

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY



CIRCULAR NO.SU/Sci.& Tech./B.Voc./33/2018

It is hereby inform to all concerned that, on the recommendation of the Dean, Faculty of Science & Technology, the Hon'ble Vice-Chancellor has accepted the **following curriculum under B.Voc. programme viz: Certificate, Diploma, Advanced Diploma and B.Voc. Degree** in his emergency powers under section 12(7) of the Maharashtra Public Universities Act, 2016 on behalf of the Academic Council as appended herewith:

1.	B.Voc. Industrial Automation,
2.	B.Voc. Automobile Technology,
3.	B.Voc. Farm Equipment and Machinery,
4.	B.Voc. I.T. Skills and Software Development,
5.	B.Voc. Architectural Planning and Interior Design,
6.	B.Voc. Dairy Products,
7.	B.Voc. Drill Technology,
8.	B.Voc. Plant Tissue Culture and Green House Technology,
9.	B.Voc. Renewable Energy Source,
10.	B.Voc. Computer Hardware & Networking Maintenance.
11.	B.Voc. Food Processing and Preservation.
12.	B.Voc. Sustainable Agriculture.
13.	B.Voc. Bioproducts technician

This is effective from the Academic Year 2018-2019 and onwards.

This curriculum are also available on the university website
www.bamu.ac.in

All concerned are requested to note the contents of this circular and bring notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
Ref.No.
SU/B.Voc/2018/21709-22148
Date:- 12-12-2018

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12/12/18
Deputy Registrar,
Syllabus Section.

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Copy forwarded with compliments to :-

- 1] The Principals, affiliated concerned Colleges,
Dr. Babasaheb Ambedkar Marathwada University.
- 2] The Director, University Network & Information Centre, UNIC,
with a request to upload this Circular on University Website.

Copy to :-

- 1] The Director, Board of Examinations & Evaluation, Dr.BAMU,A'bad.
- 2] The Section Officer, [BCS Unit] Examination Branch,
- 3] The Section officer, [Eligibility Unit], Dr.BAMU,A'bad.
- 4] The Programmer [Computer Unit-1] Examinations, Dr.BAMU,A'bad.
- 5] The Programmer [Computer Unit-2] Examinations, Dr.BAMU,A'bad.
- 6] The In-charge, [E-Suvidha Kendra], Rajarshi Shahu Maharaj Pariksha Bhavan, Dr. Babasaheb Ambedkar Marathwada University.
- 7] The Public Relation Officer, Dr.BAMU,A'bad.
- 8] The Record Keeper. Dr.BAMU,A'bad.

**DR. BABASAHEB AMBEDKAR
MARATHWADA UNIVERSITY,
AURANGABAD.**



**Curriculum of
B.Voc. Computer Hardware &
Networking Maintenance**

UNDER THE FACULTY OF SCIENCE & TECHNOLOGY.

[Effective from 2018-19 & onwards]

Course Structure
Bachelor of Vocation (B. Voc)
Computer Hardware & Networking Maintenance

Sr. No.	Course Code	Name of the Course	Contact Hrs Per Week		Evaluation Scheme		Credit
			L	P	CIA	SEE	
Semester – I		General Education Components					
1	CHN 101	Functional Marathi – I	4	0	20	80	4
2	CHN 102	Professional English – I	4	0	20	80	4
3	CHN 103	Professional Work – I	4	0	20	80	4
Semester - I		Skill Education Components					
1	CHN 201-T	Fundamentals of Computer	4	0	20	80	4
2	CHN 202-T	Operating System	4	0	20	80	4
3	CHN 203-T	Computer Organization & Microprocessor	4	0	20	80	4
4	CHN 204-P	Fundamentals of Computer	0	4	0	50	2
5	CHN 205-P	Operating System	0	4	0	50	2
6	CHN 206-P	Computer Organization & Microprocessor	0	4	0	50	2
			Total Credits				30

Course Structure
Bachelor of Vocation (B. Voc)
Computer Hardware & Networking Maintenance

