic and extrinsic semiconductors.

2. Semiconductor diode characteristics**(Periods-8hrs, Mks-12)**

- 2.1. Open circuited P.N. junction as a diode,
- 2.2. barrier potential, depletion region,
- 2.3. P-N junction biasing, forward and reverse bias,
- 2.4. Current components in a P.N. diode, V.I. characteristics, knee voltage, reverse breakdown voltage and its temperature dependence,
- 2.5. Diode resistance (static resistance, dynamic resistance), transition capacitance, diffusion capacitance

3. Special purpose diodes**(Periods-8 hrs, Mks-10)**

- 3.1. Zener diode, symbol,
- 3.2. V-I characteristics, Zener voltage, Zener breakdown, avalanche breakdown,
- 3.3. Zener diode as a voltage regulator, Regulation factor, Load and line Regulation,
- 3.4. Schottky diode, Varactor diode, Symbol, operating principle and V.I. characteristics and applications.

4. Rectifiers**(Periods-10hrs, Mks-10)**

- 4.1. Need of Rectification,
- 4.2. Types of rectifiers: Half Wave Rectifier, Full Wave Rectifier (Centre Tap and Bridge) with waveforms,
- 4.3. Comparison of Rectifiers (efficiency, ripple factor, T.U.F. Ratio of rectification, PIV)
- 4.4. **Filters:** L.filter, C.filter, L.C.; C.L.C.; Multiple L.C. and π . filter, their ripple factor with assumptions and voltage regulation.
Comparison of filters
- 4.5. Problem based on above topic.

5. Clipping and clamping circuits**(Periods-4hrs, Mks-08)**

- 5.1. Positive and negative clipper,
- 5.2. Bias clipper using diode at various input signals, applications

6. Bipolar junction Transistor

(Periods-12 hrs, Mks-12)

- 6.1. The junction transistor,
- 6.2. Types of transistor: NPN, PNP junction transistors ,Symbols,
- 6.3. Operating principle, transistors current components,
- 6.4. Transistor configurations Common Emitter (CE) , Common Base (CB) , Common Collector (CC) ,
- 6.5. Input and output characteristics, Graphical analysis of the C.E. configuration, Analysis of Active, cut-off and saturation regions,
- 6.6. Input resistance, output resistance, current gain α & β , and relation between α and β ,
- 6.7. Typical transistor junction voltages, transistor switching times and ratings, transistor as a switch.

7. Transistor biasing and thermal stabilisations

(Periods-8 hrs, Mks-10)

- 7.1. Need of biasing, Faithful amplification, operating point (Q point), DC-load line, effect of temperature on operating point,
- 7.2. Different biasing circuits and their thermal stability, bias compensation techniques

8. Single stage and Multi stage Amplifiers

(Periods-8 hrs, Mks-10)

- 8.1. Transistor as an amplifier, Single stage C.E. amplifier and its frequency response,
- 8.2. Functions of each component of CE Amplifier circuit,
- 8.3. Effect of coupling and emitter bypass capacitors,
- 8.4. C.E. short circuit current gain, gain bandwidth product. Decibel.
- 8.5. Need of Multistage amplifier, types of coupling, direct coupled, R.C. coupled, transformer coupled and their frequency response, effect of cascading on B.W. and gain (A_v).

| Sr. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | #M/E/D | |
|-----|---|---------------------|-----------|-------------|-------------|----------|
| 1. | Semiconductors | 6 | 08 | 9% | E | |
| 2. | Semiconductor diode characteristics | 8 | 12 | 12% | M | |
| 3. | Special purpose diodes | 8 | 10 | 12% | D | |
| 4. | Rectifiers | 10 | 10 | 17% | E | |
| 5. | Clipping and clamping circuits | 4 | 8 | 5% | E | |
| 6. | Bipolar junction Transistor | 12 | 12 | 18% | M | |
| 7. | Transistor biasing and thermal stabilizations | 8 | 10 | 14% | E | |
| 8. | Single and Multistage amplifiers | 8 | 10 | 14% | E | |
| | | Total | 64 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Semiconductors
2. Semiconductor diode characteristics
3. Special purpose diodes
4. Rectifiers

Section II

5. Clipping and clamping
6. Bipolar junction Transistor
7. Transistor biasing and thermal stabilizations
8. Single and Multistage amplifiers

Total Theory Hrs. = 64 hrs

Total Practical Hrs. = 32 hrs.

List of Practicals

1. Measuring different waveforms voltages and frequency using CRO.
2. Introduction to Multimeter, Power Supply and function Generator and their use to measure Voltages, Current and generation of Test Signals.
3. Diode (Ge, Si) characteristics.
4. Zener diode characteristics.
5. To observe H.W.R. /F.W.R. waveforms with/without filter.
6. To observe load and line regulation of zener voltage regulator.
7. I/P and O/P characteristics if C.E. configurations
8. To draw different biasing circuits and compare their performance w.r.t. temperature variations.

9. To draw the frequency response of single stage C.E. amplifier.
10. To draw the frequency response of two stage R.C. coupled amplifier.
11. To draw step response of C.E. Amplifier
12. Diode clipping circuits.
13. Diode clamping circuits.

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Theory topics and practice experiments should be done simultaneously. This will help the students to understand the topics.
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books

1. Integrated electronics by Millman and Halkias
2. Electronic devices and circuits by Millman and Halkias
3. Microelectronics by Jacob Millman
4. Electronics devices and circuits theory by Robert Boylestad.

Additional References:

1. Electronic devices and circuits by Allen Mottershed
2. Basic electronics and linear circuits by Bhargava
3. Electronics-I by R. G. Karandikar.
4. Basic Electronics by V.K.Mehta

Web References:

- www.hep.fsu.edu
- www.falstad.com/circuits
- www.acsu.buualo.edu

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

Programming in C (128908)

(T.W. = 25 Marks, Pr. = 50 Marks, Lecture 3/week, Practical 2/week, Credit: 6)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: II |
| Subject: Programming in C | Code: 128908 |
| Group: C* | |

Teaching and Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L., Pr./Cr. |
|------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|--------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Programming in C | 3 | 2 | 1 | 1, 3 Hrs , 80 Mks. | 20 | 80 | 25 | 50 | -- | 175 | C* | 128908 | 426 |

Rationale:

Concept of programming large programs are probably the most complicated entities ever created by humans because of this complexity, programs are prone to error and software errors can be expensive and even life-threatening object-oriented programming offers a new and powerful way to cope with this complexity. Its goal is clearer, more reliable, more easily maintained programs.

Objective:

The student will be able to:

1. Apply the techniques of simplifying complex programmes.
2. Develop the skill for programming the object oriented concepts using C++ as the Language
4. Debug pitfalls of conventional programming methods considering programming features
5. Expertise in Eliminating Redundant Code
6. Build Secure Program

Theory Contents:

- 1. Introduction to Programming** (Periods-2 hrs, Mks-06)
 - 1.1. Algorithms, Flowchart,
 - 1.2. Programming Languages, Types of Languages Character
- 2. C Fundamentals** (Periods-2 hrs, Mks-08)
 - 2.1. Character Sets, Keywords,
 - 2.2. Identifiers, Constants, Declaration, Storage classes
- 3. Operators & Expressions** (Periods-4 hrs, Mks-10)
 - 3.1. Arithmetic Operators,
 - 3.2. Unary operator,
 - 3.3. Assignment operators,
 - 3.4. Conditional Operator
- 4. Data Input / Output** (Periods-4 hrs, Mks-10)
 - 4.1. Data types: int, char, float, array and string and its basic operations,
 - 4.2. Library I/O Functions
- 5. Control Structure** (Periods-14 hrs, Mks-14)
 - 5.1. Branching statement if, nested if, if-else, switch-case
 - 5.2. Looping constructs for, while, do-while, go to
 - 5.3. Comma operator
- 6. Function** (Periods-8 hrs, Mks-14)
 - 6.1. Defining a function, Accessing a function,
 - 6.2. Argument passing: call by value and call by reference, recursion
- 7. Pointers** (Periods-6 hrs, Mks-10)
 - 7.1. Pointer Declarations, passing pointer to function,
 - 7.2. Dynamic memory allocation, operations on pointers.
 - 7.3. Array of pointers.
- 8. Structure & Union** (Periods-8 hrs, Mks-10)
 - 8.1. Defining a structure, Processing a structure
 - 8.2. User defined types Structure and pointers,
 - 8.3. Passing structure to function,
 - 8.4. self referential Structure

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|-----------------------------|---------------------|-----------|-------------|-------------|
| 1. | Introduction to Programming | 02 | 06 | 04 | E |
| 2. | C Fundamentals | 02 | 08 | 04 | E |
| 3. | Operators & Expressions | 04 | 10 | 08 | D |
| 4. | Data Input / Output | 04 | 10 | 08 | D |
| 5. | Control Structure | 14 | 14 | 32 | M |
| 6. | Function | 08 | 14 | 16 | E |
| 7. | Pointers | 06 | 10 | 12 | D |
| 8. | Structure & Union | 08 | 10 | 16 | M |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential,

E=Essential,

D=Desirable)

Section I

1. Introduction to Programming
2. C Fundamentals
3. Operators & Expressions
4. Data Input / Output
5. Control Structure (if, while, for)

Section II

5. Control Structure (do while only)
6. Function
7. Pointers
8. Structure & Union

Total Theory Hrs. = 48 hrs

Total Practical Hrs. = 32 hrs.

List of Practical

1. To display variable content and static messages using printf() function.
2. To take user inputs using scanf() function
3. To understand the working of arithmetic, relational & logical operators
4. To understand the concept of Increment/ Decrement operator & conditional operators
5. To understand Implicit & Explicit type casting
6. To understand symbolic constant concept
7. To understand the concept of if, if... else, conditional statements
8. To understand the concept of nested if, & else if... ladder conditional statements
9. To understand the concept of switch...case statement
10. To understand the concept of goto statement
11. To understand the concept of Loops i.e. while, for & do
12. To understand the concept of break & continue
13. To understand the concept of one dimensional & two dimensional arrays
14. To understand the concept of string & it's various operations
15. To understand the concept of user defined functions
16. To understand the concept of structures i.e. Arrays within structure & Arrays of structures
17. To understand the concept of pointers

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

1. Programming with C By – Byron Gottfried
2. C Programming By - Bala Guru Swami

Web References:

1. <http://www.tutorialspoint.com/cprogramming/>
2. <http://www.cs.cf.ac.uk/Dave/C/CE.html>
3. <http://www.technoexam.com/>
4. <http://www.thestudymaterial.com/c-c-programs.html>

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

Communication Skill (128909)

(One Paper-03 Hrs, Theory=80 Marks, TW=25Marks, Lectures 3 & 1 Tutorial/ Week, Credit-4)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: II |
| Subject: Communication Skill | Code: 128909 |
| Group: B* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|---------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Communication Skill | 3 | -- | 1 | 1, 3 Hrs., 80 Mks. | 20 | 80 | 25 | -- | -- | 125 | B* | 128909 | 404 |

Rationale:

The communicative competence in English is the pre-requisite for the employment market at national and international level today. However, the utility to communicate effectively does not come easily to many people. No matter how brilliant and invaluable your idea is, it is worthless until shared orally or in written manner. Here arises the need to learn communication skills which will enable the students to enhance their comprehension, writing and oral skills in English.

Objectives:

1. Students will understand the process of communication.
2. Students will learn the various grammatical structures which will enhance their oral and written communication.
3. Student will be proficient in all four language skills (LSRW) Listening, speaking, reading, writing
4. Students will acquire proficiency in spoken English by using language lab.

Theory Contents:

- 1. Basics of Communication** (Periods-4 hrs, Mks-05)
 - 1.1. Nature & Definition of communication skills
 - 1.2. Process/ cycle of communication.
 - 1.3. Characteristics of communication
 - 1.4. Objectives of communication
- 2. Methods of communication** (Periods-4 hrs, Mks-06)
 - 2.1. Verbal & Non-verbal
 - 2.2. Formal and Informal
 - 2.3. Oral & written Communication
 - 2.4. Advantages & disadvantages of Oral and written communication
- 3. Language Grammar** (Periods-6 hrs, Mks-06)
 - 3.1. Tense & its Types
 - 3.2. Parts of speech
 - 3.3. Degree and Its types
 - 3.4. Use of modal Auxiliary
 - 3.5. Basic sentence types
 - 3.6. Clause & its Types
- 4. Vocabulary Building** (Periods-4 hrs, Mks-06)
 - 4.1. Word Formation Processes
Affixation: prefix, Suffix, clipping, Backformation shortforms, Acronyms etc
 - 4.2. Technical jargons
 - 4.3. Nouns ending with -tion, -er, -logy, -ee, -aire, -metry, -ity
 - 4.4. Errors arising out of wrong use of words
- 5. Phonetics & Spoken English** (Periods-6 hrs, Mks-05)

- 5.1. Language Skills: Listening & Speaking
 5.2. English sound system (RP), Vowels & Diphthongs (RP), Consonants (RP)
 5.3. Word Accent, stress a Rhythm and Intonation
- 6. Networks of Communication In Organization** (Periods-4 hrs, Mks-06)
 6.1. Importance communication in Organization
 6.2. Horizontal communication
 6.3. Vertical- downward & upward
 6.4. Grapevine communication
 6.5. Diagonal Communication
- 7. Non- Verbal Methods of Communication** (Periods-4 hrs, Mks-06)
 7.1. Body language and its aspects
 7.2. Paralinguistic, use Colour, sign symbols for communication
 7.3. Non verbal Codes: Haptics, Chronemics, Proxemics, Artifacts etc.
- 8. Barriers to communication** (Periods-4 hrs, Mks-06)
 8.1. Definition of Barrier
 8.2. Types of barriers of communication
 Mechanical, Psychological, Linguistic, socio-cultural & Environmental etc.
 8.3. Elimination / Removal of barrier
- 9. Communication: Media & Technology** (Periods-4 hrs, Mks-06)
 9.1. Advanced Means Coomunication
 9.2. Facsimile (FAX), Internet, E-mail
 9.3. Videoconferencing
 9.4. Netiquettes
- 10. Letter writing** (Periods-8 hrs, Mks-08)
 10.1. Importance of business communication
 10.2. 7 Cs of Good writing
 10.3. Layouts: Block, semi-block, Complete Block
 10.4. Letter of Enquiry, Complaint, Order, letter to editor
- 11. Reading comprehension** (Periods-6 hrs, Mks-06)
 11.1. Reading Unseen passages for comprehension
- 12. Report Writing** (Periods-6 hrs, Mks-08)
 12.1. Definition of Report
 12.2. Formats of reports
 12.3. Types of Report: Accident, Committee, Investigation etc.
- 13. Paragraph writing** (Periods-4 hrs, Mks-06)
 13.1. Development of Paragraph on Given topic

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks % | Weightage | # M / E / D |
|---------|---|---------------------|---------|-----------|-------------|
| 1. | Basics of Communication | 04 | 05 | 6% | E |
| 2. | Methods of communication | 04 | 06 | 8% | E |
| 3. | Language Grammar | 06 | 06 | 8% | E |
| 4. | Vocabulary Building | 04 | 06 | 8% | E |
| 5. | Phonetics & Spoken English | 06 | 05 | 6% | E |
| 6. | Networks of Communication in organization | 04 | 06 | 6% | E |
| 7. | Non- verbal methods of communication | 04 | 06 | 8% | E |
| 8. | Barriers to communication | 04 | 06 | 6% | M |
| 9. | Communication: Media & Technology | 04 | 06 | 8% | M |
| 10. | Letter Writing | 08 | 08 | 10% | M |
| 11. | Reading Comprehension | 06 | 06 | 10% | M |
| 12. | Report Writing | 06 | 08 | 10% | M |
| 13. | Paragraph writing | 04 | 06 | 6% | E |

Total
64
80
100%
#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Basics of Communication
2. Methods of communication
3. Language Grammar
4. Vocabulary Building
5. Phonetics & Spoken English
6. Networks of Communication in organization
7. Non- verbal methods of communication

Section II

8. Barriers to communication
9. Communication: Media & Technology
10. Letter Writing
11. Reading Comprehension
12. Report Writing
13. Paragraph writing

Total Contact Hrs. = 64

List of Assignments

1. Explain the process of communication with the help of diagram. Give some real life examples, functioning in the similar way.
2. Explain the four types of sentences, Give at least two examples of each.
3. List down the relationship between the clause and sentence, give an example of it.
4. Find out any twenty difficult words from the English newspaper and understand their meaning by using dictionary and use it in your own sentences.
5. Listen and repeat the teacher's (or recorded) pronunciation of the given group of words (#)
6. Define syllable, vowel and consonant form RP; give at least five examples of each.
7. Listen the recorded CD's on particular topic, and try to imitate the pronunciation by following intonation and rhythm. (#)
8. Read the given passage and record it in your own voice the check the correctness of pronunciation. (#)
9. Listen and mark the primary, secondary accent for following words. (#)
10. Write the phonetic transcription of given words by using dictionary. (#)
11. List down the points related to non verbal communication to be remembered while walking for an interview, and on the stage.
12. Collect the resume of an eminent personality (like scientist, social worker, industrialist or renown politician) an prepare a speech introducing him / her.
13. Explain the Various formats of letter writing and give an examples of each.
14. Develop the paragraph on the given topic.

Note:

1. Each student has to attempt any ten assignments.
2. # marked are compulsory assignments to be conducted in Language Lab.

Implementation Strategy (Planning)

1. conducting lectures as per teaching plan/ scheme
2. Conducting Tutorials
3. guidelines for explaining the techniques of essay/dialogue writing
4. Grammar items are covered along with the units of lessons
5. Home assignments & class room participation

Reference Books:

1. Human Communication, Burqoon, Michael : London Sage Publications 1994
2. A Communicative Grammar of English, Geoffrey Leech and Jan Svartvik : Essex, Longman Group Ltd., 1975, rpt., E.L.B.S., 2nd edition, 1994.
3. University grammar of English, Randolf Quirk and Sidney Greenbaum : Essex, Longman Group Ltd. 1973., rpt., E.L.B.S., 1993
4. Collins Cobuild English Grammar Ed. John Sinclair, London, William Collins Sons & Co. Ltd., 1990; rpt., Indus, 1991.
5. Technical Writing and Professional Communications, Thomas Huckin and Leslie Olson : New York; McGraw-Hill, 1991
6. Excellence in Business Communication John Thill and Courtland Boves : New York; McGraw-Hill, 1991
7. Business Communication, Lesikar & Petic, Tata Mcgraw Hill Publication New Delhi, 1995

Additional References:

1. Spoken English for India, R.K. Bansal and J.B. Harrison: New Delhi, Orient Longman, 1972
2. Better English Pronunciation, J.D. O'Connor: London; Cambridge University Press, 1967; rpt. E.L.B.S., 1970.
3. Developing Communication skills, Krishna Mohan and Meera Banerji : New Delhi; Macmillan
4. Data Book: Longman Dictionary of Contemporary English: Essex, Longman Group Ltd., 1989 rpt., Orient Longman, 1994.
5. Codes of Practice: IS: 790 – 1887 – Guidelines for Preliminary pages of a Book

Web References:

1. <http://www.directionservice.org/cadre/section4.cfm>
2. <http://www.skillsyouneed.com/general/communication-skills.html>
3. http://www.helpguide.org/mental/effective_communication_skills.htm
4. <http://science.uniserve.edu.au/projects/skills/jantrial/communication/communication.htm>

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

ENGINEERING GRAPHICS (128910)

(T.W. = 50 Marks, Oral =50Mks, Lecture: 2/Week, Pract. : 2/Week, Credit: 4)

SUBJECT DETAILS:

| | |
|--------------------------------------|---------------------|
| Course: Computer Engineering | Semester: II |
| Subject: Engineering Graphics | Code: 128910 |
| Group: C* | |

Teaching and Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|----------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Engineering Graphics | 2 | 2 | -- | -- | -- | -- | 50 | -- | 50 | 100 | C* | 128910 | 224 |

RATIONALE:

Engineering Graphics is the language of engineers. The concepts of Engineering Graphics are used to develop, express the ideas, and conveying the instructions which are used to carry out jobs in the field Engineering. The course illustrates the techniques of graphics in actual practice. This preliminary course aims at building a foundation for the further course in drawing and other allied subjects.

OBJECTIVES:

The student should be able to: -

- 1) Draw different engineering curves and know their applications.
- 2) Draw orthographic projections of different objects.
- 3) Visualize three dimensional objects and draw Isometric Projections.
- 4) Use the techniques and able to interpret the drawing in Engineering field.
- 5) Use computer aided drafting packages.

Theory Contents:**1. Drawing Instruments and their uses****(Periods 06)**

- 1.1. Letters and numbers (single stroke vertical),
- 1.2. Convention of lines and their applications,
- 1.3. Scale (reduced, enlarged & full size) plain scale and diagonal scale, Sheet layout,
- 1.4. Introduction to CAD (Basic draw and modify Command), Geometrical constructions.

2. Engineering curves & Loci of Points.**(Periods 10)**

- 2.1. To draw an ellipse by: Directrix and focus method, Arcs of circle method, Concentric circles method,
- 2.2. To draw a parabola by: Directrix and focus method, Rectangle method,
- 2.3. To draw a hyperbola by: Directrix and focus method, passing through given points with reference to asymptotes, Transverse Axis and focus method,
- 2.4. To draw involutes of circle & polygon (up to hexagon),
- 2.5. To draw a cycloid, epicycloids, hypocycloid,
- 2.6. To draw Helix & spiral,
- 2.7. Loci of Points:Loci of points with given conditions and examples related to simple mechanisms.

3. Orthographic projections**(Periods 06)**

- 3.1. Introduction to Orthographic projections,
- 3.2. Conversion of pictorial view into Orthographic Views (First Angle Projection Method Only),
- 3.3. Dimensioning technique as per SP-46

4. Isometric projection**(Periods 04)**

- 4.1. Isometric scale, Conversion of orthographic views into isometric View/projection (Simple objects)
- 4.2. Projection of Straight Lines and Planes (First Angle Projection Method only).

5. Planes

- 5.1. Lines inclined to one reference plane only and limited to both ends in one quadrant,
- 5.2. Projection of simple planes of circular, square, rectangular, rhombus, pentagonal, and hexagonal, inclined to one reference plane and perpendicular to the other.

Section I

1. Drawing Instruments and their uses
2. Engineering curves & Loci of Points.

Section II

3. Orthographic projections
4. Isometric projection
5. Planes

Total Theory Hours =: 32 hrs.

Total Practical Hours = 32 hrs

List of Practicals

1. Introduction to graphics

Draw Rectangle, Circle, Pentagon, Hexagon, one figure containing circle tangent, arc and dimensioning using CAD with given dimensions

2. Engineering curves & Loci of points

- i) Three different curves are to be draw using any one method.
- ii) Draw locus of point on any one mechanism

3. Orthographic projections

- i. Two objects by first angle projection method
- ii. Redraw the same sheet using CAD

4. Isometric projection

- i. Two objects one by true scale and another by isometric scale (simple objects).
- ii. Redraw the same sheet using CAD

5. Projections of line and planes.

Two problems on Projection of lines and two problems on Projection of Planes.

6. To draw layout of visited Industry, College using CAD

7. To draw orthographic projection of given machine element using CAD

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.
- Term Work Plan for practical giving problems to draw in the class.
- Use of PowerPoint presentation during theory class.

Reference Books

1. N. D. Bhatt- Engineering Drawing- Charotar Publishing House
2. K. Venugopal- Engineering Drawing and Graphics+ AutoCAD- New Age Publication
3. Auto Cad User Guide

Additional References:

P.J. Shah.- Engineering Drawing

Web References:

1. <http://www.me.umn.edu/courses/me2011/handouts/drawing/blanco-tutorial.html>
2. http://www2.ivcc.edu/perez/what_what_is_an_engineering_draw.htm

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC**TEACHING AND EXAMINATION SCHEME**

DISCIPLINE: COMPUTER
ENGINEERING
SEMESTER: III

w.e.f. Batch admitted in June, 2012 (progressively)

| SR. No. | SUBJECT NAME/ SUBJECT CODE | Pre-requisite Subject Code | SCHEME OF INSTRUCTION AND PERIODS PER WEEK | | | | | THEORY PAPER DURATION AND MARKS | | SCHEME OF EXAMINATION | | | | | | Gr | SCHEME L/P/Cr | | |
|---------|---|----------------------------------|--|----|----|----|----|---------------------------------|-----|-----------------------|---------------------|------|-------|-------|-------|----|---------------|--|--|
| | | | L | P | D | T | Cr | Hrs | Mks | SSL @ | PAPER ** | TW @ | PR ** | OR ** | TOTAL | | | | |
| 1 | Electronic Devices & Circuit II (128911) | -- | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 25 | 50 | -- | 175 | C | 325 | | |
| 2 | Fundamentals of Computer Network (120803) | -- | 4 | 2 | -- | -- | 6 | 3 | 80 | 20 | 80 | 25 | -- | 25 | 150 | C* | 426 | | |
| 3 | Power Electronics (120804) | -- | 4 | 2 | -- | -- | 6 | 3 | 80 | 20 | 80 | 25 | -- | 50 | 175 | C | 426 | | |
| 4 | Digital Electronics (128912) | -- | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 25 | 50 | -- | 175 | C* | 325 | | |
| 5 | System Programming (128913) | 128901 | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 25 | 50 | -- | 175 | C* | 325 | | |
| 6 | Data Structure (128914) | 128908 | 4 | 2 | -- | -- | 6 | 3 | 80 | 20 | 80 | 25 | 50 | -- | 175 | C | 426 | | |
| 7 | Programming in C++ (128915) | -- | 3 | 2 | -- | 1 | 6 | 3 | 80 | 20 | 80 | 50 | 50 | -- | 200 | C* | 426 | | |
| | TOTAL | | 24 | 14 | -- | 1 | 39 | No.of papers= 07 | | 140 | 560 | 200 | 250 | 75 | 1225 | | | | |
| | | | TOTAL PERIODS= | | | | | 39 | | 560 | TOTAL MARKS= | | | | | | 1225 | | |

* Compulsory, # Award Winning. ** Assessed by Internal and External Examiners Jointly, @ Assessed by Internal Examiner only
L- Lecture Period, P- Practical Period, D-Drawing Practice Period, T- Tutorial, Cr-Credit, SSL-Sessional, TW- Term Work
PR-Practical, OR-Oral
GR- Group, B-Basic, C-Core, A-Application, M-Management

ELECTRONIC DEVICES AND CIRCUITS – II (128911)

(One Paper –3 Hrs., Theory 80 Mks, Lect. –3/Week, Pr.– 2/Week, Credit = 5, T.W= 25Marks, Pr.=50 Marks.)

