**Curriculum Structure and Sample Path for Computer Science & Engineering TERM-VI**

| Sl. No. | Code | Course | Study Scheme | | | | Evaluation Scheme | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Contact Hrs /Week | | | Theory | | | | Practical | | | Total Marks | Credit |
| | | | Pre-requiste | L | T | P | End Exam | Progressive Assignment | | | End Exam | Progressive Assignment | | | |
| | | | | | | | | Class Test | Assign-ment | Attendance | | Sessional | Viva voce | | |
| 1 | G301-G307 | Softcore - II (Enterpreneurship Development) | NIL | 3 | 0 | 0 | 70 | 15 | 10 | 5 | 0 | 0 | 0 | 100 | 3 |
| 2 | CSE 501 | Network Installation & Maintenance | CSE405 CSE412 CSE505 | 3 | 0 | 4 | 70 | 15 | 10 | 5 | 25 | 25 | 0 | 150 | 5 |
| 3 | CSE601 | Elective - I | NIL | 3 | 0 | 2 | 70 | 15 | 10 | 5 | 25 | 25 | 0 | 150 | 4 |
| 4 | CSE602 | Elective - II | NIL | 3 | 0 | 2 | 70 | 15 | 10 | 5 | 25 | 25 | 0 | 150 | 4 |
| 5 | CSE512 | Project | NIL | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 100 | 50 | 50 | 200 | 5 |
| 6 | CSE511 | Professional Practices V | NIL | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 50 | 2 |
| **Total** | | | | **12** | **0** | **22** | **280** | **60** | **40** | **20** | **175** | **175** | **50** | **800** | **23** |

## SOFTCORE –II (Entrepreneurship Development)

| *L* | *T* | *P* | | **Curri. Ref. No.: G301-307** |
|---|---|---|---|---|
| **3** | **0** | **0** | **Total Marks:100** | **Theory: 100** |
| *Theory: 45* | | | | *End Term Exam: 70* |
| *Tutorial: 0* | | | | *P.A.: 30* |
| *Practical: 60* | | | | ***Practical: 0*** |
| **Pre requisite: NIL** | | | | *End Term Exam: 0* |
| ***Credit: 3*** | | | | *P.A : 0* |

**Theory**

Total Period : 45

Period : 3 P/W

| UNIT | TOPIC/SUB-TOPIC | CONTACT HRS. |
|---|---|---|
| **1.** | **INTRODUCTION** | **10** |
| 1.1 | Definition and functions of Entrepreneur, entrepreneurship quality, entrepreneurial spirit, need for entrepreneurship. | |
| 1.2 | Individual and social aspects of business – achievement motivation theory | |
| 1.3 | Social responsibilities of Entrepreneurs | |
| **2.** | **FORMS OF BUSINESS ORGANISATION** | **4** |
| 2.1 | Types of company | |
| 2.2 | Merits and demerits of different types | |
| 2.3 | Registration of small scale industries | |
| 2.4 | Conglomeration. | |
| **3.** | **SMALL SCALE AND ANCILLARY INDUSTRIES** | **8** |
| 3.1 | Definition – scope with special reference to self employment. | |
| 3.2 | Procedure to start small scale and Ancillary industries | |
| 3.3 | Pattern on which the Scheme/Project may be prepared | |
| 3.4 | Sources of finance - Bank, Govt., and other financial institutions. | |
| 3.5 | Selection of site for factory | |
| 3.6 | Factors of selection | |
| 3.7 | N.O.C. from different authorities, e.g., Pollution Control Board, Factories Directorate etc. | |
| 3.8 | Trade License. | |
| **4.** | **SYSTEM OF DISTRIBUTION** | **1** |
| 4.1 | Wholesale Trade | |
| 4.2 | Retail trade | |
| **5.** | **SALES ORGANISATION** | **3** |
| 5.1 | Market survey, marketing trends, knowledge of competitors, product selection & its basis . | |
| 5.2 | Sales promotion | |
| 5.3 | Advertisement | |
| 5.4 | Public relations and selling skills | |
| **6.** | **PRICING THE PRODUCT** | **1** |
| 6.1 | Basic guidelines | |
| **7.** | **INTRODUCTION TO IMPORT AND EXPORT** | **6** |
| 7.1 | Procedures for export | |
| 7.2 | Procedures for import | |
| 7.3 | Technical collaboration – international trade | |
| 7.4 | Business insurance | |
| 7.5 | Rail and road transport | |
| 7.6 | Forwarding formalities, FOR, FOB, CIF, etc. | |
| **8.** | **BUSINESS ENQUIRIES** | **4** |
| 8.1 | Enquiries: From SISI, DIC, SFC Dept. of Industrial Development Banks. | |
| 8.2 | Offers and Quotations | |
| 8.3 | Orders | |
| **9.** | **PROJECT REPORT** | **6** |
| 9.1 | Project Report on feasibility studies for small scale industries, proposal for finances from bank and other financial institutions for establishing new industries and its extension, obtaining License enlistment as suppliers, different vetting organizations for Techno Economic feasibility report. | |
| 9.2 | Breakeven analysis, Breakeven point. | |
| **10.** | **ENVIRONMENT LEGISLATION** | **2** |
| 10.1 | Air Pollution Act | |
| 10.2 | Water Pollution Act | |
| 10.3 | Smoke Nuisance Control Act | |
| 10.4 | ISO: 14000, OSHA | |
| | | --- |
| | | **45** |