Sr. No.	Course Code	Name of the Course	Contact Hrs Per Week		Evaluation Scheme		Credit
			L	P	CIA	SEE	
Semester – II		General Education Components					
1	CHN 301	Functional Marathi – II	4	0	20	80	4
2	CHN 302	Professional English – II	4	0	20	80	4
3	CHN 303	Professional Work – II	4	0	20	80	4
Semester - II		Skill Education Components					
1	CHN 401-T	Microprocessor & Interfacing Techniques I	4	0	20	80	4
2	CHN 402-T	Microprocessor & Interfacing Techniques II	4	0	20	80	4
3	CHN 403-T	Computer System Management – I	4	0	20	80	4
4	CHN 404-P	Microprocessor & Interfacing Techniques I	0	4	0	50	2
5	CHN 405-P	Microprocessor & Interfacing Techniques II	0	4	0	50	2
6	CHN 406-P	Computer System Management – I	0	4	0	50	2
			Total Credits				30

Matsyodari Shikshan Sansthas
Ankushrao Tope College, Jalna



Bachelor of Vocational
(Computer Hardware & Networking Maintenance)

Syllabus of
B. Voc. (Computer Hardware & Networking Maintenance)

First Year - Semester I & II
Three Year Degree Course
(With Effective from: June 2018)

Semester – I

General Education Components

1. General Marathi

The students learn to pronounce, read and write. They acquire their knowledge of fundamental grammatical structures and functions (e.g. sentence types, tenses, voice, parts of speech, word order, expressing possibility, obligation, necessity, prohibition, criticism; expressing preferences, making assumptions; asking for/refusing/giving permission; making offers, suggestions, etc.) They acquire their fundamental vocabulary to fulfill the above mentioned functions in roles, topics and discussions.

The students are taught to be able to converse on different topics (people, jobs, places to visit, festivals/celebrations, disasters/accidents, eating habits, sports/hobbies, environment, education, entertainment, transport, crime, etc.).

The students learn to understand spoken language. Listening texts include monologues and interacting speakers. They are taught to focus on understanding the gist, the main points, look for detail or specific information, and deduce the meaning.

The students are offered adapted/instructional reading material and are encouraged to learn to use different strategies for different reading purposes: identifying the main points in a text, looking for detail, locating specific information in a text, understanding a text structure, etc.

The students are expected to learn to produce written texts of various types: formal / informal / transactional letters, argumentative essays (expressing opinions, for and against), narration (story writing), memoranda and notes.

2. Professional Marathi

The purpose of this course is to prepare the students for doing Economics, Mathematics and Statistics in Marathi. Development of the students' restricted knowledge in economic terms and topics includes: different economic systems, central control of economy, labour utilities, demand and supply, money, markets and monopolies, banking.

Reference Books:

संदर्भ ग्रंथ:

१. शास्त्रीय मराठी व्याकरण - मो. के. दामले.
२. सुगम मराठी व्याकरण - मो. रा. वाळिंबे
३. वाड;मयीन निबंधलेखन - रा. ग. जाधव
४. संगणक परिचय - नदकिशोर दायमा
५. नभोवाणी कार्यक्रम : तंत्र-मंत्र - पुष्या काणे
६. माहिती व तंत्रज्ञान मराठी - संपा. म.रा.मा.व.उ.मा.मं. नाशिक
- ७.व्यावसायिक व उपयोजित मराठी - प्रकाश मेदककर
- ८ मराठी शुद्धलेखन विषय नियम - मो. रा. वाळिंबे
९. वस्तुनिष्ठ आकलन आणि उपयोजित मराठी लेखन - डॉ नरेंद्र मारवाडे
१०. उयोजित मराठी ऊ. रा.नासिराबादक
११. व्यावहारिक मराठी - स्नेहल तावरे
१२. पत्रकारितेची मुलतत्वे - प्रभाकर पांधे
१३. व्यावहारिक मराठी - संपा. दत्तात्रय पुंड

1. General English

The students learn to pronounce, read and write. They acquire their knowledge of fundamental grammatical structures and functions (e.g. sentence types, tenses, voice, parts of speech, word order, expressing possibility, obligation, necessity, prohibition, criticism; expressing preferences, making assumptions; asking for/refusing/giving permission; making offers, suggestions, etc.) They acquire their fundamental vocabulary to fulfill the above mentioned functions in roles, topics and discussions.