SUBJECT DETAILS:

| | |
|---|----------------------|
| Course: Computer Engineering | Semester: III |
| Subject: Electronic Devices & Circuit – II | Code: 128911 |
| Group: C | |

Teaching And Examination Scheme :

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|--|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Electronic Devices & Circuit – II | 3 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 25 | 50 | -- | 175 | C | 128911 | 325 |

Rationale:

This subject deals with some more sophisticated electronic devices & complex types of circuits & their functions. This devices & ckts are used as functional blocks in their complete system like analog & digital control & processing system.

Objectives:

To develop the skill:

1. Identifying the diff. Components & classify them.
2. Identity diff. Devices, char., working.
3. Appreciate use of diff. Transistors, amplifier, and oscillators.
4. Design simple circuits using above comp.

Theory Contents:

- 1. Power Amplifier** (Periods-8 hrs, Mks-12)
 - 1.1. Single ended and double ended amplifiers,
 - 1.2. Class A Transformer coupled power amplifier, conversion efficiency, harmonic distortion o/p power, classification of power amplifier based on wave forms
 - 1.3. Class A, B, AB operation, Class B Push pull and complementary symmetry amplifier, heat sink,
 - 1.4. Problems based on above topics.
- 2. Voltage Tuned Amplifiers** (Periods-04 hrs, Mks-080)
 - 2.1. Need Tuned Amplifier, single tuned and double tuned voltage amplifiers,
 - 2.2. Selectivity and sensitivity,
 - 2.3. Frequency Response, Bandwidth and Gain
- 3. Multivibrators** (Periods-07 hrs, Mks-12)
 - 3.1. Block Diagram, Stable and unstable states,
 - 3.2. Type triggers, Astable, monostable, bistable,
 - 3.3. Schmitt trigger, Applications of Schmitt Trigger,
 - 3.4. Monostable, astable and Bistable MVs.
- 4. Uni Junction Transistor** (Periods-05 hrs, Mks-08)
 - 4.1. Construction, equivalent Circuit, V.I characteristics,
 - 4.2. Applications of UJT as relaxation oscillator, Frequency stability,
 - 4.3. Problems based on above topics.
- 5. Thyristors.** (Periods-08 hrs, Mks-15)
 - 5.1. Construction, Working and V.I characteristics. and applications of SCR, DIAC, TRIAC,
 - 5.2. Two transistor analogy of SCR,
 - 5.3. Half and Full wave Rectifiers using SCR
 - 5.4. Problems based on SCR.
- 6. Field Effect Transistor** (Periods-10 hrs, Mks-15)
 - 6.1. Construction, working , Transfer and drain characteristics of JFET, effect of temp, JFET parameters, configurations,
 - 6.2. FET biasing, common source and common drain amplifiers,
 - 6.3. FET applications as Voltage Variable Resistor(VVR).
 - 6.4. Construction, working , Transfer and drain characteristics. Of D-MOSFET and E-MOSFET.
- 7. Photoelectric Devices** (Periods-6 hrs, Mks-10)
 - 7.1. Photoelectric effects, construction and char. of Photodiode, Phototransistor, Phototube, Multiplier Phototube, LED, LCD, Optocoupler, Photovoltaic cell and their applications,
 - 7.2. Burglar alarm.

| Sr. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | #M/E/D |
|-----|--------------------------|---------------------|-------|-------------|--------|
| 1 | Power Amplifier | 8 | 12 | 17% | E |
| 2 | Voltage Tuned Amplifiers | 4 | 08 | 8% | D |

| | | | | | |
|---|--|----|----|------|---|
| 3 | Multivibrators | 7 | 12 | 15% | E |
| 4 | Uni Junction Transistor | 5 | 08 | 11% | D |
| 5 | Thyristors. | 8 | 15 | 17% | M |
| 6 | Field Effect Transistor | 10 | 15 | 21% | M |
| 7 | Photoelectric Devices | 6 | 10 | 12% | E |
| | | 48 | 80 | 100% | # |
| | (# M=Most Essential, E=Essential, D=Desirable) | | | | |

Section I

1. Power Amplifier
2. Voltage Tuned Amplifiers
3. Multivibrators
4. Uni Junction Transistor

Section II

5. Thyristors.
6. FET
7. Photoelectric Devices

Total Theory Hrs = 48 hrs.

Total Practical Hrs = 32 hrs.

List of Experiments:

1. V.I characteristics of UJT.
2. UJT Relaxation Oscillator.
3. SCR characteristics.
4. Diac characteristics
5. Light dimmer circuit using TRIAC and Diac
6. JFET Characteristics
7. Frequency response of FET amplifier
8. Freq. Response of tuned voltage amplifier.
9. Observe the output wave forms of Astable Multivibrator.
10. VCO (symmetrical Astable Multivibrator..)
11. Bistable Multivibrator
12. Schmitt Trigger.

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Theory topics and practice experiments should be done simultaneously. This will help the students to understand the topics.
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

1. Integrated Elex. by Millman and Halkias
2. Microelectronics by Millman
3. Electronic Devices and Circuits by Robert Boylestad
4. Electronic Devices and Circuits by Allen Mottershed
5. Pulse, digital and switching waveforms by Millman & Taub

Additional References:

1. Thyristors and their Applications by Ramamurthy
2. Thyristorised power controllers by Dubey & Doradla
3. SCR GEC manual
4. Basic Elex. and linear ckts. By Bhargava.

Web Reference:

- www.hep.fsu.edu
- www.falstad.com/circuits
- www.acsu.buualo.edu

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

FUNDAMENTALS OF COMPUTER NETWORK (120803)

(T.W.= 25 Marks, Oral= 25 Marks, Lecture 4/week, Practical 2/week , Credit : 6)

SUBJECT DETAILS:

| | |
|--|----------------------|
| Course: Computer Engineering | Semester: III |
| Subject: Fundamentals of Computer Network | Code: 120803 |
| Group: C* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|---|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-----------|------|-------|-----------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Practical | Oral | Total | | | |
| Fundamentals of Computer Network | 4 | 2 | -- | 1, 3 Hrs, 80 Mks | 20 | 80 | 25 | -- | 25 | 150 | C* | 120803 | 426 |

Rationale:

The day- to-day business transaction in banks, railways reservation, industrial sale, purchase, industrial automation / process and educational environments are all dependent on computers that are connected on networks. This subject will enable to learn the basic concepts of digital communication, computer network and its applications, topologies, communication media, protocols used and OSI reference model

Objective:

The student will be able to:

1. Learn Network Architecture and physical media used to connect computers in network
2. Understand the basic component used in network and different types of networks.
3. Familiarize with OSI model

Theory Contents:**Chapter 1. Introduction****(6 hrs- 10 marks)**

- 1.1. Uses of Computer Networks
- 1.2. Network Hardware
- 1.3. Network Software
- 1.4. Reference Models
- 1.5. Example Networks

Chapter 2. The Physical Layer**(10 hrs- 15 marks)**

- 2.1. The Theoretical Basis for Data Communication
- 2.2. Guided Transmission Media
- 2.3. Wireless Transmission
- 2.5. The Public Switched Telephone Network
- 2.6. The Mobile Telephone System

Chapter 3. The Data Link Layer**(12 hrs-15 marks)**

- 3.1. Data Link Layer Design Issues
- 3.2. Error Detection and Correction
- 3.3. Elementary Data Link Protocols
- 3.4. Sliding Window Protocols
- 3.5. Protocol Verification
- 3.6. Example Data Link Protocols

Chapter 4. The Medium Access Control Sub layer**(10 hrs- 10 marks)**

- 4.1. The Channel Allocation Problem
- 4.2. Multiple Access Protocols
- 4.3. Ethernet
- 4.4. Wireless LANs
- 4.5. Broadband Wireless
- 4.6. Bluetooth

Chapter 5. The Network Layer**(10 hrs-10 marks)**

- 5.1. Network Layer Design Issues
- 5.2. Routing Algorithms
- 5.3. Congestion Control Algorithms
- 5.4. Quality of Service
- 5.5. Internetworking
- 5.6. The Network Layer in the Internet

Chapter 6. The Transport Layer**(08 hrs-10 marks)**

- 6.1. The Transport Service
- 6.2. Elements of Transport Protocols
- 6.3. A Simple Transport Protocol
- 6.4. The Internet Transport Protocols: UDP
- 6.5. The Internet Transport Protocols: TCP

Chapter 7. The Application Layer**(8 hrs-10 marks)**

- 7.1. DNS—The Domain Name System
- 7.2. Electronic Mail
- 7.3. The World Wide Web
- 7.4. Multimedia

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|-------------------------------------|---------------------|-----------|-------------|-------------|
| 1. | Introduction | 06 | 10 | 14 | D |
| 2. | The Physical Layer | 10 | 15 | 16 | E |
| 3. | The Data Link Layer | 12 | 15 | 20 | M |
| 4. | The Medium Access Control Sub layer | 10 | 10 | 15 | E |
| 5. | The Network Layer | 10 | 10 | 15 | M |
| 6. | The Transport Layer | 08 | 10 | 12 | M |
| 7. | The Application Layer | 08 | 10 | 08 | D |
| Total | | 64 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction
2. The Physical Layer
3. The Data Link Layer

Section II

4. The Medium Access Control Sub layer
5. The Network Layer
6. The Transport Layer
7. The Application Layer

Total Theory Hrs. = 64 hrs**Total Practical Hrs. = 32 hrs.****List of Practical**

1. To study the basics of computer networking.
2. To demonstrate wired transmission media CAT 6 and connectors RJ45 etc
3. To create network user account, mention accessibility, sharing & protection of data.
4. Implement any one error detection & correction method.
5. To understand the working of the sliding window protocols.
6. To demonstrate network directing devices like switches, hub.
7. To Design a network according to given case – study.
8. To Understand the working of various routing algorithms using applets.
9. To Share any output device to the existing network.
10. To demonstrate a LAN card and its types.
11. To understand the addressing schemes of IPV4 & IPV6.
12. To perform various networking commands like ping, ipconfig, netstat etc..

IMPLEMENTATION STRATEGY (PLANNING) :

In depth study and understanding of the subject will be implemented by adoption of the following strategy :

1. Theory Teaching Plan
2. Term Work Plan for practical.
3. Conducting lectures as per the teaching plan.

Reference Books:

1. Computer networks by Andrew Tanenbaum
2. Data communication by Becrouz Forouzan

Web References

1. http://nsgn.net/osi_reference_model/the_osi_reference_model.htm
2. <http://computernetworkingnotes.com/osi-layer-modals/osi-model.html>
3. <http://www.howtheosimodelworks.com>
4. <https://ciscoacad.net>

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

POWER ELECTRONICS (120804)

(One paper: 3hrs, Theory: 80 Marks, Lec : 4/week, Prac: 2/week,T.W. :25 Marks., Oral :50 Marks, Credit :6)

SUBJECT DETAILS:

| | |
|-------------------------------------|----------------------|
| Course: Computer Engineering | Semester: III |
| Subject: Power Electronics | Code: 120804 |
| Group: C | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|-------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Power Electronics | 4 | 2 | -- | 1, 3 Hrs, 80 Mks | 20 | 80 | 25 | -- | 50 | 175 | C | 120804 | 426 |

Rationale :

This subject is classified under Technology group & enable the students to learn facts, concepts, principles & procedures of Power electronics circuits so that students can understand the principles & analyse the problems encountered in technology subject.

Objectives:

The students will be able:

1. to know the different types of motors
2. to learn about Switch gears in motors and D.C. Choppers

Theory Contents :**1. D.C. Drive****(Periods-12hrs. Mks-18)**

- 1.1. D.C. motor characteristics
- 1.2. Methods of speed control
- 1.3. Electrical braking
- 1.4. 4 – quadrant operation of drives.
- 1.5. Closed loop control scheme for following:
- 1.6. Constant torque drive with tachogenerator feedback
- 1.7. Constant torque drive with armature voltage feedback
- 1.8. Constant power derive
- 1.9. Constant torque dual converter drive. Microprocessor drives system.

2. Induction Motor Drives**(Periods-24hrs. Mks-22)**

- 2.1. Induction motor characteristics
- 2.2. Methods of speed control
- 2.3. Closed loop control scheme for following:
- 2.4. V-F Control
- 2.5. Constant Torque
- 2.6. Constant Power
- 2.7. Constant slip control
- 2.8. Slip Power Control
- 2.9. Sub synchronous, Super synchronous control,
- 2.10. Important, features of A.C. drive based on vector control technology
- 2.11. Programming features of modern drives
- 2.12. Interfacing and standard schematic diagram.

3. Switchgear used in drive circuits**(Periods- 4hrs. Mks-10)**

- 3.1. Protection of semiconductor components and motors.

4. D.C. Choppers**(Periods-08hrs. Mks-10)**

- 4.1. Series turn off chopper, Parallel capacitor turn off chopper
- 4.2. Joans chopper, Trigg. Circuits for choppers.

5. Resistance welding**(Periods-16hrs. Mks-20)**

- 5.1. Ignitron
- 5.2. Ignitron ratings,
- 5.3. Percent duty
- 5.4. Load calculations
- 5.5. Ignitron and SCR line contactors
- 5.6. Follow up circuits

- 5.7. Timing and heat control
- 5.8. Synchronous weld control
- 5.9. Use of sequential timer
- 5.10. Energy storage system.

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|-----------------------------------|---------------------|-----------|-------------|-------------|
| 1. | D.C. Drive | 12 | 18 | 20 | E |
| 2. | Induction Motor Drives | 24 | 22 | 30 | M |
| 3. | Switchgear used in drive circuits | 04 | 10 | 04 | D |
| 4. | D.C. Choppers | 08 | 10 | 20 | E |
| 5. | Resistance welding | 16 | 20 | 26 | M |
| Total | | 64 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. D.C. Drive
2. Induction Motor Drives

Section II

3. Switchgear used in drive circuits
4. D.C. Choppers
5. Resistance welding

Total Theory Hours = 64 hrs.

Total Practical Hours = 32 hrs.

List of Practicals :

1. Sequential timer using UJT and SCR
2. Open loop control of a small DC motor using SCR
3. Open loop control of a Universal motor using SCR
4. Study of Trigger Circuits of high power SCR.
5. Closed loop control of DC motor – I
6. Closed loop control of DC motor – II
7. V-F Control of Induction Motor
8. Joan Chopper

IMPLEMENTATION STRATEGY (PLANNING):

In depth study and understanding of the subject will be implemented by adoption of the following strategy :

1. Theory Teaching Plan
2. Term Work Plan for practical.
3. Conducting lectures as per the teaching plan.

Reference Books:

1. power Electronics third Edition) by Cyril W. Lander; TMH publications
2. Electric Drives concepts & Applications by Vedom subrahmanyam
3. Power Engineering Using Thyristors Vol. I Techniques of Thirstier power control Mullard

Additional References:.

1. Electronics in Industry by Chutte & Chutte
2. Power Electronics and Control by S.K. Datta
3. Modern Industrial Electronics by Schuler & McNamee
4. Electrical Machine fundamentals by S. Chapman.

Web References:

1. www.nptel.iitm.ac.in
2. www.circuitstoday.com
3. www.electronics-tutorials.ws
4. www.members.shaw.ca/iegg/i_pel_tut.html
5. www.3442pe.webs.com/tutorials/pdf

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

DIGITAL ELECTRONICS (128912)

(One Paper- 3 Hrs, Theory Marks: 80, Lect. = 3 hrs/Week, Pract=2/Week, Credit: 5, Pract. Marks: 50, TW=25marks)

SUBJECT DETAILS:

| | |
|-------------------------------------|----------------------|
| Course: Computer Engineering | Semester: III |
| Subject: Digital Electronics | Code: 128912 |
| Group: C* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|----------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-----------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Digital Electronics | 3 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 25 | 50 | -- | 175 | C* | 128912 | 325 |

Rationale:

This subject will help the students to learn facts, Concepts, principals and procedures of digital electronics. These techniques can be used for designing sequential and combinational circuits which forms the basis of any electronic device.

Objectives

The course is designed in such a manner that students will be knowing the basic Boolean algebra along with implementation of the function using logic gates.

The course covers advanced logic families in & grater depth.

The course gives a detail introduction to sequential & combinational circuits, which form a basic for hardware subjects.

Theory Contents:**1. Number systems and Code****(Period-8 Hrs,Mks-06)**

- 1.1. Introduction to number systems,
- 1.2. Binary No. Systems, binary arithmetic (addition, subtraction, multiplication, division)
- 1.3. Octal No. System, Hexadecimal System, 1's complement & 2's complement method of subtraction signed number
- 1.4. Codes: Excess – 3 and grey code. Alphanumeric Codes: Extended BCD Interchange code (EBC-DIC), ASCII code, 12 bit Hollerith Code, Error Detection Codes: Parity, 7 – bit hamming code.

2. Combinational Logic Design**(Period-7 Hrs,Mks-12)**

- 2.1. Boolean Algebra – Concept of AND OR. NOT operators. Evaluation of logic expression,
- 2.2. Basic laws of simplification Demorgan's theorems.
- 2.3. Mean terms & max term representatives of logical functions K-map representations of logical functions and minimisation using K-map.
- 2.4. Don't care conditions, Examples, Binary half & full adder, subtractor, BCD to 7 segment decoder,
- 2.5. Binary to Grey & Grey to Binary code converter.

3. Logic Families**(Period-6 Hrs,Mks-12)**

- 3.1. TTL, ECL, ITL MOS, CMOS, etc.,
- 3.2. Review or logic analysis of basic circuits in these families, open collector and tri state logic, Input & O/P parameters.
- 3.3. Noise margin, Fan-out and Fan-in, speed, power deviation

4. MSI Circuits**(Period-7 Hrs,Mks-10)**

- 4.1. Multiplexers and their use in combinational logic design, cascading of demultiplexers,
- 4.2. Introduction to general purpose 74 series Multiplexers IC's Demultiplexers or Decoders and their use in combinational logic design, cascading of demultiplexers,
- 4.3. Binary and BCD address digital comparators. BCD to seven segment decoder/drives. Study of ALU 74181.

5. Flip-Flops**(Period-6 Hrs,Mks-12)**

- 5.1. A 1-bit memory cell, clocked SR, JK, MSJK,
- 5.2. D Type Flip Flop, T type Flip Flop. Applications of Flip Flop-counter, registers, memory.

6. Sequential Logic Design**(Period-5 Hrs,Mks-12)**

- 6.1. Introduction to Registers Shift registers, universal registers,
- 6.2. Application to registers from various shift operation,
- 6.3. Ring counter, Johnson counter.

7. Study of Timer (555)**(Period-4 Hrs,Mks-08)**

- 7.1. Study of timer(555) and it's applications,
- 7.2. Schmitt trigger and various modes

8. Semiconductor Memories**(Period-5Hrs,Mks-08)**

- 8.1. Introduction, Memory organisation and operation,
- 8.2. Introduction to different types of memories as ROM, EPROM, RAM (static & dynamic)

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D | |
|---------|----------------------------|---------------------|-----------|-------------|-------------|----------|
| 1. | Number systems and Code | 08 | 06 | 15 | E | |
| 2. | Combinational Logic Design | 07 | 12 | 13 | M | |
| 3. | Logic Families | 06 | 12 | 13 | M | |
| 4. | MSI Circuits | 07 | 10 | 15 | M | |
| 5. | Flip-Flops | 06 | 12 | 15 | M | |
| 6. | Sequential Logic Design | 05 | 12 | 13 | D | |
| 7. | Study of Timer (555) | 04 | 08 | 08 | E | |
| 8. | Semiconductor Memories | 05 | 08 | 08 | D | |
| | | Total | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Number systems and Code
2. Combinational Logic Design
3. Logic Families
4. MSI Circuits

Section II

5. Flip-Flops
6. Sequential Logic Design
7. Study of Timer (555)
8. Semiconductor Memories

Total Theory Hours: 48 Hrs.**Total Practicals Hours: 32hrs****List of practicals**

1. Study of logic gates & verification of Demorgan's Theorems.
2. Demultiplexers Decoders, multiplexer (digital)
3. Study of Astable monostable bistable Multivibrators using logic gates.
4. SR,JK, T & D flip flop in logic gates
5. Ripple counter using JK flip flops.
6. Decade counter 7490
7. Synchronous counter using JK flip flops
8. Shift register using D flip flops
9. Monoshot IC's like 74121, 74123, 74221
10. Presentable shift right, shift left registers
11. Counter with multiplexed display example 740926, 925,927
12. Up down counter
13. Mod N Counter using JK flip flop
14. Full adder – subtractors using IC 7483
15. Study of BCD adder
16. Study of BCD to 7 segment decoder, BCD to decimal
17. Undirection buffer IC 74LS244, Bdirectional 74LS245 buffers.
18. Buffer latches – 74LS373, 74LS374, 8212
19. Decimal to BCD encoder
20. Analog Demultiplexer and Decoders
21. Analog to digital converter (any one type)
22. Digital to analog converter (any one type)
23. 7 to DPM.
24. Study of 8116 RAM.

IMPLEMENTATION STRATEGY (PLANNING):

In depth study and understanding of the subject will be implemented by adoption of the following strategy :

1. Theory Teaching Plan
2. Term Work Plan for practical giving problems to draw in the class.
3. Home assignment to practice at home

Reference books:

1. Digital Principles – Malvino & Leach
2. Digital computer fundamental – T.C. Bartee
3. Digital electronics – R.P. Jain

Additional References:

1. TTI CMOS data handbook,
2. Reference manual for application circuit.

Web References:

1. www.howstuffworks.com
2. www.asic-world.com/digital/tutorial.html
3. www.technologystudent.com/elec1/dig1.htm

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

SYSTEM PROGRAMMING (128913)

(One Paper - 3 Hrs. Theory: 80 Marks, Lect: 3/Week, Prac: 2/Week, Credit: 5, T.W.: 25Marks, Practical: 50 Marks.)

SUBJECT DETAILS:

| | |
|-------------------------------------|----------------------|
| Course: Computer Engineering | Semester: III |
| Subject: System Programming | Code: 128913 |
| Group: C* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|--------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| System Programming | 3 | 2 | -- | 1,3 Hrs., 80 Mks. | 20 | 80 | 25 | 50 | -- | 175 | C* | 128913 | 325 |

Rationale:

This course is intended to give an insight to the software required to utilise the hardware resources. It gives an important migration path to the students from Data Structures to finally using Data Structure for Software and Applications.

Objectives:

This course is intended to give an insight to the software used to utilise the hardware resources. It gives an important migration path to the students from Data Structures to finally using Data Structure for Software and Applications.

Theory Contents:

- 1. Component of a programming system :** (Periods-06hrs.,Mks-10)
 - 1.1. Assemblers, Loaders, macros, Compilers, Formal system,
 - 1.2. Evolution of operation system, operating system functions and facilities
- 2. General machine structure** (Periods-10 hrs. Mks-15)
 - 2.1. For a typical Von-nauman, machine such as IBM 360/370 formats (RX, RR, SS, SI) and types of data and instruction,
 - 2.2. Instructions in Load, Store, Add, Subtract, Compare, Multiply, divide and shift groups for IBM 360/370,
 - 2.3. Machine language and Assembly language programmes, Assembler directives and pseudo-kopns.
- 3. Assembler** (Periods-10hrs. Mks-15)
 - 3.1. General design procedures, The detail design procedures of a two pass Assembler.
 - 3.2. Data Structures:**
 - 3.2.1. Searching methods : Linear search and binary search,
 - 3.2.2. Sorting methods : Interchange sort (bubble sort), shell sort, bucket sort, Radix Exchange sort, Address calculation sort,
 - 3.2.3. Hash or random entry searching
 - 3.2.4. Macro processors: Macro instruction, features of macro facility and implementation with a two pass assembler.
- 4. Loaders** (Periods-08 hrs. Mks-15)
 - 4.1. "Compile-and Go" loaders, General loader scheme, Absolute loaders, Relocating loaders, Design of an absolute loaders.
 - 4.2. Other loader scheme: Binder linkage editor overlay structure, Dynamic loading, Dynamic linking.
- 5. Higher level Language** (Periods-06 hrs. Mks-10)
 - 5.1. Importance of HLL, Features of HLL,
 - 5.2. Extensive data types and instructions, storage location,
 - 5.3. Accessing flexibility, Functional modularity and asynchronous operation.
- 6. Compilers** (Periods-08 hrs. Mks-15)
 - 6.1. General model of a compiler phases of a compiler, Lexical phase, syntax phase Interpretation phase optimisation,
 - 6.2. Storage assignment and Code generation assembly phase.