**REFERENCE BOOKS:**


1) **Entrepreneurship Development – by CPSC Manila, TMGH**
2) Small Enterprise Management – by ISTE, Mysore
3) **Motivation – by ISTE Mysore**
4) Entrepreneurship Development – by Jose Pauletal, Himalaya Publishing House
5) A Handbook of Entrepreneurship – by Rathore, B.S. and J.S. Saini(ed) Panchkula : Aapga,


## NETWORK INSTALLATION & MAINTENANCE

**L T P** **Curri. Ref. No.: CSE501**
**3 0 4**

**Total marks: 150**

**Theory: 100**
*Theory: 45Hrs*
*End Term Exam: 70*
*Tutorial: 0*
*P.A.: 30*

***Practical: 50***
*Practical: 60Hrs*
*End Term Exam: 25*
*P.A : 25*

### COURSE CONTENTS

**Theory**
Total Period : 45
Period : 3 P/W

| UNIT | TOPIC/SUB-TOPIC |
|---|---|
| **Unit I** | **Introduction of Network Administration:** Networking performance monitoring, Testing of network segment for traffic management, congestion control, and connectivity of network segment. Updates and upgrades of software, patches and device drivers. |
| **Unit II** | **Switches, VLAN and VLAN Management:** Switches, type of switches L2 and L3, deployment of switches in enterprise LAN, VLAN, VLAN design and inter VLAN routing, STP, OSPF, and DHCP protocol, POE Switches, Server Farm Switches and SAN Switches – Introductory concept. |
| **Unit III** | **Wireless Network:** Wireless Networks, types of wireless networks. Wireless LAN Controller, Access points, POE Devices. |
| **Unit IV** | **Server Management:** Problem identification troubleshooting and resolve of Server , Monitoring Security aspect of Server, Web Server, DNS Server, Main Server, Proxy Server, Application, Visualization: Introductory Concept. |

**Unit V** **Router, Firewall and Cyber security:**
Router specification, Basic router Configuration, RIP, OSPF, Firewall specification, Firewall deployment, Identity and Access Management, LDAP.

**Unit VI** **Data centre Technology:**
Data Centre, Requirement of a Data Centre, Basic facilities of a Data Centre. Server Deployment and management, Server Farm Switches, Storage Connectivity, Smart Rack: Precision AC, Fire Detection and Prevention, Remote monitoring of Data Centre.

**Practical**
Total Period : 60
Period : 4 P/W

1) Study of the various network architecture of the LAN / WAN
2) Study of the various protocols in LAN and WAN
3) Creation and management of VLAN, DHCP, inter VLAN routing, Traffic Management through VLAN.
4) Management of Various Server – including maintenance, backup, trouble shooting, etc.
5) Basic Operation related to Wireless Devices, including management of POE devices, access-points, etc.
6) Configuration of various server applications like DNS, Proxy, Web server, Mail Server, etc.
7) Router Management and deployment
8) Firewall Management and deployment
9) Security using radius server
10) Exposure to Data Centre for Routine maintenance.