The students are taught to be able to converse on different topics (people, jobs, places to visit, festivals/celebrations, disasters/accidents, eating habits, sports/hobbies, environment, education, entertainment, transport, crime, etc.).

The students learn to understand spoken language. Listening texts include monologues and interacting speakers. They are taught to focus on understanding the gist, the main points, look for detail or specific information, deduce the meaning.

The students are offered adapted/instructional reading material and are encouraged to learn to use different strategies for different reading purposes: identifying the main points in a text, looking for detail, locating specific information in a text, understanding a text structure, etc.

The students are expected to learn to produce written texts of various types: formal / informal / transactional letters, argumentative essays (expressing opinions, for and against), narration (story writing), memoranda and notes.

Reference Books

- 1) MSBTE Textbook - MSBTE
- 2) Essential English Grammar – Raymond Murphy
(Cambridge Publication)
- 3) High School English Grammar & Composition – Wren & Martin
(S Chand & Co.)

Professional Work

Computer Fundamentals & MS- Office- I Code:-CHN103

UNIT – 1

1. Fundamentals of Computer System

- Characteristics & features of Computers.
- Components of Computers.
- Organization of Computer.

2. Computer Generation & Classification

- Generation of Computers: First to Fifth

UNIT – II

3. Computer Memory

- Memory Cell & Organization
- Types of Memory (Primary And Secondary) : RAM , ROM , PROM , EPROM
- oSecondary Storage Devices (FD, CD, HD, Pen drive, DVD, Tape Drive, DAT)

4. I/O Devices

- Input Devices: Touch screen, OMR, OBR, OCR, Light pen, Scanners
- Output Devices: Digitizers, Plotters, LCD, Plasma Display, Printers

UNIT – III

5 GUI Operating System : Mouse Practice, Starting, Login, Shutdown, Exploring Directories, Resizing, Moving, Minimizing, closing of software windows, familiarization with file icons, Launching Applications, Deleting, Renaming files, Managing Directories, Searching for files, Using Accessories.

UNIT – IV

Ms- Office (Ms- Word)

Word Processing Tool: Menus, Shortcut menus, Toolbars, Customizing toolbars, Creating and opening documents, Saving documents, Renaming documents, Working on multiple documents, Close a document ;

Working With Text: Typing and inserting text, Selecting text, Deleting text, Undo, Formatting toolbar, Format Painter, Formatting Paragraphs: Paragraph attributes, Moving, copying, and pasting text, The clipboard, Columns, Drop caps; **Styles:** Apply a style, Apply a style from the style dialog box, Create a new styles from a model, Create a simple style from the style dialog box, Modify or rename a style, Delete a style;

Lists: Bulleted and numbered lists, Nested lists, Formatting lists

Tables: Insert Table button, Draw a table, Inserting rows and columns,

Moving and resizing a table, Tables and Borders toolbar, Table properties

Graphics: Adding clip art, Add an image from a file, editing a graphic, AutoShapes;

Spelling and Grammar: AutoCorrect, Spelling and grammar check, Synonyms,

Thesaurus;

Page Formatting: Page margins, Page size and orientation, Headers and footers, Page numbers, Print preview and printing.

Note:

The above practical is to be conducted using the either Microsoft-Office or Open Office.

WWW.tutorialspoint.com

WWW.w3schools.com

Text Books:

1. Fundamentals of Information Technology; By Chetan Srivastava, Kalyani Publishers

2. Fundamentals of Computers: By V.Rajaraman, PHI Publication, IVth Edition.

3. Fundamentals of Programming: By Raj K.Jain, S.Chand Publication

Reference Books:

1. Computer Fundamental By B.Ram, BPB Publication.

Skill Education Components

Fundamentals of Computer Code: CHN 201-T

UNIT- 1

1. Fundamentals of Computer System

Characteristics & features of Computers.

Components of Computers, Organization of Computer.

UNIT2: Essentials of Computers

Functional Block Diagram, History, Evolution.

An Overview of System and Components.

CPU Cabinet: Power supply, SMPS, Motherboard, CPU, Cables and connectors, Main and auxiliary memory, Front and rear panel study.

UNIT 3: Devices & its types

Input devices: wired /wireless Keyboard, Mouse, Joystick, Scanner, Digitizers, Light pen, Touch screen, Barcode Scanner Camcorder.