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|-------------------------------------|---------------------|-----------|-------------|-------------|
| 1. | Component of a programming system : | 06 | 10 | 10 | E |
| 2. | General machine structure | 10 | 15 | 20 | M |
| 3. | Assembler | 10 | 15 | 20 | M |
| 4. | Loaders | 08 | 15 | 20 | E |
| 5. | Higher level Language | 06 | 10 | 10 | D |
| 6. | Compilers | 08 | 15 | 20 | E |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- Component of a programming system
- General machine structure
- Assembler

Section II

- Loaders
- Higher level Language
- Compilers

Total Theory Hrs.= 48 hrs

Total Practical Hrs.= 32 hrs.

List of Practicals :

- Study of general machine structure
- To perform Linear & Binary search
- To perform Bubble Sort
- To perform Bucket Sort
- To perform Shell Sort
- To perform code Conversion
- To perform File Management
- To perform Token generation
- To perform Token Identification
- Study of Pass-I Assembler
- Study of Pass-II Assembler

IMPLEMENTATION STRATEGY (PLANNING)

In depth study and understanding of the subject will be implemented by adoption of the following strategy :

- Conducting lectures as per the teaching plan.
- Help students to determine whether they have completed the necessary academic preparation for the subject

Reference Books :

- System programming by John. J Donovan (McGraw Hill)
- Introduction to system software by D.M. Dhamdhare.

Additional References:

- Principals of Compiler Construction by Aho Ullman.
- Operating System by John J Donovan & Mandrik

Web References:

- www.programmingbooks.com

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

DATA STRUCTURE (128914)

(One Paper - 3 Hrs., Theory Marks: 80, Lect.4/Week, Pract. 2/Week,T/W : 25Marks, Pract. : 50Marks, Credit :6)

SUBJECT DETAILS:

| | |
|-------------------------------------|----------------------|
| Course: Computer Engineering | Semester: III |
| Subject: Data Structure | Code: 128914 |
| Group: C | |

Teaching And Examination Scheme :

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|----------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Data Structure | 4 | 2 | - | 1,3 Hrs., 80 Mks. | 20 | 80 | 25 | 50 | -- | 175 | C | 128914 | 426 |

Rationale:

This subject intends to teach the students how to implement the algorithms. After learning this subject the student can able to solve any critical problem through programming.

Objectives:

- To study data structure and their application
- This subject will help the students to use the data structure in C/ C++ programming
- The data structure is the main construct of any programming language so students should study it.

Theory Contents:

- Introduction to data structure and classification** (Periods-8 hrs. Mks-08)
 - Linear & Non linear
 - Algorithm Basic Concepts
 - Definition of Complexity with example
 - Data types
 - Control structure
 - Recursion
- Linear data structure & their sequential storage** (Periods-10 hrs. Mks-12)
 - Definition ,implementation and notation of Array
 - Basic operation such as addition, deletion etc.
 - Algorithm to implement stacks, Queues
 - Priority Queues
 - LIFO,FIFO arithmetic
- Linear data structure and their linked storage representation:** (Periods- 10hrs. Mks-12)
 - pointer & linked allocation linked lineate lists
 - operation on liner list using singly linked list
 - Doubly linked list, Application of linear linked list
 - Polynomial manipulation, linked dictionary, multiple precision arithmetic, Associative list
 - Insertion, Deletion
 - Searching in single, double link list
- Nonlinear data structure** (Periods- 10hrs. Mks-08)
 - Trees
 - definition and concept, operation on binary trees,
 - storage representation & manipulation of binary trees,
 - Linked storage representation of binary trees.
- Graphs and their representation terminology** (Periods-10 hrs. Mks-15)
 - Linear representation
 - Matrix representation of graphs
 - list structure

- 5.4 other representation of graphs,
- 5.5 Breadth first search & depth first search
- 5.6 Applications, shortest path algorithm

6. Sorting and Searching

(Periods-10 hrs. Mks-15)

- 6.1 Sorting: Other notations & concept,
- 6.2 Selection sort, Merge sorting tree sort partition – exchange sort, radix sort.
- 6.3 Address calculation sort. Searching : Sequential searching Binary searching,
- 6.4 Search trees, High balance trees, weight balanced trees, trees structure.
- 6.5 Efficiency and Algorithm
- 6.6 Complexity and Big 'O' notations for each sorting algorithm
- 6.7 Hash search

7. Files Structure & Introduction to data base system

(Periods-06 hrs. Mks-10)

- 7.1 Definition and concept record organization,
- 7.2 sequential files structure of sequential files,
- 7.3 Processing sequential files,
- 7.4 General concept, Hierarchical network, Relational approaches

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | #M/E/D |
|---------|---|---------------------|-------|-------------|--------|
| 1. | Introduction to data structure and classification | 08 | 08 | 8 | D |
| 2. | Linear data structure & their sequential storage | 10 | 12 | 18 | D |
| 3. | Linear data structure and their linked storage representation | 10 | 12 | 18 | M |
| 4. | Nonlinear data structure | 10 | 08 | 16 | M |
| 5. | Graphs and their representation terminology | 10 | 15 | 16 | M |
| 6. | Sorting and Searching | 10 | 15 | 16 | E |
| 7. | Files Structure & Introduction to data base system | 06 | 10 | 8 | E |

Total

64

80

100%

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction to data structure and classification
2. Linear data structure and sequential storage representation
3. Linear data structure and their linked storage representation
4. Nonlinear data structure

Section II

5. Graphs and their representation
6. Sorting and Searching
7. Files Structure

Total Theory Hours: 64 Hrs.

Total Practical Hours: 32 Hrs.

List of Practical:

1. A program for inserting an element into an array.
2. A program for deleting an element from an array.
3. A program for pushing an element into an array.
4. A program for popping an element in an array.
5. A program for inserting an element into queue.
6. A program for deleting an element from queue.
7. A program for converting an infix expression to postfix.
8. A program for traversing a linked list.
9. A program for inserting an element into the beginning of list.
10. A program for binary search.
11. A program for selection sort.
12. A program for quick sort.

Implementation Strategy (Planning) :

- Conducting the lectures as per the teaching plan..
- Planning the Term work by assessing the practical performed by the students in the laboratory.
- Assignment to practice at home.
- Conducting the periodical test.
- Use of Powerpoint presentations during theory class.

- Assessing the students in the class with their understanding ability to improve their performance

Reference Books:

1. An Introduction to data structure with application By – Trembly & Sorenson
2. Fundamentals of data structure By – Horowitz & Sahani
3. Data Structure by Lip Schutz

Additional References: Pascal + Data Structure by Dele N. Lilly

Web Reference:

1. www.csbd.edu.in/econtent/datastructures
2. www.nptel.iitm.ac.in/courses.php
3. www.gatesit.org/gitdownloads/c&ds.pdf
4. www.opendatastructure.org/ods-cpp.pdf

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

PROGRAMMING IN C++ (128915)

(One Paper -3Hrs., Theory:80 Mks , Practical : 50 Mks , T.W. : 50M, Lecture : 3/Week, Practical : 2/Week, Credit :6)

SUBJECT DETAILS:

| | |
|-------------------------------------|----------------------|
| Course: Computer Engineering | Semester: III |
| Subject: Programming in C++ | Code: 128915 |
| Group: C* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|--------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Programming in C++ | 3 | 2 | 1 | 1,3 Hrs., 80 Mks. | 20 | 80 | 50 | 50 | -- | 200 | C* | 128915 | 426 |

Rationale:

This subject intends to teach the student the basic concepts of object-oriented programming (OOP). Large programs are probably the most complicated entities ever created by humans because of this complexity, programs are prone to error and software errors can be expensive and even life-threatening object-oriented programming offers a new and powerful way to cope with this complexity. Its goal is clearer, more reliable, more easily maintained programs. This subject will act as backbone all other subjects that are based on Object Oriented concept.

Objectives:

The Student will be able to:

- Learn the concepts of object oriented technology
- Develop the skill for Programming the object oriented concepts using C++ as the language
- Debug pitfalls of conventional programming methods considering programming features.
- Expertise in Eliminating Redundant Code
- Build Secure Programs
- Apply the techniques of simplifying complex programmes.

Theory Contents:

- Principles of Object Oriented Programming** (Periods-4hrs. Mks-06)
 - 1.1. Basic concepts of OOP, Comparison of procedural programming and OOP, Advantages of OOP, OOP Languages,
 - 1.2. Definitions, Class, objects, Concepts of inheritance and encapsulation, Operator overloading ,
 - 1.3. Dynamic binding Over view of OOP using C++,
 - 1.4. Basic program construction: main and functions, Program statements, Class declaration , Comments , C++ compilation
- Elements of C++ Language** (Periods-6hrs. Mks-06)
 - 2.1. Tokens and identifiers, Character set and symbols, Keywords, C++ identifiers
 - 2.2. Variables and constants, Integers & characters, Constants and symbolic constants
 - 2.3. Dynamic initialisation of variables, Reference variables, Enumerated variables
 - 2.4. Data Types, Basic data types, Arrays and strings, User defined data types,
 - 2.5. Operators, Arithmetic, relational operators and operator precedence, Logical operators, Manipulators, Type conversions and type cast operators,
 - 2.6. console I/O : cin, cout functions,
 - 2.7. Control statements, The if statement I-else; else...if:
 - 2.8. switch statements, Loops: for and While-do statements, Break, continue, go to
- Functions** (Periods-4 hrs. Mks-10)
 - 3.1. Simple functions, Declaration of functions, Calling functions, Function definition
 - 3.2. Passing arguments and returning values, Passing constants and variables, Passing by value,
 - 3.3. Return statement, Void functions, Passing and returning structure variables, Reference variables and arguments,
 - 3.4. Overloaded functions, Inline functions, Default arguments, Returning by reference
- Classes and objects** (Periods-6 hrs. Mks-12)
 - 4.1. Declaration of classes and objects in C++, Class definition, Declaration of members,

- 4.2. Objects as data types, Objects as function arguments, Array of objects, Returning objects form junction, Structures and classes
5. Constructors and Destructors (Periods-4 hrs. Mks-06)
 5.1. Constructors, Basic constructors, Parameterised constructors, Constructors with default arguments,
 5.2. Dynamic initialisation of objects , Copy constructors, Use of copy constructor, Shallow copying and deep copying, Dynamic constructors, Destructors, Constraints on constructors and destructors
- 6. Operator Overloading** (Periods-6 hrs. Mks-10)
 6.1. Overloading unary operators, operator keyword, Arguments and return values, Laminations of increment operators,
 6.2. Overloading binary operators, Arithmetic operators, Examples: Addition of polar coordinates and concatenation of strings,
 6.3. Multiple overloading, comparison operators, Arithmetic assignment operators,
 6.4. Data and type conversions, Conversion between basic types, Conversion between objects and basic types, Conversion between objects of different classes, Constraints on type conversion
- 7. Derived Classes and Inheritance** (Periods-6 hrs. Mks-10)
 7.1. Derived classes and base class, Defining a derived class, Accessing the base class members, The protected access specifier,
 7.2. Derived class constructors, Overriding the member functions, Class hierarchies, Abstract base class,
 7.3. Constructors and member functions, Inheritance, Public and private inheritance,
 7.4. Access combinations and usage of access specifier,
 7.5. Classes and structures, Multiple inheritance, Member functions in multiple inheritance , Constructors in multiple inheritance, Ambiguity in multiple inheritance
- 8. Pointers** (Periods-4 hrs. Mks-08)
 8.1. Addresses and pointers, The address of operator & Pointer variables,
 8.2. Accessing the variable pointed to, Pointer to void,
 8.3. Pointers and Arrays, Pointers and functions, Passing simple variables, Passing arrays,
 8.4. Pointers and strings, Pointers to string constants, strings as function arguments,
 8.5. Arrays of pointers to strings Memory management using new and delete operators, Pointers to objects, Pointers to pointers
- 9. Virtual Functions** (Periods-4 hrs. Mks-06)
 9.1. Virtual functions and polymorphism, Friend functions, Static functions,
 9.2. Comparison of macros and inline function
 9.3. Generic classes and functions, function templates, Class templates
- 10. Exception Handling** (Periods-4 hrs. Mks-06)
 10.1. Use of exception handling, Try block, Catch handler, Throw statement, Exception specification

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|---|---------------------|-----------|-------------|-------------|
| 1. | Principles of Object Oriented Programming | 04 | 06 | 08 | D |
| 2. | Elements of C++ Language | 06 | 06 | 14 | E |
| 3. | Functions | 04 | 10 | 08 | E |
| 4. | Classes and objects | 06 | 12 | 12 | M |
| 5. | Constructors and Destructors | 04 | 06 | 08 | E |
| 6. | Operator Overloading | 06 | 10 | 12 | E |
| 7. | Derived Classes and Inheritance | 06 | 10 | 14 | M |
| 8. | Pointers | 04 | 08 | 08 | M |
| 9. | Virtual Functions | 04 | 06 | 08 | E |
| 10. | Exception Handling | 04 | 06 | 08 | E |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- Principles of Object Oriented Programming
- Elements of C++ Language
- Functions
- Classes and objects
- Constructors and Destructors

Section II

- Operator Overloading
- Derived Classes and Inheritance
- Pointers
- Virtual Functions
- Exception Handling

Total Theory Hrs. =48 hrs.

Total Practical Hrs. = 32 hrs

List of Practical : -

1. Objects and Classes
2. Functions: Private and Public
3. a) Overloaded functions with different number of arguments and different kind of argument.
b) Inline functions.
4. a) Constructors, Destructors
Passing objects to and returning from functions.
5. Operator Overloading
(a)Unary Operator Overloading
(b)Binary Operator Overloading
- 6.. Inheritance
(a)Derived & Base Class
(b)Protected Class Specifier
(c)Derived Class construction
(d)Public, Private Inheritance
(e)Multiple Inheritance
7. Pointers
Pointers to objects, Memory Management operators.
8. Files in C++, Reading an object from & writing to Disk, File Pointers, Error handling, Command line Arguments.
9. Graphics Functions.
10. Virtual functions, friend function, static functions.

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books :

1. Ronbert Lafore, "Object Oriented Programming in Turbo C++", Galgotia Publication, 1996
2. E.Balaguruswamy, "Object Oriented Programming with C++", Tata McGrahill 1997
3. Stnely B Lippman, "C++ Primer", Addison Wesley, 1995
4. Stastroup, "The Elements of C++ programming", Addison Wesley Publication 1995
5. Programming in c++ by Y.I. Shah & M.H. Thaker, AICTE / ISTE / SDC

Additional References:

Anthony Rudd, "C++ Complete: A Reference and Tutorial to the proposed ANSI Standard" Wiely-QED Publication 1994.

Web References:

1. www.plusplus.com
2. www.learncpp.com

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

TEACHING AND EXAMINATION SCHEME

DISCIPLINE: COMPUTER ENGINEERING

w.e.f. Batch admitted in June, 2012
(progressively)

SEMESTER: IV

| SR. No. | SUBJECT NAME/ SUBJECT CODE | Pre-requisite Subject Code | SCHEME OF INSTRUCTION AND PERIODS PER WEEK | | | | | THEORY PAPER DURATION AND MARKS | | SCHEME OF EXAMINATION | | | | | | Gr | SCHEME L/P/Cr | |
|---------|---|----------------------------------|--|----|----|----|----|---------------------------------|-----|-----------------------|----------|------|-------|-------|-------|------|---------------|--|
| | | | L | P | D | T | Cr | Hrs | Mks | SSL @ | PAPER ** | TW @ | PR ** | OR ** | TOTAL | | | |
| 1 | Fundamentals of Operating System (128916) | 128913 | 4 | 2 | -- | -- | 6 | 3 | 80 | 20 | 80 | 25 | 50 | -- | 175 | C* | 426 | |
| 2 | PC Architecture (120805) | -- | 4 | 2 | -- | -- | 6 | 3 | 80 | 20 | 80 | 25 | -- | 25 | 150 | C* | 426 | |
| 3 | Microprocessor (120806) | 128912 | 3 | 2 | -- | 1 | 6 | 3 | 80 | 20 | 80 | 25 | 50 | -- | 175 | C* | 426 | |
| 4 | Stress Management (128917) | -- | -- | 2 | -- | -- | 2 | -- | -- | -- | -- | -- | -- | -- | -- | M | 022 | |
| 5 | Communication System (120807) | -- | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 25 | -- | 25 | 150 | C | 325 | |
| 6 | Computer Graphics (128918) | 128908 | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 25 | 50 | -- | 175 | A | 325 | |
| 7 | Industrial Tour | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | A | -- | |
| 8 | Database Management System (128919) | -- | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 25 | 50 | -- | 175 | C* | 325 | |
| | TOTAL | | 20 | 14 | -- | 1 | 35 | No.of papers= 06 | | 120 | 480 | 150 | 200 | 50 | 1000 | | | |
| | | | TOTAL PERIODS= | | | | 35 | | 480 | TOTAL MARKS= | | | | | | 1000 | | |

* Compulsory, # Award Winning, ** Assessed by Internal and External Examiners Jointly, @ Assessed by Internal Examiner only

L- Lecture Period, P- Practical Period, D-Drawing Practice Period, T- Tutorial, Cr-Credit, SSL-Sessional, TW- Term Work

PR-Practical, OR-Oral

GR- Group, B-Basic, C-Core, A-Application, M-Management

FUNDAMENTALS OF OPERATING SYSTEMS (128916)

(One paper-3hrs, Theory=80 Marks, T.W. =25Marks, Practical: 50 Marks, Lecture: 4/Week, Pract. : 2/Week, Credit: 6)

SUBJECT DETAILS:

| | |
|--|---------------------|
| Course: Computer Engineering | Semester: IV |
| Subject: Fundamentals of Operating System | Code: 128916 |
| Group: C* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|---|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-----------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Fundamentals of Operating System | 4 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 25 | 50 | -- | 175 | C* | 128916 | 426 |

Rationale:

The subject operation system intends to teach the students design and data structures used to develop an operating system. The students will also learn the various services of an operating system, organized in various layers to perform different functions. These basic concepts can be used for a proper understanding of single user and multi-user operating systems.

Objectives:

Student will be able to learn about

- 1) Memory management
- 2) File management
- 3) Distributed system
- 4) Multiprocessor system
- 5) Process management

Theory contents:**1. Processes****(Periods-10hrs.,Mks-10)**

- 1.1 The process concept, systems programmer's view of processes,
- 1.2 the operating system view of processes, Operating system services for process management,
- 1.3 Scheduling algorithms, Performance evaluation.

2. Interprocess Communication and Synchronization**(Periods-10 hrs.,Mks-12).**

- 2.1 The need for inter process synchronization, mutual exclusion, semaphores, Hardware support for mutual exclusion,
- 2.2 Queuing implementation of semaphores, Classical problems in concurrent programming,
- 2.3 Critical region and conditional critical region, monitors, messages, deadlocks.

3. Memory Management**(Periods-12hrs.,Mks-10)**

- 3.1 Contiguous allocation
Single process monitor, Partitioned memory allocation stack, Partitioned memory allocation – Dynamic, segmentation.
- 3.2 Non-contiguous allocation
Paging, virtual memory (allocation policies and page replacement policies).

4. File Management**(Periods-8 Hrs.,Mks-16) 4.1**

- 4.1 Command language user's view of the file system disk organization, disk controller and driver,
- 4.2 operating system's view of file management,
- 4.3 disk caches and Unix Buffer cache, a generalization of file services.

5. Security and Protection**(Periods-8 Hrs.,Mks-12)**

- 5.1 Security threats and goals penetration attempts, security policies and mechanisms authentication, protection and access control, format models of protection,
- 5.2 cryptography worms and viruses.

6. Multi processor Systems (Periods-8 Hrs.,Mks-10)

- 6.1 Motivation and classification, multi processor interconnection, types of multi processor operating system,
- 6.2 multi processor OS functions and requirements introduction to parallel computing,
- 6.3 multi processor synchronization

7. Distributed Operating Systems: algorithms (Periods-8 Hrs.,Mks-10)

Rationale for distributed systems, computer networks algorithms for distributed processing coing with failures

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|--|---------------------|-----------|-------------|-------------|
| 1. | Processes | 10 | 10 | 14% | M |
| 2. | Interprocess Communication and Synchronization | 10 | 12 | 15% | M |
| 3. | Memory Management | 12 | 10 | 15% | M |
| 4. | File Management | 08 | 16 | 12% | E |
| 5. | Security and Protection | 08 | 12 | 20% | E |
| 6. | Multi processor Systems | 08 | 10 | 16% | E |
| 7. | Distributed Operating Systems: algorithms | 08 | 10 | 08% | E |
| Total | | 64 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- 1. Processes
- 2. Interprocess Communication and Synchronization
- 3. Memory Management
- 4. File Management (First Half Portion)

Section II

- 4. File Management (Remaining Half Portion)
- 5. Security and Protection
- 6. Multi processor Systems
- 7. Distributed Operating Systems: algorithms

Total Theory Hours = 64 hrs

Total Practicals Hours = 32 hrs

List of Practicals:

- 1) Program for implementing System calls for file manipulation
- 2) Program for implementing scheduling algorithm FCFS
- 3) Program for Static partitioning – Memory Management
- 4) Program for Dynamic partitioning – Memory Management
- 5) Program for page replacement strategy.
- 6) Program for shortest job first scheduling- Preemptive
- 8) Program for shortest job first scheduling- Non-Preemptive
- 9) Program for round robin scheduling
- 10) Program for implementation of dead lock avoidance mechanism.
- 11) Program for implementation Producer – Consumer problem
- 12) Program for implementation Priority scheduling.

Implementation Strategy (Planning) :

- Conducting lectures as per the teaching plan
- Planning the Term work by assessing the practical and the programs given to the students to write in the classroom
- Conducting the periodical test.
- Use of Powerpoint presentations during theory class.

Reference Books :

- 1. Operating systems – Concepts and Design” Milan Milenkovic, McGraw-Hill international Edition – computer Science series 1992
- 2. An introduction to operating Systems” Harvey M. Deitel, Addison- Welley Publishing Company 1984
- 3. Operating System Concepts” James L Peterson, Abram Silberschatz, Addison – Wesley Publishing Company 1989,

Additional References:

- 1. Operating system” by Achyut Godbole.

2. Modern Operating Systems” Andrew S. Tanenbaum, Prentice-hall of India private ltd. 1995.

Web Refernces:

1. <http://aduni.org/courses/systems/courseware/operatingsystem.html>
2. www.howstuffworks.com/operating-system1.htm

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

PC ARCHITECTURE (120805)

(One Paper : 3 Hrs., Thory: 80 Mks., Lec:4/week, Prac:2/week, Oral: 25, Credit :6)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: IV |
| Subject: PC Architecture | Code: 120805 |
| Group: C* | |

Teaching And Examination Scheme :

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|-----------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| PC Architecture | 4 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 25 | -- | 25 | 150 | C* | 120805 | 426 |

Rationale:

After studying this subject student will be able to understand the architecture of the computer system.. This will develop the basic insight in the hardware technology, technology design and thereby develop the better knowledge for the maintenance and repairing of the computer system.

Objectives :**The student will be able to**

- Understand the PC Architecture
- Select the appropriate PC Configuration
- PC assemble & Disassemble

Theory Contents :**1. PC Hardware Overview****(Periods-4 hrs. Mks-10)**

- Hardware BIOS_DOS interaction,
- The PC-Family, RISSC and CISC systems, inside the system box,
- SMPS, mother board,
- Memories, virtual memory, DRAM SRAM, concept of extended and expanded memory,
- I/O cards,
- FDD, HDD,
- speakers,
- reset switch, keyboard lock,
- connectors and cables

2. Hardware Components**(Periods-4 hrs. Mks-15)**

- Intel 8088, BIU, EU, 8088 Pinout definitions,
- max-mode, min-mode,
- physical address generation, bus,
- cycle Memory Segmentation

3. IBM PC Architecture**(Periods-26 hrs. Mks-15)**

- System configuration,
- IBM PC motherboard,
- ROM BIOS setting,
- Use of CMOS Battery,
- Overview and features of ISA, PCI-X, PCI-X press, AGP 4x ,PCMCIA,
- Processor BUS PCI versus PCI Express,
- Overview and features of SDRAM, DDR, DDR2, DDR3

4. IBM PC supporting chip/chipset**(Periods-12 hrs. Mks-12)**

- Chipset basic,
- chipset Architecture: North / South Bridge architecture and Hub architecture,

4.3 Architecture of Intel chipset 915 G & 945 G, H61, CGA 6845 based design details,
 4.4 video RAM testing.

5. Storage Devices and Its Interfacing:

(Periods-14 hrs. Mks-20)

- 5.1 Recording Technique : FM, MFM, RLL Perpendicular magnetic Recording,
- 5.2 Hard disk construction and working,
- 5.3 Terms related to Hard Disk : Track, Sector cylinder, cluster, landing zone, MBR, Zone recording, write precompensation, Formatting, Low level formatting, High level formatting, partitioning,
- 5.4 FAT basics, Introduction to file system FAT 16, FAT 32, NTFS, ext2, ext3
- 5.5 Hard disk drive interface : features of parallel AT attachment (PATA), Serial ATA (SATA), ATA devices
- 5.6 jumper selections: Master, slave,
- 5.7 cable select, ATA cables, ATA RAID: RAIDx

6. Power supply and Back Up

(Periods-04 hrs. Mks-08)

- 6.1 Working of SMPS, Different types of SMPS
- 6.2 UPS, Need & working of UPS
- 6.3 Stabilizers, Spike Protectors

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|---------|-------------------------------------|---------------------|-------|-------------|-------------|
| 1. | PC Hardware Overview | 04 | 10 | 12 | M |
| 2. | Hardware Components | 04 | 15 | 14 | E |
| 3. | IBM PC Architecture | 26 | 15 | 24 | E |
| 4. | IBM PC supporting chip/chipset | 12 | 12 | 18 | M |
| 5. | Storage Devices and Its Interfacing | 14 | 20 | 24 | E |
| 6. | Power supply and Back Up | 04 | 08 | 08 | D |
| TOTAL | | 64 | 80 | 100 | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- 1. PC Hardware Overview
- 2. Hardware Components
- 3. IBM PC Architecture

Section II

- 4. IBM PC supporting chip/chipset
- 5. Storage Devices and Its Interfacing
- 6. Power supply and Back Up

Total Theory Hours = 64 hrs.
Total Practical Hours = 32 hrs.