**REFERENCE BOOKS:**

1. Computer Network – by A. S. Tanenbaum, PHI
2. Data Communication & Computer Networks – by W. Stallings, PHI
3. TCP/IP Guide- by Charles M. Kozierok's, No Starch Press


**LIST OF EQUIPMENT**
Hardware :Stand alone PC (for detail, please refer Annex – I)
Software : C++ Compiler/Java compiler

**Total: 45**

## PROJECTS

**L T P** **Curri. Ref. No.: CSE512**
**0 0 10**

**Total Contact Hrs.: 105**
**Total marks: 200** **Practical: 200**
*Theory: 0* *Viva Voce.: 50*
*End Term Exam: 0* *End Term Exam:100*
*Tutorial: 0* *P.A : 50*

***Credit: 5***

**Aim:** The main aim of the final year project is to develop student's knowledge for solving technical problems in order to produce competent and sound engineers.

**The objectives of a final year project are to:**

- Allow students to demonstrate a wide range of the skills learned during their course of study
- Allow students to develop problem solving, analysis, synthesis and evaluation skills.
- Encourage teamwork.
- Improve students' communication skills through the production of professional reports

**Suggested List of activities to be done:**

1. Allow the student to choose their Project
2. Collect information, Planning, Executing, and Managing the Project
3. Documenting the Project
5. Project Assessment and Marking

## PROFESSIONAL PRACTICES –V

**L T P** **Curri. Ref. No.: CSE509**
**0 0 4**

**Total Contact Hrs.: 30** **Total marks: 50**
**Theory: 0** ***Practical: 50 Marks***
*Theory: 0* *Practical:30 Hrs*
*End Term Exam: 0* *End Term Exam: 0*
*Tutorial: 0*
*P.A.: 0* *P.A : 50*
***Pre-requisite: NIL***
***Credit: 1***

**Aim :** To familiarize and expose students more extensively with the methodology of their own subject.

**Objective:**
On completion of this course, the Student will be able to:

- Increase their understanding of ideas as presented by the work at hand.
- Be actively involved in their own learning
- Speak more articulately
- Listen better
- Read more thoroughly
- Learn to justify/ qualify opinions
- Prepare a report on the seminar presentation topic

**Suggested List of Activities:**

1. Arrangement of expert talks and attending those talks
2. Each student will be assign a suitable topic related to the subjects being taught in the respective semester on which they have to self-study, prepared a small report (5-10 pages)
3. Develop (10-15 minutes) presentation (power point presentation preferably with animation) and deliver it as seminar.
4. Presentation follows by group discussion
5. Industrial visits

**PC SYSTEM TECHNOLOGY & MAINTENANCE *(Elective I)***

**L T P**
**3 0 2**

**Curri. Ref. No.: CSE601**

**Total Contact Hrs.: 75** **Total marks: 150**

**Theory: 100**
***Practical: 50***

*Theory: 45Hrs*
*End Term Exam: 70*
*Tutorial: 0*
*P.A.: 30*
***Pre-requisite: NIL***

*Practical:30Hrs*
*End Term Exam: 25*

*P.A : 25*
***Credit: 4***

**Theory**
Total Periods : 45Hrs
Periods: 3 P/W

## COURSE CONTENTS

**UNIT** **TOPIC/SUB-TOPIC** **TOTAL HRS.**

**1. Processor** **8**
1.1 Functional component of a microprocessor
1.2 General purpose and Special purpose registers
1.3 Stack and Instruction Pointers
1.4 Instruction set
1.5 Single / Dual / Quad Core Processor Core
1.6 RISC and CISC Processor

**2. Memory** **6**
2.1 Main Memory: ROM and RAM
2.2 Static RAM – Cache memory
2.3 Dynamic RAM, DDR2 and DDR3 RAM
2.4 Front Side Bus and memory Interface
2.5 Memory hierarchy

**3. Motherboard & Chipset** **8**
3.1 Functional Component of Motherboard
3.2 Memory slots
3.3 Hard Disk Controller
3.4 RAID Controller (SERVER)
3.5 Integrated Graphics Card
3.6 Integrated Sound Card

**4. Interfaces** **8**
4.1 USB Ports 1.0, 2.0, 3.0
4.2 RS232, Comm ports,
4.3 Ethernet RJ45
4.4 Wireless LAN 802.11 a/b/g/n
4.5 PS-2
4.6 Fire ware 1394
4.7 5.1 Audio Interface 3.5mm jack
4.8 VGA / DVI
4.9 HDMI
4.10 Micro SD Card Slots

**5. ROM Bios and Boot Strap Loader** **2**

**6. Peripherals** **6**
6.1 Working and Setup of Peripherals:
a) Printers
b) Scanners
c) Web cameras
d) Video capture card / Grabber
e) Sound Capture Card
f) 5.1 / 7.1 Channel Sound system
g) USB Wireless Dongle
h) Bluetooth Dongle