Output devices: Monitor (CRT, LCD/ LED Panel,)

UNIT4: CPU

Microprocessor as CPU, General block diagram of CPU, CPU bus system, Packing, Cooling, Sockets and slots, Comparative study of Microprocessor's features with evolutions, Microprocessor Operations:- Instruction Cycle, Data fetch, Address Decoding, Classification of Interrupts, Input Output Techniques, Device Controllers(DMA controller , Disk drive controller)

Reference Books:

1. Computer Fundamentals, P. K. Sinha
2. Upgrading and Repairing of PCs, Scott Muller
3. IBM PC and Clones, B. Govindrajalu
4. Microprocessor and Interfacing, D. V. Hall
5. Microprocessor X 86 Programming, Venugopal
6. Computer Motherboard Testing and Fault finding, S. K. Gupta
7. PC Hardware (A+ Certificate guide), Mike Mayer
8. PC Hardware interfaces, Michael Gook

Operating System

Code: CHN 202-T

UNIT1: Operating System

Types and Functions. DOS – Introduction, Versions, DOS Commands, Internal, External, Root Directory. Windows – Introduction, Working with desktop, Control Panel settings. Introduction to RTO.

LINUX: Basic Commands, Introduction to OS: ANDROID OS, IOS Operating System & types of Operating system.

UNIT2: Computer Memory and Memory Management Techniques

Types and characteristics, Classification, Semiconductor, Magnetic, Optical ROM and its types.

RAM and its types: SDRAM, EDORAM, DDR Series, Flash RAM. Memory modules, SIMM and DIMMs. Secondary Memory: Hard Disc Drive, Floppy Disc, CDROM, CD R/W, DVD, Pen Drive.

Flash memories: Mini/ micro SD Card. Formatting and Utility Tools for drivers.

UNIT3:Process Management

Process & its types, Process States, Process synchronization.

Types of Motherboard & its details.

UNIT4:Computer Structure and Communication

Basic Computer Structure and Communication inside Computer, MAR, MBR and Memory mapping, ALU, Control UNIT (Concept of Micro programmed and Hardwired Control)

Reference Books:

1. Computer Fundamentals, P. K. Sinha
2. Upgrading and Repairing of PCs, Scott Muller
3. IBM PC and Clones, B. Govindrajalu
4. Microprocessor and Interfacing, D. V. Hall
5. Microprocessor X 86 Programming, Venugopal
6. Computer Motherboard Testing and Fault finding, S. K. Gupta
7. PC Hardware (A+ Certificate guide), Mike Mayer
8. PC Hardware interfaces, Michael Gook

Computer Organization & Microprocessor

Code: CHN 203-T

UNIT 1: Introduction and Concepts

Hardware and Software, System Software, Application Software, Firmware, BIOS, POST sequence, Operating Systems, Program, Flow Charts, Loader, assembler, Compiler, Linker, Editor, Simulator, Emulator, Debugger, Device Drivers, Software Packages and Programming Languages

UNIT2: Computer Hardware

Storage Devices:

Magnetic Tape, Floppy Disk, CD/DVD, Hard Disk, SSD (Pen drive) etc.

Types of Card used in Computer System:

Motherboard, Controller card, Display card, Sound card, AGPS, Fax / Modem cards, TV Tuner, Ethernet cards.

UNIT3: Microprocessor Study8086

Architecture, Instruction set, 80286, 80386, and 80486. Introduction to advanced processors- i series

UNIT4: Printer & types of Printer

Dot Matrix, Inkjet, LASER, Thermal, Plotter, and Barcode Printers, Sound devices (Speaker, Headphone, Bluetooth, and dongle)

Details of Printer & Working of Different printer, DVD, CD-ROM & other Hardware Devices.