List of Practicals :

- 1. To know the architecture of your PC
- 2. To draw and study different components/ daughter boards on the mother board(s).
- 3. To demonstrate pci, isa, etc buses, cables and connectors
- 4. To set up BIOS and C-mos
- 5. To Identify and write different components of a hard disk
- 6. To know file system and demonstrate high level and low level partitioning
- 7. To know the memory subsystem on system board and upgrading issues
- 8. To know working of SMPS and measure voltage level at SMPS and connectors
- 9. To study working of UPS
- 10. Assembling of PC and Installation of Operating System
- 11. To connect two computers using RS232C
- 12. To know the device driver in windows os and upgrade the drivers

Implementation Strategy (Planning):

- Conducting the lectures as per the teaching plan..
- Planning the Term work by assessing the practical performed by the students in the laboratory.
- Assignment to practice at home.
- Conducting the periodical test.
- Use of Powerpoint presentations during theory class.
- Assessing the students in the class with their understanding ability to improve their performance

Reference Books :

1. IBM PC Trouble Shooting & Repair Guide by Robert C. Branner.
2. Introduction to computers by Peter Norton

Additional References :

IBM PC & Clones by Govind Rajalu

Web Reference:

1. www.intel.com
2. www.pcworld.com
3. <http://www.phy.ornl.gov/csep/ca/node2.html>
4. <http://www.entusiastpc.net/articles/00008/>

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

MICROPROCESSOR (120806)

(One paper: 3hrs, Theory:80 Mks, Lect:3/week, Prac : 2/week, tutorial – 1 week,T/W :25Mks, Prac.exam:50Mks, Credit:6)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: IV |
| Subject: Microprocessor | Code: 120806 |
| Group: C* | |

Teaching And Examination Scheme :

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|----------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Microprocessor | 3 | 2 | 1 | 1, 3 Hrs., 80 Mks. | 20 | 80 | 25 | 50 | -- | 175 | C* | 120806 | 426 |

Rationale:

This subject is designed to give clear idea about working principles of 8085 microprocessor and X86 family.

Objectives:

- To introduce commonly used microprocessor 8085 as the microprocessor forms major component of micro computer system.
- Student will be able to acquire grip over assembly language programming

Theory Contents:**1. Architecture of Intel 8085 microprocessor****(Periods- 5 hrs. Mks-08)**

- features of 8085,
- functional blocks of 8085- arithmetic & logical group,
- register section, interrupt control, serial I/O group, instruction register,
- Instruction decoder, timing & control group.
- Pin diagram of 8085, 8085 instruction fetching & execution operation, data transfer operation of microprocessor.

2. Instruction set of Intel 8085**(Periods- 6 hrs. Mks-12)**

- Instruction formats,
- instruction types – data transfer group, arithmetic operation group,
- logical group, stack control & branching group,
- Introduction to subroutine, nested subroutines,
- Software & hardware delay.

3. Assembly language programming on 8085 microprocessor**(Periods- 10 hrs. Mks-20)**

- Introduction to assembly language programming & programming steps,
- looping concept,
- counting & indexing, stacks & Subroutines, programs based on –
 - Arithmetic Operations
 - Data Manipulation
 - Code Conversions
 - Delay Subroutines
 - Simple I/O operations

4. Addressing modes of 8085 & Timing diagrams**(Periods- 5 hrs. Mks-12)**

- Immediate addressing,
- Register addressing,
- Direct addressing, Indirect addressing,
- Implied addressing or Inherent addressing.
- Introduction to timing diagram
- representation of signals in timing diagram
- introduction to machine cycles
- timing diagram of 8085 instructions

5. Interrupt structure of 8085**(Periods- 8 hrs. Mks-12)**

- 5.1 Interrupt systems,
- 5.2 types of interrupts,
- 5.3 8085 interrupt structure, interrupt logic control instruction,
- 5.4 interrupt priority structure,
- 5.5 Timing characteristics of interrupts
- 5.6 features of 8259, functional blocks, pin diagram
- 5.7 interrupt sequence, 8259 ICW & OCW, Concepts

6. Introduction to 8086 microprocessor**(Periods- 8 hrs. Mks-08)**

- 6.1 Architecture & organization of 8086 microprocessor,
- 6.2 bus interface unit, minimum & maximum modes of operations of 8086,
- 6.3 Pin diagram of 8086.

7. Introduction of X86 family**(Periods- 6 hrs. Mks-08)**

- 7.1 Main features, Real and protected mode,
- 7.2 internal organization and external interface of X286, X386, X486,
- 7.3 Pentium processors.
- 7.4 Introduction to Dual Core, Core2 Duo and I3/I5/I7 processors

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|--|---------------------|-----------|-------------|-------------|
| 1. | Architecture of Intel 8085 microprocessor | 05 | 08 | 18% | M |
| 2. | Instruction set of Intel 8085 | 06 | 12 | 17% | E |
| 3. | Assembly language programming on 8085 microprocessor | 10 | 20 | 15% | E |
| 4. | Addressing modes of 8085, Timing diagrams | 05 | 12 | 15% | E |
| 5. | Interrupt structure of 8085 | 08 | 12 | 15% | M |
| 6. | Introduction to 8086 microprocessor | 08 | 08 | 12% | E |
| 7. | Introduction of X86 family | 06 | 08 | 08% | D |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Architecture of Intel 8085 microprocessor
2. Instruction set of Intel 8085
3. Assembly language programming on 8085 microprocessor

Section II

4. Addressing modes of 8085, Timing diagrams
5. Interrupt structure of 8085
6. Introduction to 8086 microprocessor
7. Introduction of X86 family

Total Theory Hours = 48 hrs**Total Practical Hours = 32 hrs****List of Practicals:**

- I. Execution of assembly language programs on microprocessor kit
 - (a) Sum of N single byte numbers.
 - (b) Sum of N two byte numbers.
 - (c) Multiplication and division of two single byte numbers.
 - (d) Sum and Average of given series of numbers.
 - (e) Scan the given series of numbers for smallest/largest number.
 - (f) Separate the Even and Odd numbers from the given series of numbers and Store them at different memory locations.
 - (g) Sort the given series of numbers in ascending/descending order.
 - (h) Code conversions
 - (i) Block move.
 - (j) Searching a given number from a series of numbers
- II. Simple programs on 8086 microprocessor using Simulator/Toolkit
- III. Study of X86 processors i.e. 80286, 80386, 80486, Pentium, etc.

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

1. Microprocessor Architecture, programming & applications with 8085/8080A by Ramesh S.Gaonkar.
2. Microcomputer systems: the 8086/8088 family : architecture By Yu-cheng Liu, Glenn A. Gibson

Additional References:

1. Data Sheets and application notes by Intel
2. 8085-A Assembly Language programming and applications by Mrs. S.P. Awate.

Web References:

1. <http://yesnarayanan.blogspot.in/2008/12/8085-microprocessor-tutorials.html>
2. <http://webphysics.davidson.edu/faculty/dmb/py310/8085.pdf>
3. <http://www.wiziq.com/tutorial/190965-8085-Microprocessor-Class-notes>
4. <http://gnusim8085.org/>

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

Stress Management (128917)

(Practical – 2 / week, Credit – 2, Total Practical contact Hrs: 32 Hrs)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: IV |
| Subject: Stress Management | Code: 128917 |
| Group: M | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|--------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|-------|----------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Total | | | |
| Stress Management | - | 2 | - | -- | -- | - | -- | -- | -- | M | 128917 | 022 |

Rationale:

This subject is design to provide overview of Yoga, Meditation, Art of Living, Stress Management and Spiritual Power in human Being as support Engineer to achieve Auxiliary skill.

Objectives:

Students will able to

1. Learn knowledge about the basic technique and practice of yoga, including instruction in Breath control, meditation, and physical postures
2. Develop physical competency and mental concentration
3. Gain an intellectual and theoretical understanding of the principles embodied in the Yoga Sutras,
4. Increase efficiency, concentration, inner power and enhance the spiritual power for improving Learning Skill.

Contents:**1. HISTORICAL BACKGROUND AND YOGA****(Period: 10 Hrs.)****(LEARNING**

- i) Yoga in Vedas
- ii) Yoga and its Principles
- iii) Consciousness
- iv) Yoga approach and Scientific view
- v) Pranayama: Breath Control, Breath and Postures, Rhythmic Breathing
- vi) Controlling the Body, Mechanism of Body: Kriyas and its high Therapeutic value.
- vii) Body as understood in its frame work systems and structure:..Asanas – Cultural and Relaxation Asanas -
- viii) Muscles strength, Muscular coordination strength of Immune system
- ix) Relation and Reflection techniques Shavasana – Shakshi Bhavanam.
- x) Bandhas and Mudras.
- xi) Depth of perception and expansion of awareness
- xii) Gross level – Muscular stretches
- xiii) Subtle level – Respiration changes and normalizing breath

2. MEDITATION AND ITS TECHNIQUES: (Period:10 Hrs.)

Meditative postures and kinds of Meditation

Bodily Benefits – Lower Blood Pressure ,lowers the levels of blood lactate, improves the immune system, increases body vitality, controls insomnia and increases overall health of the body

Violence Free Society – Meditation develops happiness, contentment and calmness. When increasing number of people practice meditation, it has a calming effect on the environment. This is a potent way to achieve a violence free society.

Mental Benefits – Emotional stability, anxiety decreases, anger reduces, happiness increases, and intuition develops clarity and peace of mind, induces ability to focus, and reduces tension and fear.

Value Based Society – The effects of meditation include happiness, respect for the environment and others, appreciation of diversity in nature, a strong sense of social values. These qualities an individual level, helps develop a value based social system.

Spiritual Growth – Consciousness evolves, meditation brings harmony in creation, personal transformation, realization of SELF

Trusting, Happy and Content Society – These are the objectives of any society. Meditation empowers a society to achieve these qualities.

3. ART OF LIVING

(Period: 08 Hrs.)

1. Sudarshan Kriya
2. Life Skills
3. Ancient Wisdom
4. Practical knowledge to deal with the daily challenges of life
5. Interactive exercises
6. Dealing with your emotions
7. Improving Communication skills and Relationship

4. STRESS MANAGEMENT FOR STUDENTS

(Period: 04 Hrs.)

Stress management techniques:

1. Time management techniques
2. Organization techniques
3. Create a study environment
4. Memorization techniques
5. Be an Optimist
6. Sleep Well
7. Study Techniques

IMPLEMENTATION STRATEGY AND PRACTICE SKILL

1.The students will be performing practice sessions covering above topics.

2.Live demonstration along with content delivery sessions will be conducted.

3. The lecture room/ Hall separately will be assigned batchwise as per Time Table for Male(Boys) and Female(Girls) as where an applicable depending upon relevant topics.

4.The materials/ Items required example Yoga Matt/ Chatai/corresponding matt / towels / chadar are to be brought by students only for particular topics.

BOOK LIST:-

1. The Yoga Sutra of Patanjali M.R.Yardi, Bhandarkar Oriental Research Institute, Pune
2. Indian Philosophy by Dr. S. Radhakrishanan
3. Introduction to Indian Philosophy by Dutta & Chatterji
4. Outlines of Indian Philosophy by Hiriyanna.

Book for reference

1. The Yoga system of Patanjali, James, Houghton , wood.
2. Yoga a sutras of Patanjali – Sadhana pada with Exposition of Vyasa
3. Light of Yoga (on Yama – Niyama) by B.K.S. Iyenger, Iyenger Institute Pune
4. Hatha Yoga Pradeepika – Yogi Swatmarama
5. Science of Yoga by I.K.Taimini

Web references:

1. <http://www.artofliving.org>
2. <http://www.bkwsu.org>
3. <http://www.theyogainstitute.org>
4. <http://www.managingstress.com>

The above syllabus will be taken concerned expert of the field/ relevant to performance / performing practices, 02 credits are equivalent to (02 hours) practice session. Attendance and performance is mandatory for granting the term and earning the credits as per attendance rule.

COMMUNICATION SYSTEM (120807)

(One paper-3 Hrs, Theory : 80Marks, Lecture : 3/Week, Pract. : 2/Week, T.W. : 25Marks, Oral : 25Marks, Credit : 5)

SUBJECT DETAILS:

| | |
|--------------------------------------|---------------------|
| Course: Computer Engineering | Semester: IV |
| Subject: Communication System | Code: 120807 |
| Group: C | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|-----------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Communication System | 3 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 25 | -- | 25 | 150 | C | 120807 | 325 |

Rationale:

The subject Communication system intends to teach the students transmission and reception of the signals using modulation techniques, Spread Spectrum, Multiplexing schemes, digital Modulation techniques, broad band communication, and antennas.

Objectives

After Studying this student will be able to:

1. Transmission and reception of basic communication system
2. Procedures of wireless, satellite communication system.
3. The modern communication techniques.

Theory Contents:**1. Introduction to Modulation****(Periods-10 hrs. Mks-10)**

- 1.1 Need for Modulation
- 1.2 Modulation methods – Amplitude modulation, Frequency modulation,
- 1.3 Single side band technique,
- 1.4 AM Transmitter, AM detector & Receiver, Definition of selectivity and sensitivity,
- 1.5 Comparative performance of Amplitude Modulation and Frequency Modulation,

2. Pulse Modulation**(Periods-10 hrs. Mks-10)**

- 2.1 Introduction to Pulse Modulation – Pulse Time Modulation, Pulse Width Modulation, Pulse Position Modulation, Pulse Code Modulation,
- 2.2 Differential Pulse Code Modulation,
- 2.3 Delta Modulation, Adaptive Delta Modulation

3. Information Theory and Noise**(Periods-4 hrs. Mks-10)**

- 3.1 Shannon Hartley's Theorem,
- 3.2 Channel capacity, Rate of Information, Entropy, channel efficiency,
- 3.3 Types of Noise and their effect on communication signal
- 3.4 Phase locked loop, its application for Noise reduction

4. Multiplexing Schemes**(Periods-6 hrs. Mks-10)**

- 4.1 Need of Multiplexing,
- 4.2 Time Division Multiplexing (TDM), frequency Division Multiplexing (FDM), definition, block diagram & comparison,
- 4.3 Access technique TDMA, FDMA,
- 4.4 Advantages of TDMA over FDMA

5. Spread Spectrum Modulation**(Periods-06 hrs. Mks-06)**

- 5.1 Introduction, DN sequence,
- 5.2 Model of Spread spectrum Modulation System,
- 5.3 Direct sequence spread Spectrum Signal, Frequency hop spread spectrum,
- 5.4 slow frequency hopping & Fast frequency hopping

6. Digital Modulation Techniques**(Periods-10 hrs. Mks-10)**

- 6.1 definitions & waveforms

6.2 Block diagram of Transmitter and receiver and

6.3 working of

6.3.1 ASK,

6.3.2 QPSK,

6.3.3 QFSK,

6.3.4 QAM,

6.3.5 DPSK,

7. Propagation

(Periods-4 hrs. Mks-08)

7.1 Fundamentals of Electromagnetic Waves,

7.2 Propagation of waves – Ground(surface) wave propagation, sky waves propagation, space wave propagation, space wave propagation.

8. Antennas

(Periods-6 hrs. Mks-08)

8.1. Radiation Mechanism,

8.2. Antenna Gain, Antenna resistance, Bandwidth beam width,

8.3. Directional High frequency Antenna

8.4. Dipole Antenna, Yagi-Uda Antenna, Folded Dipole Antenna

9. Broadband Communication System

(Periods-6 hrs. Mks-08)

9.1. Introduction to Satellite,

9.2. Introduction to Microwave, Cable T.V.,

9.3. Introduction to Fiber-Optic Communication system.

| Sr. No. | Main Topics | No.Of Contact Hrs. | Marks | Weightage % | # M / E / D |
|---------|--------------------------------|--------------------|-------|-------------|-------------|
| 1. | Introduction to Modulation | 06 | 10 | 12 | M |
| 2. | Pulse Modulation | 06 | 10 | 12 | M |
| 3. | Information Theory and Noise | 06 | 10 | 12 | D |
| 4. | Multiplexing Schemes | 06 | 10 | 12 | E |
| 5. | Spread Spectrum Modulation | 06 | 06 | 12 | E |
| 6. | Digital Modulation Techniques | 06 | 10 | 12 | M |
| 7. | Propagation | 04 | 08 | 10 | D |
| 8. | Antennas | 04 | 08 | 9 | D |
| 9. | Broadband Communication System | 04 | 08 | 9 | E |
| Total | | | | | |
| | | 48 | 80 | 100 | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction to Modulation

2. Pulse Modulation

3. Information Theory and Noise

4. Multiplexing Schemes

Section II

5. Spread Spectrum Modulation

6. Digital Modulation Techniques

7. Propagation

8. Antennas

9. Broadband Communication System

Total Theory Hours = 64 hrs

Total Practical hours : 32 Hrs.

List of Practicals :

- To determine modulation index of Amplitude Modulation wave
- To measure Frequency deviation and calculate Modulation Index form Frequency Modulation wave
- To measure frequencies and voltages and observe waveforms at Test point in Super Heterodyne Receiver
- To plot frequency response of Audio Amplifier
- To determine attenuation in given Fiber optic Links
- To measure Amplitude and observe and plot waveforms of Pulse Amplitude Modulation
- To measure Amplitude and observe and plot waveforms of Pulse Width Modulation
- To observe the frequency Shift according to binary data signal for PSK
- To observe the frequency Shift according to binary data signal for FSK
- To plot radiation pattern of Yagi-Uda Antenna
- Study of AM Transmitter

Implementation Strategy (Planning) :

- Conducting lectures as per the teaching plan
- Planning the Term work by assessing the practical and the programs given to the students to write in the classroom

- Conducting the periodical test.
- Use of Powerpoint presentations during theory class.

Reference Books:

1. Electronic Communication Systems by G.Kennedy.
2. Principles of Communication System by Taub and Schilling

Additional References :

1. Electronic Communication by Roddy and Coollen.
2. Communication Systems by B.P. Lathi

Web References:

1. <http://www.csg.ethz.ch/>
2. <http://www.managementstudyguide.com/understanding-communication.htm>

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

COMPUTER GRAPHICS (128918)

(One paper – 3hrs, Theory: 80 Mks, Lecture: 3/Week, Pract. : 2/Week, T/W: 25 Marks, Pract. : 50 Marks, Credit: 5)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: IV |
| Subject: Computer Graphics | Code: 128918 |
| Group: A | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|--------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|----------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Computer Graphics | 3 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 25 | 50 | -- | 175 | A | 128918 | 325 |

Rationale:

This subject intends to teach the students the basic graphics primitives, based on turbo C++ compiler, graphics utilities. The advent of animation industry has brought graphics into focus as never before.

Objective:

- This course is designed to make the students familiar with basic graphics primitives.
- Students can implement these primitives on the screen using turbo C++ compiler.
- Implementation of these primitives will help the students in using the graphic utilities and libraries in their project development work.
- By studying graphics students can solve design problems.

Theory Contents:**1. Introduction****(Periods – 03, Marks – 08)**

- The origins of computer graphics,
- how the interactive graphic display works,
- new display devices,
- General purpose graphics software,
- The user interface,
- the display of solid objects

2. Derivation of basic graphic primitives**(Periods – 06, Marks – 12)**

- Coordinate system sine, Circle, Ellipse, algorithm explanations
- Implementation of the following:

Pixel blotting, line drawing, Circle & Ellipse drawing, Bezier & B-spline curves-representation & properties

3. 2D & 3D transformations**(Periods – 10, Marks – 20)**

- 2D Transformation principles, Concatenation, Matrix representation,
- 3D Transformation: scaling, rotation, translation, rotation about arbitrary axis.
- Sample problems on 2D & 3D with sample coordinates to illustrate above algorithms

4. Clipping & Windowing**(Periods –09, Marks – 12)**

- A line clipping algorithm,
- Midpoint subdivision, clipping other graphic entities,
- Polygon clipping
- Viewing transformations, the windowing transformations

5. Introduction to advance graphics topics**(Periods – 07, Marks –10)**

- Segments,
- Aliasing & anti aliasing,
- Hidden line, surfaces, shading.
- Video editing:** Capturing Video & Audio, 'Titel'ing, Mixing & premier.

6. Raster graphics fundamentals**(Periods – 06, Marks – 10)**

- Introduction ,
- Generating a raster image,
- The frame buffer, display, Representing a raster image,

- 6.4. Scan converting, Line drawing,
- 6.5. Displaying characters Speed of scan conversion Natural images

7. Raster display hardware (Periods – 07, Marks – 08)

- 7.1. Raster display devices,
- 7.2. The frame buffers, The random access frame buffers,
- 7.3. Raster graphics and interactive graphics, Need for graphics standards, Graphics standards: CORE GKS PHIGS IGES CGM VDI
- 7.4. Advantages of Graphics standards, Hazards of Graphics, standards.

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|---|---------------------|-----------|-------------|-------------|
| 1. | Introduction | 03 | 08 | 05% | D |
| 2. | Derivation of basic graphic primitives | 06 | 12 | 22% | M |
| 3. | 2D & 3D transformations | 05 | 20 | 08% | E |
| 4. | Clipping & Windowing | 09 | 12 | 25% | M |
| 5. | Introduction to advance graphics topics | 07 | 10 | 08% | E |
| 6. | Raster graphics fundamentals | 06 | 10 | 22% | M |
| 7. | Raster display hardware | 03 | 08 | 06% | E |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- 1. Introduction
- 2. Derivation of basic graphic primitives
- 3. 2D & 3D transformations

Section II

- 4. Clipping & Windowing
- 5. Introduction to advance graphics topics
- 6. Raster graphics fundamentals
- 7. Raster display hardware

Total Theory Hours : 48 Hrs

Total Practical Hours : 32 Hrs.

List of Experiments:

Requirements:- Minimum requirement is an IBM PC XT or AT with C Compiler. Assignments for the Graphics Laboratory

- 1. Pixel Drawing
- 2. Line drawing (DDA, Bresenham's)
- 3. Circle Drawing(DDA,Bresenham's, midpoint)
- 4. Ellipse Drawing(midpoint)
- 5. Transformation (2D & 3D)
- 6. Introduction to Standard CG Packages
- 7. Line Clipping (Sutherland-Cohen, midpoint subdivision)
- 8. Text Generation

IMPLEMENTATION STRATEGY (PLANNING) :

In depth study and understanding of the subject will be implemented by adoption of the following strategy :

- 1. Conduction of lectures & practicals according to theory Teaching Plan
- 2. Termwork plan for practical implementation.
- 3.Hands on practice in the laboratory.
- 4. conducting 2 periodical tests .
- 5.Problems on transformation.
- 6. use of PPT/ vedios/ Models as a teaching aid.

Reference Books:

- 1. Computer Graphics a programming approach by Steven Harrington
- 2. Computer Graphics by David Rogers.

Additional References :

- 1. Interactive Computer Graphics by Numan
- 2. Computer Graphics by A.P.Godse.

Web References:

- 1) www.insidecg.com
- 2) www.graphics.standard.edu

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

Industrial Tour

SUBJECT DETAILS:

Course: Information Technology

Semester: IV

Subject: Industrial Tour

Group: A

Teaching And Examination Scheme: Nil

Under Multipoint Entry Credit (MPEC) System Curriculum Design IVth Semester of Full Time Diploma In Information Technology (50% coverage of syllabus)

Educational Visit/ Industrial Tour –curriculum objectives

Members of curriculum committee advised for non sandwiched pattern courses students are to be given live industry environment exposure. [Optional Non-Credit Component].The tour period/ duration up to seven days. The various learning areas through industrial educational tour with wide prospectus covers technical institutions , professional industries , IT sector , service industries, research institutions manufacturing / production plants in fulfilling major thrust areas

Objectives: Students are able to learn

- A. Development of Life Skill [DLS Sub. code:- 128904 / 120920]
 1. Leadership Qualities, Professional Communication Skills
 2. Teamwork
 3. File Management
 4. Self Centered responsibility
 5. Internal Organization Hierarchy
 6. Time/ Task Management
 7. Presentation Skill, Self Development
- B. Technical Skill
 1. Industry work Culture
 2. Performance, Process of performing the job
 3. Functioning of Employee responsibility
 4. Discipline
 5. Trends of Projects
 6. Growth of Industry Requirement
 7. Career Planning
 8. Testing of Acquired Skills
 9. Learning Practical Skills
 10. Gain confidence
 11. Watch latest IT industry practices
 12. Dissemination of Information to the students
 13. Develop Broad vision
 14. Groomed to industries expectation
 15. Knowledge sharing
 16. Security and Safety Measures at Industry.