**7. Memory Mapping Techniques** **2**
7.1 Introductory Concepts

**8. Maintenance of PC, Laptop, tablet and Server System** **5**
8.1 Introductory Concepts

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**45**

**Practical**

Total Periods : 30

Periods : 2 P/W

1. Identification of Hardware Modules of PC
   a) Processor
   b) Motherboard
   c) SMPS
   d) CD / DVD / Blue Ray Disk Drive
   e) HDD, SCSI Controller, RAID Controller (for Server)
   f) Keyboard
   g) Mouse
   h) CRT / LCD / LED Monitors
   i) Interfaces : USB Ports 1.0, 2.0, 3.0, RS232, Comm ports, Ethernet RJ45, Wireless
   LAN 802.11 a/b/g/n, PS-2, Fire ware 1394, 5.1 Audio Interface 3.5mm jack, VGA / DVI, HDMI,
2. Identification, Configuration, and Installation of brand dependent devices
3. Installation of O.S. in standalone system, client / server architecture (Windows and Linux)
4. Installation of peripherals: Printers, Scanners, Mobile Setup, Bluetooth deivces
5. Maintenance of PC, Laptop, tablet and Server System: Routine maintenance, Virus and spam attacks, Back-up and restoration
6. Troubleshooting: Identification of trouble with keyboard, mouse, display, RAM, HDD,SMPS
7. Fixing problems related to monitor, key board, mouse, printer, connecting cables etc. Formatting of hard drive and data recovery. Disk cleanup, Disk defragment, system restoring, system configuration. Common start up problems Identify and solve basic problems related to connecting to networks and the Internet.
8. Firewalls, Physical Security, Privileges, Patches, Basic of Cryptography, Encryption, Certificates, Authenticity, Viruses, Trojan Horses, Worms, Denial of Service (DOS), Buffer Overflows.

**REFERENCE BOOKS :**


1. Hardware and Software of Personal Computers – by S.K. Bose, New Age International
2. Computer Troubleshooting – by K. MacRae, G. Marshal, Haynes Publishing.
3. Handbook of Computer Troubleshooting – by M. Byrd, J. Pearson, R.A. Saigh, The Glen Lake Publishing Company.

**MULTIMEDIA APPLICATION (Elective II)**

**L T P** **Curri. Ref. No.: CSE602**
**3 0 2**

**Total Contact Hrs.: 75** **Total marks: 150**
**Theory: 100** ***Practical: 50***
*Theory: 45* *Practical:30*
*End Term Exam: 70* *End Term Exam: 25*
*Tutorial: 0*
*P.A.: 30* *P.A : 25*

***Pre-requisite: NIL*** ***Credit: 4***

## COURSE CONTENT

**Theory**
Total Periods : 45
Periods : 3 P/W

**UNIT** **TOPIC/SUB-TOPIC** **TOTAL HRS.**

**1. Animation** **10**
1.1 Introduction and Background of Animation
1.2 Uses of Animation
1.3 Types of Animation – cell animation, path animation, 2D & 3D animation
1.4 Role of computers in animation
1.5 Key-frames and Tweening
1.6 Movement creation – coordinate system, transformations
1.7 Principles of Animations – squash and stretch, anticipations, staging, follow-through and overlapping, slow-in slow-out, arcs, timing.
1.8 Animation Techniques – onion skinning, motion cycling, masking, flipbook animation, sound addition.
1.9 3D Animation – modelling, camera and centre of interest (COI), movements of camera, and special effects.

**2. Compression** **8**
2.1 Need for Compression
2.2 Types of Compression – lossless and lossy, intra-frame and inter-frame,
2.3 Types of Redundancies – statistical, psycho-visual
2.4 CODEC
2.5 Lossless / Statistical Compression Techniques – entropy, RLE, Huffman, arithmetic coding, LZ, LZW DPCM coding
2.6 Lossy / Perceptual Compression Techniques – Transform, psychoanalysis, inter-frame corrélation,
2.7 JPEG image Coding Standard
2.8 MPEG Standard Overview

**3. CD Technology** **4**
3.1 CDROM digital data, CD-interactive, CDROM – extended architecture, Photo CD, Video CD, CD-R, CD-RW.
3.2 DVD – specification, DVDROM, DVD-R, DVD-RW, single sided, single layer, signal sided double layer, double sided single layer, double sided double layer.