Reference Books:

1. Computer Fundamentals, P. K. Sinha
2. Upgrading and Repairing of PCs, Scott Muller
3. IBM PC and Clones, B. Govindraju
4. Microprocessor and Interfacing, D. V. Hall
5. Microprocessor X 86 Programming, Venugopal
6. Computer Motherboard Testing and Fault finding, S. K. Gupta
7. PC Hardware (A+ Certificate guide), Mike Mayer
8. PC Hardware interfaces, Michael Gook

List of Practical

1. Site Preparation, Electrical Connections and use of Maintenance kit, Cable Maintenance, Connecting Keyboard, Mouse, Printer, Scanner, Multimedia components and make it working.
2. Identification of system, Explanation of system components: Motherboard 1) Onboard controllers, 2) Add on controllers. (Drives, RAM, CMOS battery, SMPS, BIOS RAM, Chipset, Controllers.
3. Identification of cables, connectors and tools.
4. DOS based practical Internal External commands, Directory handling and Practical on AUTOEXEC. BAT and CONFIG.SYS files (Only Demo)
5. Desktop and control panel settings of windows operating system.

Operating System Code: CHN 205-P

List of Practical

1. MS office: 3 practical. (Students are expected to be familiar with MS office.)
2. Practical based on MS Word, Excel.
3. Practical based on Power Point.
4. Study of Power Supply: Types, Concepts of Fuse, MCB, Stabilizer, UPS, SMPS and checking of Different voltages, Power Good Signal
5. Study of BIOS and POST Sequence (Only Demo) and Standard CMOS setup for different configuration
6. Installation of device drivers for Mouse / printer / scanner / pen drive / CD- Combo and Checking hardware and software components and working with multimedia

Computer Organization & Microprocessor

Code: CHN 206-P

List of Practical

1. Assembly and disassembly of computer.
2. Identification and verification and Detailed Study of Disc drives.
3. Study of Formatting, Scheduled Tasks, Defragmentation, Bootable disk.
4. Assembly and maintenance of Dot matrix printer, Hardware study of Inkjet Printer, LASER printer.
5. Use of Internet, search engines and e-mail.

Semester II

General Education Components

Functional Marathi

Code: CHN301

1. Business Marathi

Business Marathi course starts during the first intensive course with the introduction of the students into the world of business.

The course aims to:

- Develop the students' comprehension of business and economic texts
- Develop the students' listening skills in the field of business and economics
- Provide the students with opportunities to express business concepts by reformulating them in their own words while summarizing.

The students' competence in this aspect is measured by their ability to demonstrate their communication skills in the key business areas of meetings, negotiations, telephoning and social Marathi, as well as the ability to write memos, notes.

2. Skills development

Students are taught to develop their skills in:

Reading which includes:

Skimming, scanning, detailed reading, guessing unknown words from context, understanding text organization, recognizing argument and counter-argument; distinguishing between main information and supporting detail, fact and opinion, hypothesis versus evidence; summarizing and note-taking.

Writing includes:

- Essay content and structure (patterns of organization, paragraphing, discussion – argument/counter-argument, advantages and disadvantages, topic sentence and supporting ideas, coherence and cohesion, punctuation).
- Functions (generalization, definitions, exemplification, classification, comparison and contrast, cause and effect, process and procedure, interpretation of data).
- Style (passive constructions, avoiding verbosity)
- Punctuation

Listening includes:

- General comprehension (listening for gist, listening for detailed information, evaluating the importance of information).
- Lectures (identifying the topic and main themes, identifying relationships among major ideas, comprehending key information).

Speaking includes:

- Seminar skills (agreeing and disagreeing, clarifying, questioning, concluding).
- Presentation skills (introductions and stating the purpose, signposting, highlighting key points, summaries, conclusions).

The students' competence in skills development is measured by their ability to understand and produce written and spoken language in an educational context, to perform the following academic tasks:

- reading and understanding written academic language;
- writing assignments in an appropriate style for university study;
- listening to and comprehending spoken language (within the framework of Breakthrough level);
- Speaking to colleagues and lecturers (within the framework of Breakthrough level).