Processes: Visit as per planning

- 1) Identifying Areas
- 2) Academic calendar
- 3) Student/ Parent Undertaking
- 4) Approaching and contacting companies
- 5) Permission from companies
- 6) 50% Syllabus coverage
- 7) Monitoring students in Batches
- 8) Accommodation of Students/ Staff
- 9) Briefing of students
- 10) Schedules to parents
- 11) Rules and Regulations, safety instructions
- 12) Visiting Factories/ Industries- Noting of Key factors
- 13) Appraisal and interaction by factory/Industry executives

Student Report:

- 1) Report submission by individual student
- 2) Compiled report by CR/ SC
- 3) Presentation by CR on learning outcomes
- 4) Learning outcomes towards Staff/ Faculty
- 5) Student Feedback

Review, Updation, Reimplementation of System

DATA BASE MANAGEMENT SYSTEM (128919)

(One paper-3 hrs, Theory: 80 Marks, Lecture: 3/Week, Pract: 2/Week, T.W.: 25Marks, Pract. : 50Marks, Credit: 5)

SUBJECT DETAILS:

| | |
|--|---------------------|
| Course: Computer Engineering | Semester: IV |
| Subject: DataBase Management System | Code: 128919 |
| Group: C* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|---------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| DBMS | 3 | 2 | - | 1, 3 Hrs, 80 Mks. | 20 | 80 | 25 | 50 | -- | 175 | C* | 128919 | 325 |

Rationale:

The aim of this subject is to get broad understanding of the basic concepts of database system in general and relational database system in particular. The students will have theoretical foundation required for working with different types of relational database products, such as SQL.

Objectives:

The student will be able to:

- Learn the concept of database
- Familiarize the different data models.
- Create applications using available database packages.

Theory Contents:

- 1. Introduction, Data Models, Database administrator, users and system structure** (Periods-10 hrs. Mks-12)
 - 1.1. Introduction: file processing disadvantages, data abstraction, data independence,
 - 1.2. Data Models: Entity Relationship model, Network Model, DBTG proposal, Hierarchical Model, Relational Model,
 - 1.3. Database administrator and database users,
 - 1.4. Database system structure.
- 2. Data definitions and Data Manipulation languages, Different SQL operations** (Periods-07 hrs. Mks-14)
 - 2.1. Data definitions and Data Manipulation languages,
 - 2.2. Different SQL operations (Retrieving Data, sorting data, grouping data, constraints, aggregate functions, character functions, set operations, views, joins, subqueries)
- 3. Storage Organization for Relations** (Periods-07 hrs. Mks-14)
 - 3.1. Storage Organization for relations: overview of physical storage media, magnetic disks,
 - 3.2. File organization, fixed length records and variable length records, sequential and clustering file organization.
- 4. Relational Database Design** (Periods-07 hrs. Mks-12)
 - 4.1. Relational database design: functional dependencies, pitfalls in relational database design,
 - 4.2. Decomposition, normalization and different normal forms.
- 5. Query Processor and Optimizer, Transactions** (Periods-08 hrs. Mks-14)
 - 5.1. Query processor and optimizer,
 - 5.2. Transaction: transaction concept, transaction state,
 - 5.3. Implementation of atomicity and durability, concurrent executions, serializability. Dependencies

6. Concurrency Control, Recovery system**(Periods-09 hrs. Mks-14)**

- 6.1. Concurrency control: lock-based protocols, timestamp-based protocols, validation protocols, deadlock handling.
 6.2. Recovery system: Failure classification, storage structure, log-based recovery, shadow paging, checkpoints.

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|--|---------------------|-----------|-------------|-------------|
| 1. | Introduction, Data Models, Database administrator, users and system structure. | 10 | 12 | 20 | M |
| 2. | Data definitions and Data Manipulation languages, Different SQL operations | 07 | 14 | 15 | E |
| 3. | Storage Organization for Relations | 07 | 14 | 15 | D |
| 4. | Relational Database Design | 07 | 12 | 15 | M |
| 5. | Query Processor and Optimizer, Transaction. | 08 | 14 | 17 | E |
| 6. | Concurrency Control, Recovery system. | 09 | 14 | 18 | D |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction, Data Models, Database administrator, users and system structure
2. Data definitions and Data Manipulation languages, Different SQL operations
3. Storage Organization for Relations

Section II

4. Relational Database Design
5. Query Processor and Optimizer, Transactions
6. Concurrency Control, Recovery system

Total Theory Hours = 48 hrs.**Total practical Hours = 32 hrs****List of practicals:**

1. Creation of table with constraints and insertion of data
2. Running simple SQL queries (select, distinct, desc, where)
3. Execution of Alter, Update, Delete and drop
4. Implementation of aggregate and character functions
5. Implementation of various clauses in SQL
6. Execution of string, comparison and set operations
- 7: Implementation of various types of joins
- 8: Implementation of views and triggers
- 9: Implementation of different subqueries on the data
- 10: Execution of a simple PL/SQL program

IMPLEMENTATION STRATEGY (PLANNING):

In depth study and understanding of the subject will be implemented by adoption of the following strategy :

1. Conducting lectures as per the teaching plan and conduction tutorials.
2. Use of powerpoint presentations during theory class and practical periods

Reference Books :

1. Principles of Database Management, by James Martin
2. An Introduction to Database systems by date C.J. Volumes I & II, Addison-Wesley, 1981, 1983.
3. Database System Concepts by Silberschatz, Korth, Sudarshan
4. Understanding Dbase III by Simpson, A BPN Publications, Delhi
5. Data Base system Engineering by Whittington R.P., Calvender Press
6. Database Systems Management and Design by Pratt. P. Boyd and Frasser Publ. Comp. 1987.
7. Database Processing: Fundamentals, Design, Implementation by Kroenke, D.M. 2nd Edn., Galgotia Publ. Pvt. Ltd.

Additional References:

1. Database Design by Wiederhold, (McGraw Hill Book Comp.)

2. Dbase III Plus made systematic by Shah Y.I., Jeevan Deep Prakashan.

Web References:

1. www.w3schools.com

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

TEACHING AND EXAMINATION SCHEME

DISCIPLINE: COMPUTER ENGINEERING

w.e.f. Batch admitted in June, 2012 (progressively)

SEMESTER: V

| SR. No. | SUBJECT NAME/ SUBJECT CODE | Pre-requisite Subject Code | SCHEME OF INSTRUCTION AND PERIODS PER WEEK | | | | | THEORY PAPER DURATION AND MARKS | | SCHEME OF EXAMINATION | | | | | | Gr | SCHEME L/P/Cr | |
|----------|---|----------------------------|--|----|----|----|----|---------------------------------|-----|-----------------------|----------|------|-------|-------|-------|------|---------------|--|
| | | | L | P | D | T | Cr | Hrs | Mks | SSL @ | PAPER ** | TW @ | PR ** | OR ** | TOTAL | | | |
| 1 | # Network Administration- I (120808) | 120803 | 2 | 4 | -- | -- | 6 | 3 | 80 | 20 | 80 | 50 | -- | 50 | 200 | A* | 246 | |
| 2 | # Microprocessor Interfacing (120809) | 120806 | 3 | 2 | -- | 1 | 6 | 3 | 80 | 20 | 80 | 50 | 50 | -- | 200 | A* | 426 | |
| 3 | # PC Maintenance and Instruments (120810) | -- | 4 | 2 | -- | -- | 6 | 3 | 80 | 20 | 80 | 50 | -- | 50 | 200 | A* | 426 | |
| 4 | System Analysis & Design (120811) | -- | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 25 | 50 | -- | 175 | M | 325 | |
| 5 | Fibre Optic Communication (128920) | -- | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 50 | -- | 50 | 200 | A | 325 | |
| 6 | Elective I (Any One) | | | | | | | | | | | | | | | | | |
| 6.1 | # Mobile Computing (120812) | -- | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 50 | -- | 50 | 200 | A* | 325 | |
| 6.2 | # Data base Administration (120813) | 128919 | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 50 | -- | 50 | 200 | A* | 325 | |
| 7 | IT Innovative Project & Practices | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | A | -- | |
| | TOTAL | | 18 | 14 | -- | 1 | 33 | No.of papers= 06 | | 120 | 480 | 275 | 100 | 200 | 1175 | | | |
| | | | TOTAL PERIODS= | | | | 33 | | 480 | TOTAL MARKS= | | | | | | 1175 | | |

* Compulsory, # Award Winning. ** Assessed by Internal and External Examiners Jointly, @ Assessed by Internal Examiner only

L- Lecture Period, P- Practical Period, D-Drawing Practice Period, T- Tutorial, Cr-Credit, SSL-Sessional, TW- Term Work

PR-Practical, OR-Oral

GR- Group, B-Basic, C-Core, A-Application, M-Management

NETWORK ADMINISTRATION - I (120808)

(One Paper: 3 Hrs. Theory: 80 Mks, Lect/ Week – 2, Prac: 4/Week, Practical – 50 Mks, T.W. : 50 Mks, Credit : 6)

SUBJECT DETAILS:

| | |
|--|---------------------|
| Course: Computer Engineering | Semester: V |
| Subject: Network administration – I | Code: 120808 |
| Group: A* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|----------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Network administration - I | 2 | 4 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 50 | -- | 50 | 200 | A* | 120808 | 246 |

Rationale:

This subject is network application based subject. It gives the practical knowledge of designing computer network while using any type of topologies. This subject covers the installation and configuration of any network operating system. With the proper configuration of operating system on the server, the students will manage and administer the network resources or devices such as printers, scanner and also software like files, folders, directories, application, programs etc.

Objectives:

The student will be able to

- Identify different types of network devices.
- Compare different types of network
- Know the network management and administration. administrator.

Theory Contents:

- 1. Introduction** (Period-02, Marks 08)
 - 1.1. Hardware
 - 1.1.1. Overview of cables and connectors, Topologies , Routers, bridges, gateways, switches, wired /wireless media
 - 1.1.2. Selection criteria for the devices
 - 1.2. Network administrator
 - 1.2.1. Responsibilities- Designing, Setting Up, Maintaining the Network, Expanding,
 - 1.2.2. Duties of Network Engineer ,
- 2. Implementation of the network** (Period-04, Marks 10)
 - 2.1. Access needs, Users Application, Choosing- network type, structure and servers,
 - 2.2. Configuration, installation of network.
- 3. Information Models and directories services** (Period-04, Marks 10)
 - 3.1. Need of directory service, Features , Architecture of directories, protocol support
 - 3.2. Types of directory service---X500,NDS ,ADS, LDAP , INfor
- 4. Setting up and configuring TCP/IP network** (Period-05, Marks 12)
 - 4.1. Connection oriented and connection less services,
 - 4.2. Basic configuration-TCP/IP model,
 - 4.3. Protocol stack, Connection establishment,
- 5. Mobile and adhoc network** (Period-06, Marks 15)
 - 5.1. topology, distributed network, reliability, security, bandwidth,
 - 5.2. Energy and power constraints, scalability, applications
- 6. Remote Network Access** (Period-05, Marks 10)
 - 6.1. Need of remote access, remote access technology,
 - 6.2. VPN- Types, protocols (IPsec, L2TP,PPTP), call sequences, Set up
- 7. Routing** (Period-06, Marks 15)
 - 7.1. Static, Dynamic Routing
 - 7.2. Delivery (direct Vs Indirect)
 - 7.3. Forwarding – techniques, process
 - 7.4. Routing protocols : OSPF,BGP etc
 - 7.5. Unicast , multicast, broadcast routing

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D | |
|---------|---|---------------------|-------|-------------|-------------|---|
| 1. | Introduction | 02 | 08 | 05 | M | |
| 2. | Implementation of the network | 04 | 10 | 15 | E | |
| 3. | Information Models and directories services | 04 | 10 | 15 | E | |
| 4. | Setting up and configuring TCP/IP network | | 05 | 12 | 20 | M |
| 5. | Mobile and ad hoc network | 06 | 15 | 15 | D | |
| 6. | Remote Network Access | 05 | 10 | 15 | E | |
| 7. | Routing | 06 | 15 | 15 | E | |
| Total | | 32 | 80 | 100% | # | |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction
2. Implementation of the network
3. Information Models and directories services
4. Setting up and configuring TCP/IP network

Section II

5. Mobile and ad hoc network
6. Remote Network Access
7. Routing

Total Theory Hours = 32 hrs

Total Practicals Hours = 64 hrs.

List of Practicals:

1. Installing Active Directory
2. Installing Windows 2003 Server
3. Installing Active Directory
4. Creating AD Objects
5. To create network cable using RJ 45 connectors.
6. Connections of two hubs by creating cross over connections.
7. To install a network interface card (NIC)
8. Setting up Local Print Device
9. Installing and Configuring a Network – Capable Print Device
10. Create new Users & give the Permission
11. study of routers
12. Study of virtual private network – client-server model
13. Group of four students prepare a mini report on Latest Networking Technology
14. Installing and configuring DHCP.
15. Configuring & Implementing routing services

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

1. Data communication & networking- Behrouz Forouzan
2. The Complete Reference Networking Craig Zacker
3. Networking A Beginner's Guide Bruce Hallberg
4. Introduction to Networking Richard A. McMohan, Sir

Web Reference:

1. www.openldap.org
2. www.intel.com/content/
3. www.ietf.org
4. www.cisco.com
5. www.technet.microsoft.com

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

MICROPROCESSOR INTERFACING (120809)

(Paper: 3 Hrs. Theory: 80 Mks, Lect/ Week – 3, Prac: 2/Week, Tutorial: 1/week, Prct – 50 Mks, T.W. : 50 Mks, Credit : 6)

SUBJECT DETAILS:

| | |
|--|---------------------|
| Course: Computer Engineering | Semester: V |
| Subject: Microprocessor Interfacing | Code: 120809 |
| Group: A* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|-----------------------------------|---|----------------|----------|---------------------------------|-----------------------|-----------|-----------|-------------|----------|------------|-----------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Microprocessor Interfacing | 3 | 2 | 1 | 1, 3 Hrs., 80 Mks. | 20 | 80 | 50 | 50 | - | 200 | A* | 120809 | 426 |

Rationale:

This subject is designed to give clear idea about working principle of 8085 microprocessor. Knowledge acquired by student will be able to interface programmable IC's with microprocessor.

Objectives:

The student will be able to

- To make student knowledgeable about programmable IC's.
- Student will be able to know interfacing of programmable devices with microprocessor.
- Student will be able to develop real world mp based application.

Theory Contents:

- Basics of I/O Interfacing** (Period-06, Marks 12)
 - I/O mapped I/O,
 - Memory mapped I/O,
 - input/output interfacing in I/O mapped I/O & memory mapped I/O.
 - comparison of I/O & memory mapped technique
- Interfacing Data Converters** (Period-06, Marks 08)
 - Digital to analog converters,
 - Analog to digital converters
- Programmable interface devices** (Period-08, Marks 20)
 - Basic concept in programmable devices,
 - The 8155 : multipurpose programmable device & timer,
 - The 8279 programmable keyboard/ display interface.
- General purpose programmable peripheral devices** (Period-12, Marks 20)
 - The 8255 programmable peripheral interface,
 - interfacing keyboard & seven segment display,
 - bidirectional data transfer between two microcomputers,
 - the 8254/8253 programmable interval timer,
 - the 8259 programmable interrupt controller,
 - direct memory access (DMA) and the 8237 DMA controller
- Serial i/o and data communication** (Period-08, Marks 10)
 - Basic concept in serial i/o,
 - software –controlled asynchronous serial i/o,
 - the 8085- serial i/o lines: SOD and SID,
 - hardware –controlled serial i/o using programmable chips
- Microprocessor application programmes** (Period-08, Marks 10)
 - Design of small systems ,
 - study of application programmes like basic I/O interfacing,
 - hardware digital clock,
 - elementary stepper motor operation,
 - traffic light control,
 - monitor program for microprocessor kit

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|---------|---|---------------------|-------|-------------|-------------|
| 1. | Basics of I/O Interfacing | 06 | 12 | 14% | M |
| 2. | Interfacing Data Converters | 06 | 08 | 14% | E |
| 3. | Programmable interface devices | 08 | 20 | 22% | E |
| 4. | General purpose programmable peripheral devices | 12 | 20 | 24% | D |
| 5. | Serial i/o and data communication | 08 | 10 | 13% | E |
| 6. | Microprocessor application programmes | 08 | 10 | 13% | D |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- Basics of I/O Interfacing
- Interfacing Data Converters
- Programmable interface devices

Section II

- General purpose programmable peripheral devices
- Serial i/o and data communication
- Microprocessor application programmes

Total Theory Hours = 48 hrs

Total Practicals Hours = 32 hrs.

List of Practicals:

- Know your microprocessor Laboratory.
- Find largest & smallest number from the given series of number.
- Peripheral 8155 (I/O mode and generation of square wave using internal timer)
- Study of IC 8255 programmable peripheral interface (I/O mode & BSR mode)
- Program to initiate 8251 & to check transmission & reception of characters.
- Interfacing of DAC with 8085 to generate square, sawtooth & triangular waveforms.
- Program to interface 8253 & verify the operations of 8253 in different modes.
- Program to interface 8279 for rolling display.
- Voltage Measurement Using ADC.
- Study of Microprocessor Based Temperature Controller.
- Study of Microprocessor Based Stepper Motor Control.

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

- Microprocessor 8085 and Its interfacing by Sunil Mathur.
- Microprocessors And Applications By D.A.Godse A.P.Godse
- Microprocessors Architecture, Programming and application with 8085/8080A By Ramesh S. Gaonkar.

Reference URL:

- <http://www.gnucsim8085.org>
- <http://www.phy.davidson.edu/fachome/dmb/py310/8085.pdf>

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

PC MAINTAINANCE & INSTRUMENTS (120810)

(One Paper : 3 Hrs., Theory : 80 Mks, Lect/ Week – 4, Prac: 2/Week, Oral – 50 Mks, T.W. : 50 Mks, Credit : 6)

SUBJECT DETAILS:

| | |
|--|---------------------|
| Course: Computer Engineering | Semester: V |
| Subject: PC Maintenance and Instruments | Code: 120810 |
| Group: A* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|--------------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| PC Maintenance and Instruments | 4 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 50 | -- | 50 | 200 | A* | 120810 | 426 |

Rationale:

The students after studying this subject will be able to understand the maintenance and servicing of computer system. They will understand hardware development, processor and control design of computer system. This will develop the basic insight in the student about the changes in the hardware technology, technology design and thereby develop the better knowledge for the maintenance and repairing of the computer system.

Objectives:

The students will be able to:

- To know how to maintain the various units of computer.
- To study various fault finding procedures & trouble shooting procedures.
- To make the students familiar with various faults inside the PC.

Theory Contents:**1. General maintenance of PC****(Periods-12hrs., Mks-15)**

- 1.1. Different types of maintenance, preventive & remedial maintenance, importance of prevent maintenance, intermittent & hard-on (Persistent) faults, customer provided information & it's synthesis.
- 1.2. Use of diagnostic software monitors & test condition generators measurement of signal flow & selection of test points.
- 1.3. Understanding of logic diagrams, symptoms of failures, identification of electromechanical & logic faults, typical the logic diagrams.
- 1.4. Practicals based on study of various fault finding & diagnosis Techniques used in the maintenance of computer included in subject.

2. Measuring concept & Basic of do indicating instruments**(Periods-12 hrs., Mks-15)**

- 2.1. Significance of measurement, Methods of measurement,
- 2.2. Galvanometer, PMMC, Dc ammeter, Dc Voltmeter, Alternating current indicating instruments,
- 2.3. Oscilloscope (Functional study of oscilloscope, Study of various types of oscilloscope, Sampling oscilloscope, Storage oscilloscope)

3. Study of signal generator, Logic analyser, Spectrum analyser, Emulators**(Periods-08 hrs. Mks-10)****4. Troubleshooting Techniques****(Periods-10hrs., Mks-10)**

- 4.1. Introduction, classical steps to successful troubleshooting,
- 4.2. audit and video error codes, testing components,
- 4.3. soldering and desoldering techniques, symptom, observation, layman checks, symptom analysis,
- 4.4. fault diagnosis, fault rectification, proper documentation of faults.

5. Preliminary Service Checks**(Periods-08hrs.,Mks-10)**

- 5.1. Assembling and disassembling hints, no power, no display, mother board problems,
- 5.2. self-test error code displayed, method 1- disk speed program, method-2 tuning lamp,
- 5.3. disk drive problems, index sensor adjustment KBD problems, general printer problems.

6. Servicing of Peripherals**(Periods-14 hrs., Mks-20)**

- 6.1. Servicing Keyboard – Checking key signals on CPU-Trouble Shooting the keyboard
- 6.2. Disk drives – Service problems with Diskette and Disk Drive-Trouble Shooting Disk Drives-Alignment and Adjustments-Checking individual Circuits and Mechanism.
- 6.3. Servicing of Printers - Printer Types (Dot Matrix and Daisy Wheel) – Self test – Trouble shooting based on Symptoms, identifying detective subsystems (Carriage Movement, Head Movement, Platen Drive, Head Printer, CPU Interfacing) and rectification.
- 6.4. Servicing Monitors-Identification of Problems with general Symptoms – Completely dead – Contrast, Brightness defects – Retrace Visibility – Vertical hold defect – Cartage on Monitors – Checking CRT drive board.

6.5. Servicing power supply-Linear Power Supply-Switched Mode Power Supply-Identification of Power Supply Problems based on output voltage on load and electrical noise.

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|---|---------------------|-----------|-------------|-------------|
| 1. | General maintenance of PC | 12 | 15 | 22 | M |
| 2. | Measuring concept | 12 | 15 | 18 | M |
| 3. | Study of signal generator, Logic analyser, Spectrum analyser, Emulators | 08 | 10 | 10 | E |
| 4. | Troubleshooting Techniques | 10 | 10 | 15 | E |
| 5. | Preliminary Service Checks | 08 | 10 | 10 | D |
| 6. | Servicing of Peripherals | 14 | 20 | 25 | M |
| Total | | 64 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. General maintenance of PC
2. Measuring concept
3. Study of signal generator, Logic analyser, Spectrum analyser, Emulators

Section II

4. Troubleshooting Techniques
5. Preliminary Service Checks
6. Servicing of Peripherals

Total Theory Hours = 64 hrs

Total Practicals Hours = 32 hrs.

List of Practicals:

1. Study of different types of Motherboards & its problem diagnosis.
2. Creating batch files, study and practice of CMOS setup & study of POST
3. Practice Different Component Level Fault Finding & troubleshooting tools.
4. Study of various types of display cards, AGP cards, assembling & disassembling of monochrome & Color monitors.
5. Drives – Hard Disk, CD/DVD drive, Removable drives, Pen drives - Wireless Devices
6. Disk Clean up and Disk Defragmentation, Formatting and Partitioning of Hard Disk.
7. Installation of two HDDs in a PC system
8. Practicals on dismantling and assembling of Dot matrix, Inkjet and Laser Printers and their Troubleshooting.
9. Study of the contents of Config.sys file and their functions
10. Study of jumper setting on Pentium motherboards
11. Practicals on troubleshooting of the PC systems & Peripherals using flow-charting methods.
12. Study of Device Manger in a PC
13. Practical on dismantling and assembling of SMPS, study of voltage and Waveforms at different important points & Troubleshooting.
14. Installation of Operating Systems, Application Softwares, Utilities, Antivirus
15. To study assembling and dissembling of the computer system.
16. Practical on using Diagnostic tools & Data Recovery tools.

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

1. Upgrading & repairing PC's by Scott Mneller (QUE publication)
2. IBM PC CLONES by Govindrajalu (Tata McGRAW HILL)
3. Inside the IBM PC by Peter Norton (Prentice Hall of India)
4. IBM PC / XT technical reference manual
5. Electronic fault diagnosis, IIIrd edition by G.C. Loveday longman Scientific & Technical

Additional References:

1. Microprocessor Data Books, Intel
2. TTI, Data Books, National Semiconductor
3. Using your hard disk by Roberb D. Ainsbury (QUE publication)

Web Reference:

1. <http://www.dummies.com/how-to/computers-software/pcs-laptops/maintenance.html>
2. <http://www.computerhope.com/basic.htm>

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

SYSTEM ANALYSIS AND DESIGN (120811)

(One Paper: 3 Hrs. Theory: 80 Mks, Lect/ Week – 3, Prac: 2/Week, Practical – 50 Mks, T.W. : 25 Mks, Credit : 5)

SUBJECT DETAILS:

| | |
|--|---------------------|
| Course: Computer Engineering | Semester: V |
| Subject: System Analysis And Design | Code: 120811 |
| Group: M | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|-----------------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| System Analysis And Design | 3 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 25 | 50 | -- | 175 | M | 120811 | 325 |

Rationale:

In this age of information technology computer system, is playing an important role for automation. Computers systems are used as an effective communication and decision making tool for process and product automation in a business, industrial and educational environment

Objectives:

The student will be able to

- Implement stepwise and systematic methodology approach for developing a software system design considering all software engineering principles.
- Understand the drawbacks of ad-hoc system development.
- Achieve the managerial skills necessary to execute a project within various technical and environmental constraints.