**4. Multimedia Application Development** **10**
4.1 Multimedia Software Life Cycle – feasibility study, requirement analysis, project planning and management, designing, implementation, integration, delivery and maintenance.
4.2 Conceptualization - subject matter/theme, target audience, objectives
4.3 Content Collection and Processing
4.4 Storyboard – guidelines for: text, visual element, motion video, animation, audio
4.5 Hardware and software for implementation.
4.6 Authoring Metaphors – slide show, book, windowing, timeline, network, icon metaphor.

**5. Computer Games** **10**
5.1 Video Game Console – Sony Play Station, Nintendo Game Cube, Xbox
5.2 Genres
5.3 Game Design
5.4 Game Controller / Game Engine
5.5 Game Programming
5.6 Interactive Gaming

**6. Virtual Reality** **3**

6.1 Forms of Virtual Reality
6.2 Virtual Reality Application – perambulation, synthetic experience, realization.
6.3 Software Requirement - device drivers, development tools, navigation engine
6.4 Peripherals Devices – audio/visual, tracking, navigation devices
6.5 Virtual Reality Modelling Language (VRML)

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**Total = 45**

**Practical**

Total Periods : 30
Periods : 2 P/W

**1. Desktop Publishing**

Photoshop basics, Corel draw, Page Maker

**2. Audio**

Nature of sound
Techniques of recording and editing sound using popular audio software

**3. Video Editing Basics**

Picture transitions
Video and audio special effects
Current popular editing software

**4. Animation**

Principles of Animation
Various stages of production like script, story boarding etc
Working with flash – basic and advanced
Basics of 3D Max – modeling, texturing, advanced lighting, animation

**5. Advanced 3D Graphics and Animation**

Maya –polygon modeling, NURBS modeling, Advanced texturing, lighting, Creating 3D Characters and Animation, Generating Special effects using features of Maya.

**REFERENCE BOOKS:**


1. Principles of Multimedia – Ranjan Parekh – Mc-Graw-Hill –2008
2. Multimedia Communications – Fred Halsell–Pearson Education Ltd – 2009
3. Multimedia Communication System: Techniques, Standards and Networks – by K.R.
   Rao, Z.S. Bojkovic, A. Milovanovic, Prentice Hall
4. Multimedia: From Wagner to Virtual Reality- by Randall Packer, Nortan
5. Virtual Reality –by H. Rheingold

**Annexure - 1**

**Proposed Specification of Multimedia Desktop Computers**

| Sl No. | ITEM | | CONFIGURATION |
|---|---|---|---|
| **I** | **Particulars** | : | **Multimedia Desktop Computer** |
| **A** | **Base Machine** | | |
| 1 | Processor | : | Intel i5 / i7 Processor (latest Generations) |
| 2 | Chipset | : | Matching Chipset |
| 3 | Memory | : | 4GB / 8GB DDR 3RAM 1600MHz or higher |
| 4 | Hard Drive | : | 500 GB / 1 TB SATA, HDD |
| 5 | Optical Drive | : | 16x Max DVD+/- RW with dual layer write capabilities + 16x Max DVD ROM |
| 6 | Video Card | : | 1GB /2GB PCI / PCI Express Graphics Card |
| 7 | Sound card | : | 7.1 channel output integrated audio card |
| 8 | Keyboard | : | USB or PS/2 Standard Keyboard |
| 9 | Mouse | : | Optical USB scroll mouse |
| 10 | Ports | : | 8 USB ports (USB 3.0 & 2.0), 1 serial, 1 parallel |
| 11 | LAN connection | : | 10/100/1000 Mbps Ethernet Card |
| 12 | Cabinet | : | Mini-tower |
| 13 | Monitor | : | 19” wide screen flat panel LCD monitor with Analog and DVI |
| 14 | Warranty & support | : | 3 years onsite comprehensive support and warranty |
| 15 | Operating System | : | Preloaded OEM MS Windows 10 / MS Windows 8 |
| 16 | Antivirus | : | Kaspersky / Quick Hill / Norton / Symantec protection with updates and upgrades for 36 months |
| | | | |
| **B** | **Optional Items** | | |
| 1 | Wi Fi connection | : | Wireless 802.11 b/g/n compliant PCI card |
| 2 | Web Cam | : | 720 HD Web Camera USB Connectivity |
| 3 | Speakers System | : | 2.1 / 5.1 channel surround speaker system with 1000 w p.m.p.o. output of reputed brand |