Reference Books:

संदर्भ ग्रंथ:

१. शास्त्रीय मराठी व्याकरण - मो. के. वामले
२. सुगम मराठी व्याकरण - मो. रा. वाळिंबे
३. वाड; मर्यान निर्बंधलेखन - रा. ग. जाधव
४. संगणक परिचय - नदकिशोर दायमा
५. नमोद्याणी कार्यक्रम : तंत्र-मंत्र - पुष्टा काणे
६. माहिती व तंत्रज्ञान मराठी - संपा. म.रा.मा.व.ड.मा.मं. नाशिक
७. व्यावसायिक व उपयोजित मराठी - प्रकाश मेदककर
८. मराठी शुद्धलेखन विषय नियम - मो. रा. वाळिंबे
९. वस्तुनिष्ठ आकलन अहंि उपयोजित मराठी लेखन - डॉ नरेंद्र मारवाडे
१०. उद्योजित मराठी छ.ल. रा.नासिराबादक
११. व्यावहारिक मराठी - स्नेहल तावरे
१२. पत्रकारितेची मुलालवे - प्रभाकर पाण्ये
१३. व्यावहारिक मराठी - संपा. वत्तात्रय पुंड

1. Professional (ESP) English

The purpose of ESP course is to prepare the students for doing Economics, Mathematics and Statistics in English.

Development of the students' restricted knowledge in economic terms and topics includes: different economic systems, central control of economy, labor utilities, demand and supply, money, markets and monopolies, banking.

The students' competence in ESP is measured by their ability to: understand and interpret information presented in verbal, numerical or graphical form, organize and present ideas and statements in a clear, logical and appropriate form.

Reference Books:-

- 1) MSBTE Textbook - MSBTE
- 2) Essential English Grammar Raymond Murphy (Cambridge publication)
- 3) High School English Grammar & Composition – Wren & Martin
(S Chand & Co.)

Professional Work - II Code: CHN303

Unit 1: MS- Excel

Spreadsheet Basics: Screen elements, Adding and renaming worksheets, The standard toolbar - opening, closing, saving, and more;

Modifying A Worksheet, Moving through cells, Adding worksheets, rows, and columns, Resizing rows and columns, Selecting cells, Moving and copying cells,, Freeze panes;

Formatting Cells: Formatting toolbar, Format Cells dialog box, Dates and times;

Formulas and Functions: Formulas, Linking worksheets, Relative, absolute, and mixed referencing, basic functions, Function Wizard, Auto sum,

Sorting and Filling: Basic ascending and descending sorts, Complex sorts, Autofill; Alternating text and numbers with Auto fill, Auto filling functions; Graphics; Adding clip art; Add an image from a file; Editing a graphics; AutoShapes;

Charts: Chart Wizard; Resizing a chart; Moving a chart, Chart formatting toolbar;

Properties and Printing: Page breaks, Page orientation, Margins, Headers, footers, and page numbers, Print Preview, Print; Keyboard Shortcuts.

Unit 2:MS- PowerPoint

Presentation Tool: AutoContent Wizard, Create a presentation from a template, Create a blank presentation, Open an existing presentation, Auto Layout,

Presentation Screen: Screen layout, Views, Working with Slides: Insert a new slide, Applying a design template, Changing slide layouts, Reordering slides, Hide slides, Create a custom slide show, Edit a custom slide show

Adding Content: Resizing a text box, Text box properties, Delete a text box, Bulleted lists, Numbered lists, Adding notes, Video and Audio

Working with Text: Adding text, Editing options, Formatting text, Replace fonts, Line spacing, Change case Spelling check

Color& Background: Color schemes, Backgrounds, Graphics, Adding clip art, adding an image from a file, editing a graphic, AutoShapes,

WordArt Slide Effects: Action buttons, Slide animation, Animation preview, Slide transitions, Slide show options, Master Slides, Slide master, Header and footer, Slide numbers, Date and time Saving and Printing, Save as a web page, Page setup, Print

Unit 3:

Web Browser: Basic Browsing, Buttons: forward, backward, home, adding to favourites, stop, save, save as, Saving an Image from the Web, printing, Specifying a Home Page

Browsing: Using Web URLs, Anatomy of a URL, Membership Websites: Signing up for email service,

Searching: Academic Search on the web.

Unit 4:

Processor

- Structure of Instruction, Description of Processor, Processor Features

Operating system Concepts

- Why Operating System?, Functions of Operating System , Booting of OS & it's type
- Types of Operating System: Batch O.S. , Multiprogramming O.S., Time Sharing O.S ,Personal Computers O.S., Network O.S.