Theory Contents:**1. The Information System Environment****(Periods- 06 hrs Marks:08)**

System Concept : Definition
 Characteristics of a system : organisation Interaction
 Interdependence, integration, Control objective
 Elements of a System : Outputs & Inputs
 Processor (s) Control, Feedback, Environment, Boundaries & Interface
 Types of Systems : Physical or Abstract systems
 Open or Closed systems. Man made information systems.

2. Systems Development Overview**(Periods- 04hrs Marks:06)**

Introduction : The Systems's Life Cycle
 New approaches to design
 Resources for new systems
 The practice of systems analysis and Design
 Processing alternatives

3. Role of the systems Analyst**(Periods- 04hrs Marks:06)**

The Role of the analyst : Use Design, Steps to follow

4. Traditional tools for analysis & Design**(Periods- 06hrs Marks:08)**

Data collection, Analysis and Design tools

5. Software Project Management**(Period-10 hrs Marks:12)**

Planning software project, work Breakdown Structure, Integrating Software design and project planning,
 Software Project teams. Project monitoring and controls.

6. Preliminary Survey & Feasibility study contents**(Periods- 05hrs Marks:10)**

The Decision-making Body

7. Systems Design Specifications**(Periods- 05hrs Marks:12)**

8. Documentation (Periods- 04hrs Marks:08)

Design documentation user Documentation for Training, operations Documentation, User Reference Documentation

9. Testing and Installation; Testing User Consideration (Periods- 04hrs Marks:10)

The Aftermath, review of the Analysis Role
 (It is expected to explain the procedure of system Analysis and design of following commercial system)
 Accounts Inventory Control
 Pay Roll
 Sales & Purchases order system

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|--|---------------------|-----------|-------------|-------------|
| 1. | The Information System Environment | 06 | 08 | 11% | M |
| 2. | Systems Development Overview | 04 | 06 | 09% | E |
| 3. | Role of the systems Analyst | 04 | 06 | 09% | E |
| 4. | Traditional tools for analysis & Design | 06 | 08 | 11% | M |
| 5. | Software Project Management | 10 | 12 | 20% | E |
| 6. | Preliminary Survey & Feasibility study contents | 05 | 10 | 09% | E |
| 7. | Systems Design Specifications | 05 | 12 | 10% | E |
| 8. | Documentation | 04 | 08 | 12% | E |
| 9. | Testing and Installation; Testing User Consideration | 04 | 10 | 09% | E |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. The Information System Environment
2. Systems Development Overview
3. Role of the systems Analyst
4. Traditional tools for analysis & Design
5. Software Project Management

Section II

6. Preliminary Survey & Feasibility study contents
7. Systems Design Specifications
8. Documentation
9. Testing and Installation Testing User Consideration

Total Theory Hours = 48 hrs
Total Practicals Hours = 32 hrs.

List of Practicals:

1. Draw DFD for Railway Reservation system
2. Draw E-R diagram for Railway Reservation system
3. Generate Simple Calculator.
4. Program for Payroll system
5. Program for Inventory system
6. Program for Banking system
7. Program for Student information system
8. Program for Railway Reservation system
9. Program for Library system

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

1. The Analysis, Design and Implementation of Information systems by Henry C. Lucas. Jr. (Mogran – Hill Book Company)
2. Systems analysis & Design by Elias m Avad (Galgotia Publications Pvt. Ltd.)

Additional References :

Introducing Systems Analysis & Design, Vol. 1 & 2 prepared by NCC (National Centre for Computing) U.K.G.L. Simons (Chief Editor) Published BY Galgotia Publications Pvt. Ltd.

Web References:

1. <http://www.rspa.com>
2. www.nptel.iitk.ac.in
3. www.ddegjust.ac.in/studymaterial/pgdca/ms-04.pdf
4. www.cba.edu

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

FIBRE OPTIC COMMUNICATION (128920)

(T.W.= 50 Marks, Oral= 50 Marks, Lecture 3/week ,Practical 2/week, Credit: 5)

SUBJECT DETAILS:

Course: Computer Engineering
Subject: FIBRE OPTIC COMMUNICATION
Group: A

Semester: V
Code: 128920

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|----------------------------------|---|----------------|----------|---------------------------------|-----------------------|-----------|-----------|-------------|-----------|------------|----------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| FIBRE OPTIC COMMUNICATION | 3 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 50 | -- | 50 | 200 | A | 128920 | 325 |

Rationale:

This subject introduces advanced communication techniques using Fibre Optics includes fundamental, properties & applications such as Creating the optical signal involving the use of a transmitter, relaying the signal along the fiber, ensuring that the signal does not become too distorted or weak, receiving the optical signal, and converting it into an electrical signal.

Objectives:

To understand:

1. Transmission and reception through fibre optics
2. Fundamentals of optical fibre.
3. Concept of optical n/w.
4. Operation of Devices , tools, meters etc.

Theory Content**1. Fundamentals of Fibre Optics****(Periods- 8 hrs, Mks-10)**

- 1.1. Block diagram Optical fibre communication system,
- 1.2. Advantages and disadvantages
- 1.3. Physics Principles - Basic Optical Laws of light Reflection, Refraction
- 1.4. Ray theory – Refractive Index, Critical angle, acceptance angel, Numerical aperture
- 1.5. Total Internal Reflection, Optic Fibre Structure
- 1.6. Classification of fibres - Step index single mode fibre, step index Multimode fibre, Graded index fibre.
- 1.7. Refractive Index profile, Standard dimensions. Number of modes
- 1.8. Advantages, disadvantages of single mode, multimode fibre.

2. Transmission Properties of optical Fibre**(Periods-7 hrs, Mks-08)**

- 2.1. Attenuation
- 2.2. Fibre losses – material absorption, scattering and bending losses
- 2.3. Dispersion in fibre- intra (material and waveguide) modal, intermodal dispersion

3. Optical Fibre Cable**(Periods-6 hrs, Mks-12)**

- 3.1. Fibre materials, fibre selection,
- 3.2. Optical fibre cable Manufacturing process - perform and fibre drawing process.
- 3.3. Part of fibre cable, types of Cables – Indoor cables, Breakout, Ribbon, Outdoor, Aerial, Tightly Buffered loose Tube, typical cables with Duty Specification, Environment and Applications, Cable Laying process.

4. Optical sources and detectors**(Periods-9 hrs, Mks-20)**

- 4.1. Transmission –
- 4.2. optical Sources - Basic concept of optical absorption and emission of radiations from semiconductor material, Population inversion, Energy level diagrams, Light emitting diode(LED), Heterojunctions semiconductor injection LASERS, structures and characteristics, Frequency of Operation, Power, Modulation
- 4.3. Receiver – Basic detection Principle, Absorption coefficient , Quantum efficiency, responsively, cut-off wavelength, Photo Detectors(PN diode, PIN diode, avalanche photo diode) Performance, Receiver Power, Pre Amplification, Amplification.

5. Other Components / Devices Uses**(Periods-8 hrs, Mks-12)**

- 5.1. Splicing – Mechanical, Fusion, alignment and Joint losses
- 5.2. Fibre Connectors Types, Attenuation
- 5.3. Link power budget bandwidth consideration
- 5.4. Optical Amplifier- Rare earth doped amplifier, Raman and Brillouin fibre amplifier.

6. Optical Measurements and Instruments (Periods-7 hrs, Mks-10)

- 6.1. Optical Power, Units, Fibre Continuity, Mode scramblers
- 6.2. Fibre Attenuation measurements, Dispersion measurements
- 6.3. Bit Error Rates. Optical Power Metres Optical Time Domain Reflectometry (OTDR),

7. Optical Networks (Periods-3 hrs, Mks-08)

- 7.1. Introduction, Optical Multiplexing – WDM, DWDM
- 7.2. Optical standards SONET, SDH

| Sr. | Main Topics | No of Hrs | Marks | %weightage | # M / E / D |
|--------------|--|-----------|-----------|-------------|-------------|
| 1 | Fundamentals of Fibre Optics | 8 | 10 | 15% | M |
| 2 | Transmission Properties of optical Fibre | 7 | 08 | 13% | M |
| 3 | Optical Fibre Cable | 6 | 12 | 12% | E |
| 4 | Optical sources and detectors | 9 | 20 | 21% | M |
| 5 | Other Components / Devices Uses | 8 | 12 | 16% | E |
| 6 | Optical Measurements and Instruments | 7 | 10 | 15% | E |
| 7 | Optical Networks | 3 | 08 | 9% | D |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- 1. Fundamentals of Fibre Optics
- 2. Transmission Properties of optical Fibre
- 3. Optical Fibre Cable
- 4. Optical sources and detectors (Half Portion)

Section II

- 4. Optical sources and detectors (Remaining Half Portion)
- 5. Other Components / Devices Uses
- 6. Optical Measurements and Instruments
- 7. Optical Networks

Total Theory Hours: 48 Hrs.

Total Practical Hours: 32 Hrs.

List of practicals :

- 1. Study of fibre optics structure.
- 2. Study of various types of optical fibre.
 - a) Step index fibre
 - b) Graded index fibre.
- 3. Measurement of Numerical aperture and acceptance angle using manual method
- 4. Measurement of Numerical aperture and acceptance angle using Module
- 5. Measurements of various coupling losses in optical fibre Using Module
- 6. Design a optical link and calculate overall attenuation per unit length.
- 7. Study of different types of cables of optical fibre
- 8. Study of Light sources for optical fibre communication.
- 9. Study of Light detectors for optical fibre communication.
- 10. Study of optical power Optical Time Domain Reflectometry (OTDR),.

IMPLEMENTATION STRATEGY (PLANNING) :

In depth study and understanding of the subject will be implemented by adoption of the following strategy :

- 1. Conduction of lectures & practicals according to theory Teaching Plan
- 2. Termwork plan for practical implementation.
- 3. Hands on practice in the laboratory.
- 4. conducting 2 periodical tests .

Reference Books :

- 1. Optical Fibre Communication - By Senior
- 2. Optical Fibre Communication - By Kaiser

Additional References:

- 1. Electronic communication system by William Schweber

Web References:

1. www.educyclopedia.karadimov.info/library/accang.swf
2. www.ee.buffalo.edu
3. www.perg.phy.ksu.edu/vgm/laserwb
4. www.photonics.byu.edu/fibercalculatoror.htm

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

MOBILE COMPUTING (120812)

(One Paper: 3 Hrs. Theory: 80 Mks, Lect/ Week – 3, Prac: 2/Week, Oral – 50 Mks, T.W. : 50 Mks, Credit : 6)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: V |
| Subject: Mobile Computing | Code: 120812 |
| Group: A* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|-------------------------|---|----------------|----------|---------------------------------|-----------------------|-----------|-----------|-------------|-----------|------------|-----------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Mobile Computing | 3 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 50 | -- | 50 | 200 | A* | 120812 | 325 |

Rationale:

With the advancements in communication technologies and computing power the use of mobile has changed the human life in last decade. Broadly e-electronic prefix is replaced by m – mobile for all sectors of services. This subject covers basics of mobile communication and GSM architecture. It will help student to install w-LAN and its security.

Objectives:

The student will be able to

- Know basics of GSM Architecture.
- Appreciate the need for w-LAN and IEEE standards
- Understand various cipher algorithm for secured communication.
- Develop mobile application

Theory Contents:**1. BASICS OF MOBILE COMMUNICATION SYSTEM****(Period-07, Marks 10)**

- Radio communication- spectrum, signal propagation,
- First Generation, Second and Third generation of mobiles,
- Block diagram of mobile system, hand off, frequency reusability, transmitting, receiving, roaming, GSM and CDMA basics.

2. GSM MOBILE SYSTEMS**(Period-10, Marks 20)**

- G.S.M system architecture. ,
- G.S.M services & features.,
- G.S.M radio subsystems,
- G.S.M channel types.
- Message & call processing in GSM,
- Privacy & security in GSM. Advantages of GSM.

3. WIRELESS LAN network**(Period-07, Marks 10)**

- IEEE 802.11 - Architecture – services – MAC sublayer, addressing mechanism,
- IEEE 802.11a - 802.11b standards —HyperLAN,
- Blue Tooth- architecture, Bluetooth layers, radio layer.

4. MODERN WIRELESS COMMUNICATION SYSTEM**(Period-11, Marks 20)**

- 3G-CDMA (UMTS) (Universal mobileTelecommunication system.),
- 3G CDMA 2000, 3G- TD-SCDMA (synchronous),
- Wireless local loop & LMDS (local multipoint distribution) IMT 2000

5. WIRELESS SECURITY ISSUES**(Period-08, Marks 12)**

- Traditional security issues,
- Mobile and wireless security issues,
- problems in Ad hoc network

6. APPLICATION DESIGN FOR MOBILE**(Period-05, Marks 08)**

- J2ME,
- MIDP,
- Android simulator

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|---------|---------------------------------------|---------------------|-------|-------------|-------------|
| 1. | BASICS OF MOBILE COMMUNICATION SYSTEM | 07 | 10 | 15% | M |
| 2. | GSM MOBILE SYSTEMS | 10 | 20 | 20% | E |
| 3. | WIRELESS LAN network | 07 | 10 | 15% | E |
| 4. | MODERN WIRELESS COMMUNICATION SYSTEM | 11 | 20 | 20% | D |
| 5. | WIRELESS SECURITY ISSUES | 08 | 12 | 18% | E |
| 6. | APPLICATION DESIGN FOR MOBILE | 05 | 08 | 12% | D |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. BASICS OF MOBILE COMMUNICATION SYSTEM
2. GSM MOBILE SYSTEMS
3. WIRELESS LAN network

Section II

4. MODERN WIRELESS COMMUNICATION SYSTEM
5. WIRELESS SECURITY ISSUES
6. APPLICATION DESIGN FOR MOBILE

Total Theory Hours = 48 hrs

Total Practicals Hours = 32 hrs.

List of Practicals:

1. Observe & analysis of Input / Output signal of different sections.
2. Retrieve the data of SIM card.
3. Perform testing procedure.
4. Testing of mobile handset.
5. Find out different add- on accessories for cell phones (battery, charger, hands free data cable)
6. Identify different sections & component of mobile unit such as (Ringer section, dialer section, receiver section etc.
7. Demonstration of handoff, frequency response, cell splitting.
8. Prepare report on different facilities provided by cellular company (visit)
9. Prepare report on cellophane operator companies and their plan & traffic. (Visit)
10. Find out the specifications of different handsets provides by different companies.
11. Power supply requirement, battery technology, display, phone memory, answered called memory charging time, Facilities: - STD, ISD & LIP)
12. Prepare report on GSM technology, its network, GSM capability & data Services.
13. Study & prepare report on cell site , distance coverage , antennas used & other components.

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

1. A. Mehrotra , GSM System Engineering.
2. M. V. D. Heijden, M. Taylor, Understanding WAP, Artech House.
3. Charles Perkins, Mobile IP, Addison Wesley
4. Charles Perkins, Ad hoc Networks, Addison Wesley.
5. Jochen Schiller, "Mobile Communications", PHI/Pearson Education, Second Edition, 2003
6. William Stallings, "Wireless Communications and Networks", PHI/Pearson Education, 2002

Reference URL:

1. www.tutorialspoint.com
2. www.onlinelibrary.wiley.com
3. www.cse.iitk.ac.in
4. www.cs.cmu.edu
5. <http://www.edunotes.in/mobile-computing>
6. <http://k.web.umkc.edu/kumarv/cs572/PCS-history.pdf>
7. http://www.cse.iitk.ac.in/users/rkg/Talks/mobile_main.pdf

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

DATABASE ADMINISTRATION (120813)

(One Paper: 3 Hrs. Theory: 80 Mks, Lect/ Week – 3, Prac: 2/Week, Oral – 50 Mks, T.W. : 50 Mks, Credit : 5)

SUBJECT DETAILS:

| | |
|--|---------------------|
| Course: Computer Engineering | Semester: V |
| Subject: Data Base Administration | Code: 120813 |
| Group: A* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|---------------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Data Base Administration | 3 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 50 | -- | 50 | 200 | A* | 120813 | 325 |

Rationale:

In the present era it is very essential to develop and arrange data in such a way that it solves a complex problem efficiently. Data base administration is a subject which emphasizes on managing the data and this is performed by the database administrator (DBA). The position of DBA is vital since it deals with critical issues of design and management of data comprehensively. The student will also be able to set up the network configuration between the database clients and servers, perform backup and recovery.

Objectives:

The student will be able to

- Describe the database architecture.
- Create and manage redo & Control files.
- Create and manage user, roles, privileges tables, table spaces, indexes and integrity constraints.

Theory Contents:**7. Architectural Components****(Period-04, Marks 12)**

- Overview of Primary Components, Server and Instance
- Establishing a Connection and Creating a Session
- Physical Structure
- Memory Structure
- System Global Area, Shared Pool, Library Cache, Data Dictionary Cache,
- Buffers and pools
- Program Global Area, User Process, Sever Process
- Background Processes
- Logical Structure, Processing a SQL Statement

8. Creating a Database And Managing an Instance**(Period-04, Marks 12)**

- Managing and Organizing a Database,
- Creation Prerequisites
- Planning Database Files Locations
- Creating a Database
- Operating System Environment
- Initialization Parameter Files,
- Starting UP a Database and Shutting Down the Database,
- Shutdown Options

9. Maintaining the Control File And Redo Log Files**(Period-06, Marks 08)**

- Use of control file, Multiplex and manage the control file
- Using Redo Log Files, Structure of Redo Log Files,
- How Redo Logs Work, Forcing Log Switches and Checkpoints

10. Managing Tablespaces and Data files**(Period-10, Marks 08)**

- Database Storage Hierarchy,

10.2. Creating Tablespaces, Space Management in Tablespaces, Changing the Storage Settings, Undo Tablespace, Data files, tables, undo data and indexes logical structure of table spaces within the database, create table spaces, Undo Segments, types of undo segments, Automatic Undo Management

11. Managing Tables And Indexes (Period-05, Marks 06)

11.1. Distinguish between an extended versus a restricted row id, structure of a row, creating regular and temporary tables, manage storage structures within a table, reorganize truncate, drop a table, purpose of undo data

11.2. Classification of Indexes, B-Tree Index, Bitmap Index

12. Storage Structure And Relationships (Period-05, Marks 08)

12.1. Segment types and uses

12.2. Keywords that control block spaces usage, storage structures from the data dictionary

12.3. Data dictionary content and usage

12.4. Data dictionary components, Contents and uses of data dictionary , Query the data dictionary

13. Managing Users, Role And Database Objects (Period-08, Marks 12)

13.1. Managing users, privileges and roles.

13.2. Creating new database users alter and drop existing database users,

13.3. Monitor information about existing users,

13.4. Classify system and object privileges, Grant and revoke privileges,

13.5. Auditing, Create, modify and controlling availability of roles,

13.6. Remove roles, user predefined roles,

13.7. Display role information from the data dictionary

14. Maintaining Password Security, Resources Data Integrity (Period-06, Marks 14)

14.1. Manage passwords using profiles and Administrator profiles, Control use of resources using profile, Data Integrity, Types of Constraints,

14.2. Constraint States, Constraint Checking

14.3. Defining Constraints as Immediate or Deferred,

14.4. Primary and Unique Key Enforcement Foreign Key Considerations

14.5. Manage passwords using profiles and Administrator profiles, Control use of resources using profile, Data Integrity, Types of Constraints,

14.6. Constraint States, Constraint Checking

14.7. Defining Constraints as Immediate or Deferred,

14.8. Primary and Unique Key Enforcement Foreign Key Considerations

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|---------|--|---------------------|-------|-------------|-------------|
| 1. | Architectural Components | 04 | 12 | 13% | M |
| 2. | Creating a Database And Managing an Instance | 04 | 12 | 13% | E |
| 3. | Maintaining the Control File And Redo Log Files | 06 | 08 | 13% | E |
| 4. | Managing Tablespaces and Data files | 10 | 08 | 11% | D |
| 5. | Managing Tables And Indexes | 05 | 06 | 13% | E |
| 6. | Storage Structure And Relationships | 05 | 08 | 11% | D |
| 7. | Managing Users, Role And Database Objects | 08 | 12 | 13% | E |
| 8. | Maintaining Password Security, Resources Data Integrity; | 06 | 14 | 13% | E |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Architectural Components
2. Creating a Database And Managing an Instance
3. Maintaining the Control File And Redo Log Files
4. Managing Tablespaces and Data files

Section II

5. Managing Tables And Indexes
6. Storage Structure And Relationships
7. Managing Users, Role And Database Objects
8. Maintaining Password Security, Resources Data Integrity

Total Theory Hours = 48 hrs

Total Practicals Hours = 32 hrs.

List of Practicals:

1. Installation of database software
2. Create a database and database configuration.
3. Starting up and shutting down database with SQL Plus
4. Starting up and shutting down and, viewing parameters list using database manager .

5. Use enterprise manager to create after and drop a table space.
6. Use SQL Plus to create users and assign roles and grant permissions table space
7. Create database objects and constraints using SQL Plus.
8. Create and undo table space with database control and monitor undo with SQL plus.
9. Detect and resolve log connection.
10. Multiplex the redo log and translation the database to archive log mode.
11. Run a whole database backup and back up the control file to trace with SQL plus

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

1. Database System Concepts by Korth.
2. Oracle 9I Database: Fundamentals II exam guide by Rama Velpuri.

Reference URL:

1. www.oracle.com/technology/pub/articles/tech_dba.html
2. www.oracle.com/technology/oramag/oracle/03-may/0330cp.html

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

IT Innovative Project & Practices

SUBJECT DETAILS:

Course: Computer Engineering

Semester: V

Subject: IT Innovative Project & Practices

Code: -

Group: A

Teaching And Examination Scheme:

Non examination and non credit subject

Rationale

Today the I.T field is growing rapidly. The use of latest Mobile devices and websites has created curiosity and interest in students. It needs to properly utilize for the project implementation. This subject also gives student exposures to latest emerging trend and technologies around.

Objective

The student will be able to

- 1) select the latest topics and understand the topic
- 2) develop interest in extra curricular reading
- 3) keep update with the cutting edge
- 4) write report on the topic
- 5) prepare the presentation and deliver the seminar

Implementation Strategy

The students will propose topic on their interest at the beginning of semester. The proposed topic will be approved by committee at departmental level and assigned a guide for the seminar. They will be collecting the information from reputed magazines / periodicals publications and websites. Study the tools and technologies used for the topic. Student will understand and appreciate the significance of topic.

The topic include emerging trends such as Social media, Gaming and animation, android application development, Robotics , big data and analytical tool , web technologies, cloud computing , etc.

The student will prepare a report and present the seminar.

Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

TEACHING AND EXAMINATION SCHEME

DISCIPLINE: COMPUTER
ENGINEERING
SEMESTER: VI

w.e.f. Batch admitted in June, 2012 (progressively)

| SR. No. | SUBJECT NAME/ SUBJECT CODE | Pre-requisite Subject Code | SCHEME OF INSTRUCTION AND PERIODS PER WEEK | | | | | THEORY PAPER DURATION AND MARKS | | SCHEME OF EXAMINATION | | | | | | Gr | SCHEME L/P/Cr | |
|----------|---------------------------------------|----------------------------|--|----|----|----|----|---------------------------------|-----|-----------------------|----------|------|-------|-------|-------|------|---------------|--|
| | | | L | P | D | T | Cr | Hrs | Mks | SSL @ | PAPER ** | TW @ | PR ** | OR ** | TOTAL | | | |
| 1 | # Embedded System (120814) | 120806 | 4 | 2 | -- | -- | 6 | 3 | 80 | 20 | 80 | 50 | 50 | -- | 200 | A* | 426 | |
| 2 | # Network Administration- II (120815) | 120808 | 4 | 2 | -- | -- | 6 | 3 | 80 | 20 | 80 | 50 | -- | 50 | 200 | M* | 426 | |
| 3 | Elective II (Any One) | | | | | | | | | | | | | | | | | |
| 3.1 | # Web Technology (128921) | -- | 4 | 2 | -- | -- | 6 | 3 | 80 | 20 | 80 | 50 | 50 | -- | 200 | A* | 426 | |
| 3.2 | # Linux Administration (120816) | 128916 | 4 | 2 | -- | -- | 6 | 3 | 80 | 20 | 80 | 50 | 50 | -- | 200 | A* | 426 | |
| 4 | Data ware Housing (120817) | -- | 2 | 4 | -- | -- | 6 | 3 | 80 | 20 | 80 | 25 | -- | 50 | 175 | A | 246 | |
| 5 | Software Testing (120818) | -- | 3 | 2 | -- | -- | 5 | 3 | 80 | 20 | 80 | 25 | -- | 50 | 175 | A | 325 | |
| 6 | Entrepreneurship Development (128922) | -- | 2 | 2 | -- | -- | 4 | 3 | 80 | 20 | 80 | -- | -- | -- | 100 | M | 224 | |
| 7 | # Project (120819) | \$ | 0 | 6 | -- | -- | 6 | -- | -- | -- | -- | 50 | -- | 50 | 100 | A* | 066 | |
| | TOTAL | | 19 | 20 | -- | 0 | 39 | No.of papers = 06 | | 120 | 480 | 250 | 100 | 200 | 1150 | | | |
| | | | TOTAL PERIODS= | | | | 39 | | 480 | TOTAL MARKS= | | | | | | 1150 | | |

* Compulsory, # Award Winning. ** Assessed by Internal and External Examiners Jointly, @ Assessed by Internal Examiner only
L- Lecture Period, P- Practical Period, D-Drawing Practice Period, T- Tutorial, Cr-Credit, SSL-Sessional, TW- Term Work
PR-Practical, OR-Oral, \$- All Compulsory subjects upto Vth Sem with Term granted
GR- Group, B-Basic, C-Core, A-Application, M-Management

EMBEDDED SYSTEMS (120814)

(One Paper : 3 Hrs., Theory : 80 Mks, Lect/ Week – 4, Prac: 2/Week, Practical – 50 Mks, T.W. : 50 Mks, Credit : 6)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: VI |
| Subject: Embedded Systems | Code: 120814 |
| Group: A* | |

Teaching And Examination Scheme :

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Embedded Systems | 4 | 2 | -- | 1, 3hrs, 80 | 20 | 80 | 50 | 50 | -- | 200 | A* | 120814 | 426 |

Rationale:

The study of embedded systems is essential part of Computer Science. It deals with computer hardware with software embedded in it. This subject will enable student to develop logical thinking and use of "Firmware". It is practical oriented subject having theoretical prerequisites of Microprocessor, Digital Techniques, Data Structures and Computer Architecture. Students will be able to develop Real Time Systems, Device drivers, use interrupt service mechanism, program timing and counting devices and develop embedded C-Programs for Microcontroller.

Objective:

The student will be able to:

1. Access embedded systems hardware units like processor, I/O device, On-chip and Off-chip device, Power supply etc.
2. Interface various devices using ports.
3. Write embedded program.
4. Develop programmable interrupt controller.
5. Perform software analysis, design, implementation, testing, debugging for embedded systems.

Theory Contents:

- 1. 8051- Microcontrollers** (Periods-10hrs, Mks-10)
 - 1.1. Overview of 8051 family, Architecture, Memory organization,
 - 1.2. Functional pin, Ports & circuit, Addressing mode, Instruction Set
- 2. Hardware overview** (Periods-10hrs, Mks-10)
 - 2.1. Study of interrupt structure, Port structure & Programming,
 - 2.2. Study of SBUF, TCON, TMOD, SMOD, SCON Register, Timer/Counter & Serial Communication Programming
- 3. Introduction to embedded system** (Periods-12 hrs, Mks-20)
 - 3.1. Embedded systems, processor embedded into a system, embedded hardware units & devices in a system, embedded software in a system, examples of embedded system,
 - 3.2. SOC & use of VLSI circuit design technology, complex system design & processors,
 - 3.3. design process in embedded system,
 - 3.4. formalization of system design & examples,
 - 3.5. classification of embedded system,
 - 3.6. Skills required for an embedded system designer.
- 4. Devices & communication buses for devices network** (Periods-10hrs, Mks-15)
 - 4.1. I/O types & examples,
 - 4.2. Serial communication devices, parallel device ports, wireless devices,
 - 4.3. Timer & counting devices, watch dog timer, real time clock,
 - 4.4. Networked embedded systems, serial bus communication protocol, parallel bus devices protocol, internet embedded systems, wireless mobile protocol.
- 5. Device Driver & Interrupts Servicing Mechanism** (Periods-10hrs, Mks-10)
 - 5.1. Device Drivers, Parallel port device driver, Serial port device driver,
 - 5.2. Internal Programmable timing devices,
 - 5.3. Interrupts handling Mechanism, Context switching
- 6. RTOS & Interprocess Communication** (Periods-12hrs, Mks-15)
 - 6.1. Concepts of RTOS, Requirement, Need,

- 6.2. Specification of RTOS in Embedded systems, Multitasking, Task synchronization & Mutual Exclusion, Starvation, Deadlock, Multiple processes,
 6.3. Problem of sharing data by multiple task and routines, Interprocess communication & embedded Linux.

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|---|---------------------|-----------|-------------|-------------|
| 1. | 8051- Microcontrollers | 10 | 10 | 14 | M |
| 2. | Hardware overview | 10 | 10 | 16 | E |
| 3. | Introduction to embedded system | 12 | 20 | 20 | E |
| 4. | Devices & communication buses for devices network | 10 | 15 | 14 | M |
| 5. | Device Driver & Interrupts Servicing Mechanism | 10 | 10 | 16 | E |
| 6. | RTOS & Interprocess Communication | 12 | 15 | 20 | M |
| Total | | 64 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- 8051- Microcontrollers
- Hardware overview
- Introduction to embedded system

Section II

- Devices & communication buses for devices network
- Device Driver & Interrupts Servicing Mechanism
- RTOS & Interprocess Communication

Total Theory Hrs.= 64 hrs

Total Practical Hrs. = 32 hrs.

List of Practical

- To explore various simulators used in embedded systems.
- To write sample assembly program in Pinnacle simulator & to observe various files created.
- I/O operations with 8051 Ports.
- Serial communication with 8051.
- Timers programming with 8051.
- Interrupt Handling programming with 8051.
- Understanding of embedded c and to write a sample program in Keil simulator.
- Interfacing of Keyboard with 8051.
- Interfacing of LCD with 8051.
- Interfacing of ADC with 8051.
- Interfacing of real world embedded devices with 8051 mc using simulator.
- Study RTOS- (1) Embedded linux, (2). windows CE.

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

Publisher: Pearson Education

- An Embedded Software Primer by David E. Simon
- The 8051 Microcontroller And Embedded Systems
- Embedded Linux by Craig Hollabaugh

Publisher: Tata Magrow Hill

- Programming and Customizing the 8051 Microcontroller by Mike Predko

Web References:

- www.cis.upenn.edu
- www.nptel.iitm.ac.in
- www.embeddedindia.com
- www.ee.hacettepe.edu.tr

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|--------------|----------------|-----------|----------------|-----------|-----------------|-----------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

Network Administration II (120815)

(One Paper : 3 Hrs., Theory : 80 Mks, Lect/ Week – 4, Prac: 2/Week, Oral – 50 Mks, T.W. : 50 Mks, Credit : 6)

SUBJECT DETAILS:

| | |
|---|---------------------|
| Course: Computer Engineering | Semester: VI |
| Subject: Network Administration-II | Code: 120815 |
| Group: M* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|---------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Network Administration-II | 4 | 2 | -- | 1, 3hrs, 80 | 20 | 80 | 50 | -- | 50 | 200 | M* | 120815 | 426 |

Rationale:

Managing and protecting a computer network in today's situation has become a critical task for a network administrator. This subject covers very vital issues related to network management such as back up and network security. It emphasises on practical approach to do administration and monitoring the network using different tools. It also covers network management tools

Objective:

The student will be able to:

- Automate the network management
- Restore the data and back up policy
- Securing the network and use monitoring tools and setting up the policy
- Troubleshoot problems in network

Theory Contents:**1. Back up****(Periods-11hrs, Mks-14)**

- Administering Disaster Recovery
- Need and Types of Backup
- Using Backup Utility
- Scheduling Backups
- Restoring Data
- Troubleshooting Boot Failures
- Automated System Recovery (ASR), Basic vs. Dynamic Disks
- Disk Management Tools and Tasks
- Concept of RAID Backup Policy, Backup tools

2. Network Security**(Periods-10hrs, Mks-16)**

- Wired/wireless –
- Firewalls : concept, design principles, limitations, trusted systems, Kerberos - concept
- Security topologies – security zones, DMZ, Internet, Intranet, VLAN, security implication, tunnelling
- Email security : Email security standards : Working principle of SMTP, PEM, PGP, S/MIME, spam

3. Network Management Models**(Periods-11hrs, Mks-10)**

- SNMP v1 & v2 and CMIP
- Organizational model, information model, Communication model, Functional model

4. Network Administration tools**(Periods-10hrs, Mks-10)**

- Web based tools / Local
- Web based tools for System and network analysis-ShareEnum, NTFS Permissions Explorer, TcpView, WireShark, Look@LAN etc
- NetStat, PortScan, HostAlive, TraceRoute and Ping, Network analyser , NetCat , WinDump / TCPDump, WiFiMan, SysFiles, EmailVerify,etc

5. Server and network Monitoring tool**(Periods-12hrs, Mks-16)**

- 5.1. Server monitoring tool
- 5.2. Introduction sever monitoring, local server monitoring and log files ,open source and proprietorships third party software /tool case studies :HP OpenView and Tivoli.
- 5.3. Need, features ,case studies :Microsoft Network Monitor, nagios

6. Troubleshooting networking

(Periods-10hrs, Mks-14)

- 6.1. Troubleshooting and security of Network
- 6.2. Understanding the Problem – Troubleshooting, Segmenting the Problem,
- 6.3. Isolating the Problem, Setting Priorities.
- 6.4. Troubleshooting Tools – Hardware Tools, Software Tools, Monitoring and
- 6.5. Troubleshooting Tools
- 6.6. Internal Security – Account Security, File and Directory permissions,
- 6.7. Practices and user education.
- 6.8. External Threats – Front Door threats, Back Door threats, Denial services threats, Viruses, worms and other Malicious codes.

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|------------------------------------|---------------------|-----------|-------------|-------------|
| 1. | Back up | 11 | 14 | 16 | M |
| 2. | Network Security | 10 | 16 | 16 | E |
| 3. | Network Management Models | 11 | 10 | 20 | E |
| 4. | Network Administration tools | 10 | 10 | 16 | M |
| 5. | Server and network Monitoring tool | 12 | 16 | 16 | E |
| 6. | Troubleshooting networking | 10 | 14 | 16 | M |
| Total | | 64 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Back up
2. Network Security
3. Network Management Models

Section II

4. Network Administration tools
5. Server and network Monitoring tool
6. Troubleshooting networking

Total Theory Hrs.= 64 hrs
Total Practical Hrs. = 32 hrs.

List of Practical

1. Installation of Windows XP.
2. Configuring Hardware Profile.
3. Creating Users and Groups and setting their properties. 15
4. Configuring Roaming and Mandatory User Profiles.
5. Creating and Managing Shares.
6. Study of AGP Process.
7. Study of NTFS Permissions.
8. Study of Encrypted File System.
9. Study of File Compression.
10. Study of Event Viewer, Task Manager.
11. Study of System Monitor & Performance Log.
12. Installing Local and Network Printer and set priority.
13. Installation of Windows Server 2003.
14. Study of Disk Management & Implementing Disk Quotas.
15. Study of Backup, Restore and Automated System Recovery

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books :

Network Management: Principles and Practice

2. Mani Subramanian; Timothy A. Gonsalves; N. Usha Rani, Pearson Education India
3. William Stalling, “SNMP – SNMPv2, SNMPv3 & RMON 1 and 2”, 3 rd Edition
4. Steve Wisniewski, “Network Administration”, Prentice Hall, 2000.
5. Programming and Customizing the 8051 Microcontroller by Mike Predko

Web References:

1. <http://www.nmap.org>.
2. <http://www.tamos.com>
3. <http://www.gfi.com/blog/101-free-admin-tools/>

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

WEB TECHNOLOGY (128921)

(One Paper : 3 Hrs., Theory : 80 Mks, Lect/ Week – 4, Prac: 2/Week, Practical – 50 Mks, T.W. : 50 Mks, Credit : 6)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: VI |
| Subject: Web Technology | Code: 128921 |
| Group: A* | |

Teaching And Examination Scheme :

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|----------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Web Technology | 4 | 2 | -- | 1, 3hrs, 80 | 20 | 80 | 50 | 50 | -- | 200 | A* | 128921 | 426 |

Rationale:

This course is designed to provide overview of Web Design. Students will be able to add client side and server side script. This course also provides overview of Active Server Pages.

Objective:

The student will be able to:

1. Learn Web page Designing and relevant software aspects.
2. Develop the Web page and principle of operation of all relevant topics.

Theory Contents:**1. INTRODUCTION TO WWW****(Periods-06hrs, Mks-06)**

- 1.1. Evolution of www, Basic features
- 1.2. web browser architecture
- 1.3. Basic features, Book marks, History, Progress Indicators
- 1.4. personalization of Browsers, printing displayed page and Forms
- 1.5. Saving web pages, Netscape, Communicator

2. WEB PUBLISHING**(Periods-06hrs, Mks-06)**

- 2.1. Technology overview, web site planning
- 2.2. where to Host your web site
- 2.3. Multiple Sites on one server
- 2.4. maintaining a Web site
- 2.5. Publishing Tools

3. XML, DHTML,XHTML**(Periods-08 hrs, Mks-08)**

- 3.1. Introduction to XML
- 3.2. XML-Document type Definition(DTD), Schema
- 3.3. Extensible Style sheet Language(XSLT)
- 3.4. DHTML, events, event handlers in DHTML
- 3.5. Introduction to XHTML

4. INTRODUCTION TO VB SCRIPT**(Periods-10hrs, Mks-06)**

- 4.1. Character set
- 4.2. Variables and Data types
- 4.3. Declaration of variables
- 4.4. VBScript Operators
- 4.5. Conditional statements
- 4.6. Looping statements
- 4.7. VB Script Functions & Subroutines
 - 4.7.1. Conversion functions
 - 4.7.2. String manipulation Functions
 - 4.7.3. Writing subroutines using sub & end sub
 - 4.7.4. Argument passing to subroutine

4.7.5. Writing a functions, calling a function

4.8. VB Script's Built-in Functions

5. INTRODUCTION TO SERVERSIDE PROGRAMMING-ASP

(Periods-18hrs, Mks-28)

5.1. Concept of personal web server, internet information server (IIS).

5.2. Introduction to active server pages

5.3. Running ASP Pages

5.4. Built in ASP objects

5.5. Using Request object

5.5.1Collecting the form information

5.5.2Read cookies

5.6. Using Response object

5.6.1. What is the Response Object?

5.6.2. Sending HTML to the Browser

5.6.3. Buffering ASP Pages

5.6.4. Sending the User to another Page

5.6.5. Cookies

5.6.6. Caching Your ASP Pages

5.7. Maintaining Persistent Information on the web using Application and Session Object

5.8. Server Object

5.9. ASP Components

5.9.1. Introduction to all ASP components

5.9.2. Using the Ad rotator component

5.9.3. Content linker and its users

5.9.4. Browser capabilities component

6. DATABASE ACCESS USING ASP

(Periods-10hrs, Marks-16mks)

6.1. Communicating with a database using ActiveX Data Objects (ADO)

6.2. Connecting to a Database Using Connection Object

6.2.1. Opening and Closing the connection

6.2.2. Properties of the Connection

6.2.3. Using a System DSN

6.2.4. Using a DSN-less Connection

6.3. Reading Data from DataBase using Recordset Object

6.3.1. Information Retrieval using Fields Collection

6.3.2. Sorting Recordsets

6.3.3. Filtering Recordsets Based on User Input

6.4. Using SQL statements to Query Data

6.5. Using Advanced Database Techniques

7. SEARCH ENGINES

(Periods-06hrs, Mks-10)

7.1. Technology overview

7.2. Types of search engines

7.3. programming concept of search engine

7.4. how to register a web site on search Engines.

7.5. Algorithms-PageRanking

7.6. Usenet and Internet Relay Chat

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--|--|---------------------|-----------|-------------|-------------|
| 1. | INTRODUCTION TO WWW | 06 | 06 | 12 | M |
| 2. | WEB PUBLISHING | 06 | 06 | 12 | E |
| 3. | XML, DHTML,XHTML | 08 | 08 | 14 | E |
| 4. | INTRODUCTIONTO VB SCRIPT | 10 | 06 | 15 | M |
| 5. | INTRODUCTION TO SERVERSIDE PROGRAMMING-ASP | 18 | 28 | 20 | E |
| 6. | DATABASE ACCESS USING ASP | 10 | 16 | 15 | M |
| 7. | SEARCH ENGINES | 06 | 10 | 12 | D |
| ----- Total | | 64 | 80 | 100% | # |
| (# M=Most Essential, E=Essential, D=Desirable) | | | | | |

Section I:

1. INTRODUCTION TO WWW

2. WEB PUBLISHING

3. XML, DHTML,XHTML

4. INTRODUCTIONTO VB SCRIPT

5 INTRODUCTION TO SERVERSIDE PROGRAMMING-ASP(5.1-5.4)

Section II

5. INTRODUCTION TO SERVERSIDE PROGRAMMING-ASP (5.5-5.9)

6. DATABASE ACCESS USING ASP

7. SEARCH ENGINES

Total Theory Hrs.= 64 hrs

Total Practical Hrs. = 32 hrs.

List of Practical

1. Study of Extensible Markup Language
2. Design Web Page using Extensible style Sheet Language
3. Design Dynamic web page using VB Script
4. Demonstrate the installation of IIS
5. Program based on collecting the form information using ASP objects
6. Program Based on Cookie in ASP
7. Design Login form in ASP
8. Program based on Database connectivity using ASP
9. Program based on Database connectivity using System DSN
10. Program based on Database connectivity using DSN-less Connection
11. Program based on Database connectivity using XML
12. Program based on Inserting ,Updating and Deleting Database Records
13. Program based on Maintaining Persistent Information on the web using Session and Application objects.
14. Design a Web site using ASP

IMPLEMENTATION STRATEGY (PLANNING) :

In depth study and understanding of the subject will be implemented by adoption of the following strategy :

1. Conduction of lectures & practicals according to theory Teaching Plan
2. Termwork plan for practical implementation.
3. Hands on practice in the laboratory.
4. conducting 2 periodical tests .
5. home assignments on algorithms, searching techniques etc.
6. use of PPT as a teaching aid.

Reference Books :

1. Discover ASP 3.0 By D'Souza
2. Web Technologies By Achyut Godbole & Atul Kahate
3. Internet for Everyone- Leon Tech world By Alexis Leon and Mathews Leon

Additional References:

1. Sams Teach Yourself Active Server Pages 3.0 in 21Days By Scott Mitchell, James Atkinson
2. Internet in a Nutshell By Alexis Leon & Mathes Leon, Vikas Publications
3. world wide web design with html By C Xavier

Web references:

1. www.microsoft.com
2. www.w3schools.com
3. www.onlinewebtutorials.com

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

LINUX ADMINISTRATION (120816)

(One Paper: 3 Hrs., Theory: 80 Mks., Lec:4/week, Prac:2/week, Practical: 50, TW: 50, Credit: 6)

SUBJECT DETAILS:

| | |
|--------------------------------------|---------------------|
| Course: Computer Engineering | Semester: VI |
| Subject: LINUX ADMINISTRATION | Code: 120816 |
| Group: A* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|-----------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-----------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| LINUX ADMINISTRATION | 4 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 50 | 50 | -- | 200 | A* | 120816 | 426 |

Rationale:

This course is designed to provide overview of Linux Administration. Linux Operating System is widely used in industry, it is reliable, secure and flexible. Most of the Web applications are developed and deployed on Linux Operated PCs.

Objectives:

The students will be able to:

1. Install Linux Operating System.
2. Create users and super users, assigns access permissions.
3. install application software and update the linux kernels
4. Configure LAN and IP addresses.
5. Install CUPS and LPD for printing.

Theory Contents:

1. **Installation and Hardware Configuration** **(Period 10 Hrs, Marks 12)**
 - 1.1. Creating an Installation Diskette, Booting Linux Installation Program ,
 - 1.2. basic Linux installation, OS installers : YaST, Anaconda,
 - 1.3. Partitioning Hard Drive(s), Setting up Swap Space, Choosing Partitions to Format,
 - 1.4. Choosing Desired Packages to Install, Hardware Configuration, and Kick start, diskless clients , Live media ,
 - 1.5. Multi-boot with Other Operating Systems,
 - 1.6. Downloading and Installing Linux Updates
2. **General System Administration Issues** **(Period 12 Hrs, Marks 16)**
 - 2.1. Root Account, Ownership of files and processes, changing root user ,
 - 2.2. administrative commands , other administrative users sudo, syslog and log files,
 - 2.3. controlling the process, ps and TOP,
 - 2.4. Creating User Accounts, Changing User Passwords , Disabling User Accounts, Removing User Accounts,
 - 2.5. Linux Password & Shadow File Formats,
 - 2.6. System Shutdown and Restart, Bootstrapping, Working with startup scripts
3. **Software and configuration management** **(Period 12 Hrs, Marks 12)**
 - 3.1. Package management ,Available package management systems ,rpm , dpkg, High-level package management systems. Package repositories.
 - 3.2. RHN: the Red Hat Network, APT: the Advanced Package Tool,Configuring apt-get ,etc/apt/sources.list file, Setting up an internal APT, Automating apt-get yum
 - 3.3. Revision control Backup file creation ,Formal revision control systems, RCS: the Revision Control System CVS: the Concurrent Versions
 - 3.4. System Configuration management tools ,cfengine: computer immune system LCFG: a large-scale configuration system
4. **Setting Up a Linux network** **(Period 10 Hrs Marks 14)**
 - 4.1. TCP/IP protocol stack, Routing , ARP,
 - 4.2. adding a desk top to network,

- 4.3. DHCP ,DHCP software, DHCP working ,setting up DHCP server ,
- 4.4. security issues: NAT ,IP forwarding ,
- 4.5. proxy server working and setup
- 4.6. The hostname commands, network configuration files, network management and debugging issues ,
- 4.7. working firewall, setting up firewall

5. Working with DNS and web server

(Period 10 Hrs, Marks 14)

- 5.1. DNS history, working, Configuring a DNS server, using DNS client, configuration files DNS, DNS databases, dynamic DNS,
- 5.2. Working of web server, Configuring the Apache Web Server, virtual web hosting , configuration files , securing a web server.

6. Printing in Linux

(Period 5 Hrs, Marks 6)

- 6.1. Printing system overview, printer languages,
- 6.2. CUPS: architecture, Building and installation, printing protocols, managing printers,
- 6.3. Line Printer Daemon protocol, Commands, Usage

7. Storage and backup

(Period 5 Hrs, Marks 6)

- 7.1. Disk types, adding disk,
- 7.2. Introduction to Advanced disk management: RAID and LVM Backup devices and media ,
- 7.3. Setting up an incremental backup regime with dump

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|---------|---|---------------------|-----------|-------------|-------------|
| 1. | Installation and Hardware Configuration | 10 | 12 | 10 | E |
| 2. | General System Administration Issues | 12 | 16 | 15 | D |
| 3. | Software and configuration management | 12 | 12 | 25 | M |
| 4. | Setting Up a Linux network | 10 | 14 | 20 | M |
| 5. | Working with DNS and web server | 10 | 14 | 15 | E |
| 6. | Printing with CUPS and LPD | 5 | 6 | 8 | D |
| 7. | .Storage and backup | 5 | 6 | 7 | D |
| | | Total 64 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Installation and Hardware Configuration
2. General System Administration Issues
3. Software and configuration management

Section II

4. Setting Up a Linux network
5. Working with DNS and web server
6. Printing in Linux
7. Storage and backup

Total Theory Hours = 64 hrs.

Total Practical Hours =32 hrs.

List of Practicals:

1. To explore the FHS in Linux
2. To Install Red Hat/ Open Suse/ Ubuntu Linux
3. To Use administrative commands processes , log files and use of tools : Top/YaST
4. To Create an user , group and super user and various operations on user account by editing configuration files
5. To Install a package and upgrade the package using RPM and dpkg command
6. To Perform various functions (install /upgrade/ uninstall /verify) using yum/apt-get / zypper
7. To demonstrate a configuration management tool : **cfengine**
8. To configure a LAN in Linux and use different command related networking
9. To configure dhcp server using GUI and editing configuration files and start /stop the services.
10. To configure a proxy server and test the services
11. To perform command related network management and debugging (nsstat ,route hosts ping traceroute ,nslookup etc)
12. To configure a DNS server and updates its database
13. To configuring apache 2 and add a virtual hosts
14. To add a printer with local ,ipp etc protocol in Linux

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

1. Christopher Negus - Red Hat Linux 9 Bible - John Wiley & Sons
2. Michael Jang - Mastering Red Hat Linux 9 - BPB Publications
3. Evi Nemeth and others - Linux administration hand book- Prentice Hall

Additional References:

1. Ellen Siever, Aaron Weber, Stephen Figgins - Linux in a Nutshell, Fourth Edition - O'Reilly & Associates

Web Sites:

1. <http://www.linux.org>
2. <http://www.cups.org>
3. www.apache.org
4. www.kernel.org

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

DATA WARE HOUSING (120817)

(One Paper : 3 Hrs., Theory: 80 Mks., Lec:2/week, Prac:4/week, Oral: 50, Credit :6)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: VI |
| Subject: Data Ware Housing | Code: 120817 |
| Group: A | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|-------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Data Ware Housing | 2 | 4 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | 25 | -- | 50 | 175 | A | 120817 | 246 |

Rationale:

At present , Data ware housing is used by most of leading enterprises for decision support system . After studying this subject student will be able to understand the architecture and Infrastructure of Data Warehousing. It covers data extraction, modeling and data ware housing using web.

Objectives:**The student will be able to**

- Understand the Architecture and Infrastructure of Data Warehousing
- Define the Data Model and able to extract, transform data in the required format
- Understand Web- enabled Data Warehouse
- Distinguish different frameworks of Data warehousing Models

Theory Contents:**1. Overview and Concepts of Data Warehousing****(Periods-4 hrs. Marks-10)**

- Need for Data warehousing
- Defining Features
- Data warehouse and Data Marts
- Overview of the Components
 - Source data component
 - Data staging Component
 - Data storage Component
 - Information Delivery Component
 - Metadata Component
 - Management and Control Component
- Metadata in the Data Warehouse
 - Types of Metadata
 - Special Significance
- Data warehouse Expansion
- Significant Trends
- Web enabled Data Ware house
 - The warehouse to the Web
 - The Web to the Warehouse
 - The Web –Enabled Configuration

2. Data Warehouse Architecture**(Periods-4 hrs. Marks-10)**

- The Architectural Components
 - Distinguishing Characteristics
 - Architectural Framework
 - Architectural Supporting Flow of Data
 - The Management and Control Module
 - Technical Architecture
- Infrastructure as the foundation for Data Warehousing

- 2.2.1 Infrastructure Supporting Architecture
- 2.2.2 Hardware and Operating System
- 2.2.3 Database Software
- 2.2.4 Collection of Tools
 - 2.2.4.1 Data Modelling
 - 2.2.4.2 Data Extraction
 - 2.2.4.3 Data Transformation
 - 2.2.4.4 Data loading
 - 2.2.4.5 Data Quality
 - 2.2.4.6 Queries and Reports
 - 2.2.4.7 Online analytical Processing(OLAP)

3. Data Extraction, Transformation, and Loading

(Periods-06 hrs. Marks-10)

- 3.1 ETL Overview
 - 3.1.1 Most Important and Most challenging
 - 3.1.2 Time-consuming and Arduous
 - 3.1.3 ETL Requirements and Steps
- 3.2 Data Extraction
 - 3.2.1 Source Identification
 - 3.2.2 Data Extraction techniques
 - 3.2.3 Evaluation of the Techniques
- 3.3 Data Transformation
 - 3.3.1 Data Transformation: Basic tasks
 - 3.3.2 Major Transformation Types
 - 3.3.3 Data Integration and Consolidation
 - 3.3.4 Transformation for Dimension Attributes
 - 3.3.5 How to implement Transformation
- 3.4 Data Loading
 - 3.4.1 Applying Data: Techniques and Processes
 - 3.4.2 Data Refresh Versus Update
 - 3.4.3 Procedure for Dimension Tables
 - 3.4.4 Fact Tables: History and Incremental Loads

4. OLAP in the Data Warehouse

(Periods-06 hrs. Marks-20)

- 4.1 Demands for Online Analytical Processing
 - 4.1.1 Need for Multidimensional Analysis
 - 4.1.2 Fast access and powerful Calculations
 - 4.1.3 Limitations of Other Analysis Methods
- 4.2 Major Features and functions
 - 4.2.1 General Features
 - 4.2.2 Dimensional Analysis
 - 4.2.3 What are Hypercubes?
 - 4.2.4 Drill-Down and Roll-Up
 - 4.2.5 Slice- and-Dice or rotation
- 4.3 OLAP Models
 - 4.3.1 Overview of Variations
 - 4.3.2 The MOLAP Model
 - 4.3.3 The ROLAP Model
 - 4.3.4 ROLAP Versus OLAP
- 4.4 OLAP implementation Considerations
 - 4.4.1 Data Design and Preparation
 - 4.4.2 Administration and Performance
 - 4.4.3 OLAP Platforms
 - 4.4.4 OLAP Tools and Products
 - 4.4.5 Implementation steps

5. Principles of Dimensional Modeling

(Periods-04hrs. Marks-10)

- 5.1. From Requirements to Data Design
 - 5.1.1 Design Decisions
 - 5.1.2 Dimensional Modeling Basics
 - 5.1.3 E-R Modeling Versus Dimensional Modeling
 - 5.1.4 Use of CASE Tools
- 5.2. The STAR Schema
 - 5.2.1 Review of Simple STAR Schema
 - 5.2.2 Inside a Dimensional table
 - 5.2.3 inside the Fact Table
 - 5.2.4 The Factless Fact table
 - 5.2.5 Data Granularity

- 5.3. STAR Schema Keys
 - 5.3.1 Primary Keys
 - 5.3.2 Surrogate Keys
 - 5.3.3 Foreign Keys
- 5.4 Updates to the Dimension Tables
 - 5.4.1 Slowly Changing the Dimensions
 - 5.4.2 Type 1 Changes: Correction of Errors
 - 5.4.3 Type 2 Changes: Preservation of History
 - 5.4.4 Type 3 Changes: Tentative Soft Revisions

6. Significant Role Of Metadata

(Periods-04 hrs. Marks-10)

- 6.1 Why Metadata Is Important
- 6.2 Metadata Types by Functional Areas
 - 6.2.1 Data acquisition
 - 6.2.2 Data Storage
 - 6.2.3 Information Delivery
- 6.3 Business Metadata and Technical Metadata
- 6.4 How to provide Metadata
 - 6.4.1 Metadata Requirements
 - 6.4.2 Sources Of Metadata
 - 6.4.3 Metadata Repository

7. Data Warehousing and the Web

(Periods-04 hrs. Marks-10)

- 7.1 Web-Enabled Data Warehouse
 - 7.1.1 Why the Web?
 - 7.1.2 Convergence of Technologies
 - 7.1.3 Adapting the Data Warehouse for the Web
 - 7.1.4 The Web as a Data Source
- 7.2 Web-Based Information Delivery
- 7.3 OLAP and the Web
- 7.4 Building a Web-Enabled Data Warehouse

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|---------|--|---------------------|-------|-------------|-------------|
| 1. | Overview and Concepts of data warehousing | 04 | 10 | 15 | M |
| 2. | Data Warehouse Architecture | 04 | 10 | 15 | E |
| 3. | Data Extraction, Transformation, and Loading | 06 | 10 | 15 | E |
| 4. | OLAP in the Data Warehouse | 06 | 20 | 20 | M |
| 5. | Principles of Dimensional Modelling | 04 | 10 | 15 | E |
| 6. | Significant Role Of Metadata | 04 | 10 | 10 | D |
| 7. | Data Warehousing and the Web | 04 | 10 | 10 | E |
| TOTAL | | 32 | 80 | 100 | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- 1. Overview and Concepts of data warehousing
- 2. Data Warehouse Architecture
- 3. Data Extraction, Transformation, and Loading
- 4. OLAP in the Data Warehouse (Half Portion)

Section II

- 4. OLAP in the Data Warehouse (remaining Half)
- 5. Principles of Dimensional Modelling
- 6. Significant Role Of Metadata
- 7. Data Warehousing and the Web

Total Theory Hours = 32 hrs.

Total Practical Hours = 64 hrs.

List of Practicals :

- 1. To know concepts of data ware housing
- 2. To draw and understand various components of data ware housing architecture
- 3. To know the features of open source ETL tool
- 4. To Implement various function extraction, transformation and loading
- 5. To Create data ware house using Oracle 9i
- 6. Data Retrieve from Data Warehouse using Oracle 9i
- 7. Create a database using Analysis Manager & create a multi dimensional OLAP cube using STAR schema

8.Create a OLAP Cube Report

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books :

- 1.M.H.Dunham,"Data Mining:Introductory and Advanced Topics" Pearson Education
2. Jiawei Han, Micheline Kamber, "Data Mining Concepts & Techniques" Elsevier
3. Sam Anahory, Dennis Murray, "Data Warehousing in the Real World : A Practical Guide for Building Decision Support Systems, 1/e " Pearson Education
- 4.Mallach,"Data Warehousing System",McGraw –Hill
- 5.Data Warehousing Fundamentals By Paulraj Ponniah

Web Reference:

1. <http://www.1keydata.com/datawarehousing/datawarehouse.html>
2. <http://www.redbooks.ibm.com/redbooks/pdfs/sg242238.pdf>

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

SOFTWARE TESTING (120818)

(One Paper : 3 Hrs., Theory : 80 Mks, Lect/ Week – 3, Prac: 2/Week, Oral – 50 Mks, T.W. : 25 Mks, Credit : 5)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: VI |
| Subject: Software Testing | Code: 120818 |
| Group: A | |

Teaching And Examination Scheme :

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Software Testing | 3 | 2 | -- | 1, 3hrs, 80 | 20 | 80 | 25 | -- | 50 | 175 | A | 120818 | 325 |

Rationale:

This subject intends to teach the students the basic fundamentals of Software Testing. The students will learn how to immediately find problems in any computer program, how to plan an effective test approach, how to clearly report your finding and how to tell when your software is ready for release.

Objective:

The student will be able to:

- 01 Understand the impact of software bugs and importance of software testing.
- 02 Learn how to test software for compatibility, usability and cultural issues.
- 03 Discover how to improve your testing efficiency by automating your tests.

Theory Contents:**1. Software Testing Fundamentals****(Periods-08hrs, Marks-10Mks)**

- 1.1. Fundamentals of Test Process
- 1.2. Psychology of Testing
- 1.3. General Principles of Testing
- 1.4. Test Metrics
- 1.5. Testing and Debugging
- 1.6. Software Quality

2. Software development process**(Periods-06hrs, Marks-10Mks)**

- 2.1. Software development Models
- 2.2. Testing within Life cycle Model
- 2.3. Sequential Development Model
- 2.4. Iterative –Incremental Development Model
- 2.5. Test Levels
- 2.6. Static Techniques

3. Usability Testing**(Periods-12hrs, Marks-20Mks)**

- 3.1. User Interface Testing
 - 3.1.1. What makes a Good UI?
 - 3.1.2. Follows standards or Guidelines, Intuitive, Consistent, Flexible, Comfortable, Correct
 - 3.1.3. Useful Testing for the Disabled: Accessibility Testing - It's the Law, accessibility features in software.
- 3.2. Testing the Documents
 - 3.2.1 Types of Software Documentation
 - 3.2.2 The importance of documentation testing
 - 3.2.3 What to look for when reviewing documentation, the realities of documentation testing
- 3.3 Web site Testing
 - 3.3.1 Web Page Fundamentals
 - 3.3.2 Black-Box Testing - Text, Hyperlinks, graphics, forms, object and other simple miscellaneous Functionality
 - 3.3.3 Gray Box Testing
 - 3.3.4 White Box Testing
 - 3.3.5 Configuration and compatibility testing
 - 3.3.6 Usability Testing

3.3.7 Introducing Automation

4. Test Management

(Periods-08hrs, Marks-20Mks)

- 4.1. Test Organization
- 4.2. Test teams, tasks and Qualifications
- 4.3. Test Planning
- 4.4. Quality Assurance Plan, Test Plan, Prioritization Plan, Test Exit Criteria
- 4.5. Cost and economy Aspects
- 4.6. Test Strategies
- 4.7. Preventive versus Reactive Approach, Analytical versus heuristic Approach
- 4.8. Test Activity Management, Incident Management, Configuration Management
- 4.9. Test Progress Monitoring and Control
- 4.10. Specialized Testing: Performance, Load, Stress & Security Testing

5. Testing Tools

(Periods-08hrs, Marks-12Mks)

- Automation of Test Execution, Requirement tracker, High Level Review
- 5.2 Types of test Tools
 - 5.3 Tools for test management and Control, Test Specification, Static Testing, Dynamic Testing
 - 5.4 Non functional testing
 - 5.6 Selection and Introduction of Test Tools
 - 5.6 Tool Selection and Introduction, Cost Effectiveness of Tool Introduction

6. Testing Object Oriented Software

(Periods-06hrs, Marks-08Mks)

- 6.1 Introduction to OO testing concepts, Differences in OO testing

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D |
|--------------|----------------------------------|---------------------|-----------|-------------|-------------|
| 1. | Software Testing Fundamentals | 08 | 10 | 04 | M |
| 2. | Software Development Process | 06 | 10 | 08 | E |
| 3. | Usability Testing | 12 | 20 | 08 | E |
| 4. | Test Management | 08 | 20 | 10 | M |
| 5. | Testing Tools | 08 | 12 | 20 | E |
| 6. | Testing Object Oriented software | 06 | 08 | 25 | M |
| Total | | 48 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I:

1. Software Testing Fundamentals
2. Software Development Process
3. Usability Testing

Section II:

4. Test Management
5. Testing Tools
6. Testing Object Oriented software

Total Theory Hrs.= 48 hrs

Total Practical Hrs. = 32 hrs.

List of Practical:

- 1) Introduction to Software Testing Concepts
- 2) Case Study-Study any system specification and report bugs
- 3) Write Test Cases for any Application (e.g. Railway Reservation Form)
- 4) Automate any installation procedure (e.g. WinZip)
- 5) Automate Microsoft Word Application
 - Open Microsoft Word
 - Type text (automatically)
 - Generate random file name.
 - Save file and close Microsoft Word.
- 6) Create GUI Objects.
- 7) Create any GUI Application e.g. Calculator
- 8) Assignment for Web Testing (use any Web testing tools e.g. Selenium)
- 9) Assignment for any Bug Tracking Tool (e.g. Bugzilla, Bugit)
- 10) Assignment for any test management tool (e.g. Test Director)

IMPLEMENTATION STRATEGY (PLANNING):

- Conducting lectures as per the teaching plan and conduction tutorials.
- Home assignment to practice at home .
- Question papers for the periodical test should cover the topics which have been taught. To test the understanding.

Reference Books:

1. Software Testing By Ron Patton, SAMS Techmedia
2. Software Testing : Principles and Practical By Srinivasan Desikan,Gopaldaswamy Ramesh, Pearson Education

Web References:

1. www.autoitv3.com
2. www.selenium.com

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

ENTREPRENEURSHIP DEVELOPMENT (128922)

(One Paper-03 Hrs, Marks-80, Lecture 2/ Week , Practical 2/week, Credit-4)

SUBJECT DETAILS:**Course:** Computer Engineering**Semester:** VI**Subject:** Entrepreneurship Development**Code:** 128922**Group:** M**Teaching And Examination Scheme:**

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|-------------------------------------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|----------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Entrepreneurship Development | 2 | 2 | -- | 1, 3 Hrs., 80 Mks. | 20 | 80 | -- | -- | -- | 100 | M | 128922 | 224 |

Rationale:

The entrepreneurship development part of the subject consists of topics related to the development of entrepreneurship skills and other details such as selection of product lines, site selection, financial aspects, personnel management, quality control and creative thinking. The subject includes the case studies in the related field.

Objectives:

The students will be able to:

1. Understand human science subjects intended to make aware about Entrepreneurship development
2. The basic concepts, principles and procedures related to the Entrepreneurship.
3. To expose the real life problems by case study and visits to the successful entrepreneurs.

Theory Contents:

1. The Concept of (Periods- 01hrs Marks:04)
 - 1.1. Entrepreneurship
 - 1.2. Entrepreneur
 - 1.3. Opportunity
 - 1.4. Innovations.
 - 1.5. Characteristics of Entrepreneur
2. The Information Sources for Business Opportunity (Periods- 02hrs Marks:06)
 - 2.1. The unexpected success failure
 - 2.2. The incongruity
 - 2.3. Innovations based on Process need
 - 2.4. Change in Industrial structure
 - 2.5. Demographics
 - 2.6. Changes in perception mood and means.
 - 2.7. New Knowledge scientific and non scientific
 - 2.8. Discussion for sources.
3. Information Gathering Techniques (Periods-01hrs Marks:04)
4. Identification of Product or Services for Getting business (Periods- 02hrs Marks:04)
5. Principles of market Survey (Periods- 01hrs Marks:04)
6. Analysis of Survey data & Product Service design (Periods- 02hrs Marks:04)
7. System concept & Project format based on Job design for Manufacturing Product of Creating service capabilities (Periods- 02hrs Marks:06)
 - 7.1. System concept
 - 7.2. Project formats
 - 7.3. Job design
8. The Procedure of Estimation of Resources Required for Establishing (Periods- 02hrs Marks:06)

- 8.1. The Enterprise of Starting Service Business
- 8.2. Space.
- 8.3. Equipment
- 8.4. Human Resources
- 8.5. Financial Resources
9. The Procedures of Project Report Writing for Getting approval from Financial Agencies for Starting Enterprise or Service. (Periods- 02hrs Marks:04)
 - 9.1. Project report Writing
 - 9.2. Procedure for submitting project report to the firm.
10. The concept of Quality Resources, Preparation of Specification and Identification of specific need of Resources (Periods- 02hrs Marks:04)
11. Approach for Resources (Periods- 01hrs Marks:04)
12. Making Payments of Resources Received (Periods- 02hrs Marks:04)
13. The Concept of management of Enterprise (Periods- 02hrs Marks:04)
14. Production and Sale of Product/Passing the service Business (Periods- 02hrs Marks:04)
15. Concept of Budgeting/accounting of Expenditure, Budget preparation (Periods- 02hrs Marks:04)
16. Procedure of Accounting Expenditure (Periods- 02hrs Marks:04)
17. Preparation of Balance Sheet (Periods- 02hrs Marks:04)
18. Evaluation & Quality Control (Periods- 02hrs Marks:06)
 - 18.1. Principles
 - 18.2. Procedure

| Sr. No. | Main Topics | No. of Contact Hrs. | Marks | Weightage % | # M / E / D | |
|---------|--|---------------------|-----------|-------------|-------------|----------|
| 1. | The Concept of Entrepreneurship | 01 | 04 | 05 | D | |
| 2. | The Information Sources for Business Opportunity | 02 | 06 | 08 | E | |
| 3. | Information Gathering Techniques | 01 | 04 | 05 | E | |
| 4. | Identification of Product or Services for Getting business | 02 | 04 | 05 | E | |
| 5. | Principles of market Survey | 01 | 04 | 05 | D | |
| 6. | Analysis of Survey data & Product Service design | 02 | 04 | 05 | E | |
| 7. | System concept & Project format | 02 | 06 | 08 | M | |
| 8. | Procedure of Estimation of Resources | 02 | 06 | 08 | M | |
| 9. | Procedures of Project Report Writing | 02 | 04 | 05 | E | |
| 10. | Concept of Quality Resources | 02 | 04 | 05 | M | |
| 11. | Approach for Resources | 01 | 04 | 05 | D | |
| 12. | Making Payments of Resources Received | 02 | 04 | 05 | D | |
| 13. | The Concept of management of Enterprise | 02 | 04 | 05 | M | |
| 14. | Production and Sale of Product | 02 | 04 | 05 | D | |
| 15. | Concept of Budgeting/accounting of Expenditure, Budget preparation | 02 | 04 | 05 | E | |
| 16. | Procedure of Accounting Expenditure | 02 | 04 | 05 | E | |
| 17. | Preparation of Balance Sheet | 02 | 04 | 05 | E | |
| 18. | Evaluation & Quality control | 02 | 06 | 06 | E | |
| | | Total | 32 | 80 | 100% | # |

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction
2. The Concept of Entrepreneurship
3. The Information Sources for Business Opportunity
4. Information Gathering Techniques
5. Identification of Product or Services for Getting business
6. Specification
7. Industries to be surveyed

8. Principles of market Survey
9. Analysis of Survey data & Product Service design
10. System concept & Project format

Section II

11. Procedure of Estimation of Resources
12. Procedures of Project Report Writing
13. Concept of Quality Resources
14. Approach for Resources
15. Making Payments of Resources Received
16. The Concept of management of Enterprise
17. Production and Sale of Product
18. Concept of Budgeting/accounting of Expenditure
19. Budget preparation
20. Procedure of Accounting Expenditure
21. Preparation of Balance Sheet
22. Concept of Evaluation & Quality control
23. Principles of Evaluation & Quality Control
24. Procedure of Evaluation & Quality Control

Total Theory Hours = 32 hrs.

Total Practical Hours = 32 hrs.

List of Practical:

1. Term work: Short reports on the information sources gathered from the newsletters, magazines or other literature.
2. Report on any one product/service, inclusive of its use, manufacturing qualities, trade names, etc.
3. Collection of data from at least five industries, report on data analysis
4. Preparation Of proforma project report and format of detail project report
5. Preparation of specifications for resources (sample specification) like land, building, machinery and manpower.
6. Collection of list of suppliers of building materials/construction machineries
7. Preparation of budget and balance sheet for small industry.(Industry to be selected from local area)

Implementation Strategy (Planning):

1. Conducting lectures as per the teaching plan with the aid of Power Point Presentation.
2. Conduction of periodical test
3. Providing Home assignment for practice at home

Reference Books:

- 1) Dynamics of Entrepreneurial Development & Management (4th edition) by Shri Vasant Desai
- 2) Small scale Industries & Entrepreneurship (7th edition) by Shri Vasant Desai
- 3) Entrepreneurship Development (2nd edition) by S. S. Khanka

Web References:

1. www.coursera.org
2. www.studymode.com
3. www.inderscience.com

QUESTION PAPER PATTERN

| Que. No. | Section I | | Section II | | Periodical Test | |
|----------|----------------|-------|----------------|-------|-----------------|-------|
| | Bits | Marks | Bits | Marks | Bits | Marks |
| 1. | Any 3 out of 5 | 12 | - | - | Any 2 out of 3 | 06 |
| 2. | Any 2 out of 4 | 12 | - | - | Any 2 out of 3 | 08 |
| 3. | Any 2 out of 4 | 16 | - | - | Any 1 out of 2 | 06 |
| 4. | - | - | Any 3 out of 5 | 12 | - | - |
| 5. | - | - | Any 2 out of 4 | 12 | - | - |
| 6. | - | - | Any 2 out of 4 | 16 | - | - |
| Total | - | 40 | - | 40 | - | 20 |

PROJECT (120819)

(Practical: 6/Week, Credit: 6, T/W: 50 Marks, Oral: 50 Marks)

SUBJECT DETAILS:

| | |
|-------------------------------------|---------------------|
| Course: Computer Engineering | Semester: VI |
| Subject: Project | Code: 120819 |
| Group: A* | |

Teaching And Examination Scheme:

| Subject | Scheme of Instructions and Periods per week | | | No. of Papers, duration & Marks | Scheme of Examination | | | | | | Group | Detailed Syllabus Ref. No. | Scheme L.Pr./Cr. |
|---------|---|----------------|----------|---------------------------------|-----------------------|-------|-----------|-------------|------|-------|-------|----------------------------|------------------|
| | Lecture | Pract. or Drg. | Tutorial | | Sessional Work | Paper | Term work | Pract. Exam | Oral | Total | | | |
| Project | -- | 6 | -- | -- | -- | -- | 50 | -- | 50 | 100 | A* | 120819 | 066 |

Rationale:

The project will enable the students to integrate the knowledge and skills acquired in the past two years of the diploma and third year of Diploma. This project title should be taken from the polytechnic or industrial situation.

Objectives:

The students will be able to:

1. Practically implement the acquired knowledge & develop innovative ideas.
2. Develop leadership qualities.
3. Plan the work, work in groups and co-ordinate the work.
4. Develop basic technical skills by hands on experience.
5. Write a project report (documentation)
6. Develop skills to understand latest technology in Computer/IT field.

Project Development : The Right Approach**a. Project Selection**

- i) Project must be based on knowledge acquired within three years of Diploma. Students must be aware with languages, packages, hardware. He is using from his project. If a particular language/package is not in syllabus he must possess a certificate of at least 6 months course completed in that language/package.
- ii) Repetition of project should be avoided as far as possible
- iii) After start of Academic Year, one-month period is to be provided for project selection. At the end of Sept. student must submit a 3-4 page document giving outline of project & feasibility study report.
- iv) Feasibility study includes
 1. Time feasibility
 2. Software, Hardware availability
 3. Sufficient information source
 4. Cost effectiveness, etc.
- v) A group of 3-4 students (at max) can develop a project.
- vi) Project may be
 1. Application Orientated
 2. System software
- vii) End of Sept. will be deadline for Project Selection.

b. Project Design

This is II phase in which students will actually start collecting detail information about their project

- i) Group must visit concern persons in the field to collect the system requirement. A practical design & development is to be achieved
- ii) They must adopt standard procedures, rules, regulation used in the real system & no imaginary model should be developed

- iii) Group can collect information about any other package, software currently under development on same subject or already developed, what facilities it provide, what are its drawbacks.
- iv) If any such software is implemented / installed at some industry students must visit & collect on site information
- v) Taking into consideration all requirements, design total system in top down fashion. Design must be modular & there must be clear distribution of task among group members.
- vi) At the end of Dec. students must submit “synopsis” giving details about system design & deliver a seminar making clear their views about project.

c. Project development

Remaining two-three months are to be utilised for actual coding, testing, of project.

- i) Independent module development is necessary
- ii) Enough time must be provided in time-table for project development.
- iii) There must be continuous assessment of project development
- iv) Prototype model may be developed & tested.
- v) Taking into consideration shortcoming & suggestions final software / Hardware should be developed before Mar. 31.

d. Project Report

MUST INCLUDE

- i) Project Design
- ii) Flow charts
- iii) Code
- iv) Future Development
- v) Bibliography
- vi) User manual
- vii) Costing

e. Data sheets of only uncommon, (main integrator circuits.) Main I/S e.g. Speech synthesis & not of common I/C like 8085.

There is no need of any explanation of common I/C and their interfacing

Total Practical Hours = 96 Hrs.

Implementation Strategy (Planning)

1. Student will present ideas along with surveyed information atleast 03 to 04 project proposals.
2. After approval from the department student will submit the synopsis of selected project idea (Technically / Economically feasible project topic).
3. Maximum 03 students will be in a group
4. Student as well as project guide will prepare and maintain the progress of project implementation as per the slots allocated in Time Table (06 Hrs. Per week practical slot)
5. Student will present implementation after completion of project to the department

For Award of Diploma under Multipoint Entry & Credit System, the student / candidate has to earn total 180 credits including compulsory subjects out of total available 214 credits from 41 subjects. The examination pattern / scheme will be same as per the other diploma examination of this institute. The Final Award of Grade will be given on the basis of marks obtained in award winning subject of Computer Engineering i.e. Vth & VIth Semester under grade point average scheme / criteria / norms as laid down in the MPE&C System.