[**WWW.tutorialspoint.com**](http://WWW.tutorialspoint.com)

[**WWW.w3schools.com**](http://WWW.w3schools.com)

Text Books:

1. Fundamentals of Information Technology; By Chetan Srivastava, Kalyani Publishers
2. Fundamentals of Computers: By V.Rajaraman, PHI Publication, IVth Edition.
3. Fundamentals of Programming: By Raj K.Jain, S.Chand Publication

Reference Books:

1. Computer Fundamental By B.Ram, BPB Publication.

Skill Education Components

Microprocessor & Interfacing Techniques I

Code: CHN 401-T

UNIT1: Motherboard Configuration

Motherboard (Installation, Configuration and Troubleshooting): Types of motherboards, History, Parts of Motherboard, Installation of motherboard, Installation of SMPS, Processor, BIOS Setup & information, Diagnosis of motherboard.

UNIT2: Installation

Installation of I/O & Other Devices: Keyboard, Mouse, CD/ DVD drives, HDD, Installation of different types of operating system.

Advanced Technology in Computers: - Server, client, Mainframe, Desktop, Notebook, Tablets etc.

Unit 3: Computer, Microcomputers & Microprocessors

An Introduction & Overview – Structure & Operation, Specification of new processors: Intel Processors: Dual Core, Core i3/i5/i7 Family, Intel 2nd, 3rd & 4th Generation Processors, Xeon Processors.

Non-Intel Processors: Advanced Micro Devices (AMD), ARM based Processors, iMAC, (Apple Macintosh), Advanced Systems BUS Architecture PCI, IDE, USB 2.0 & 3.0, ATA, SATA, eSATA, HDMI
Interrupts & Interrupt Applications of 8086 Processor
Software Interrupt Applications.

Unit 4: Memories and EDA Tools

The 8086 Max Mode, DMA Transfers, Interfacing & Refreshing DRAMs, Cache Memory Concepts, Computer Based design & Development Tools.

Books for References:

1. Assembly Language for PC – John Socha, Peter Norton
2. Microprocessor and Interfacing- D.V. Hall
3. The 8086 Microprocessor Programming and Interfacing the PC –K. Ayala
4. Programming with X86 processor –Venugopal

Microprocessor & Interfacing Techniques II

Code: CHN 402-T

Unit 1: Digital & Analog Interfacing

Programmable parallel Ports & Handshake Input Output.

Interfacing Microprocessors to Keyboard,

Interfacing to Alphanumeric Displays.

Sensors and Transducers.

DAC & ADC Converters: Specifications & Types, Interfacing & Types of Interfacing

Unit 2: New Standards

1. Green PC: Introduction, Advantages, Thick & Thin concept. Introduction to N-Computing Concept and devices,

2. Multimedia PC: Introduction, Minimum Requirements, MPEG Terminology, Enhanced Devices & interfaces, Sound Cards, MIDI Ports.

3. Displays: Display Adaptors, Display Systems

4. Controllers: Peripheral Controllers, System Controllers, Memory Controller, Disk Drive Controller

5. BIOS: Legacy, Flash BIOS,

6. Embedded IO systems – Introduction to win8/Android/IOS

Unit 3: Computer Systems peripherals

1. Micro Computer Displays

2. Input Devices: Keyboards, Mouse, Scanners, Card Readers etc.

3. Output Devices: Printers, Displays, Plotters etc.

4. Storage Devices: Magnetic Disks, Optical Disk Data Storage, Flash Drives etc.

5. Various ADD ON Cards. (Graphics Card, Wireless NIC, Ethernet Card, Audio)

Unit 4: Communications

1. Speech Synthesis and Recognition Concepts.

2. Introduction to Asynchronous Data Communications

3. Serial Data Communication Methods & Standards.

4. Synchronous Serial Data Communication & Protocols

5. Concepts of Personal Area Network (PAN), Local Area network (LAN) & Wide Area Network (WAN)
6. Introduction to Wireless Communication Concepts & Protocols
7. Study of Remote Desktop Sharing Tools

Books for References:

1. Assembly Language for PC – John Socha, Peter Norton
2. Microprocessor and Interfacing- D.V. Hall
3. The 8086 Microprocessor Programming and Interfacing the PC –K. Ayala
4. Programming with X86 processor –Venugopal
5. Information System Control and Audit – Ron Weber.
6. PC Hardware (A+ Certificate guide) by Mike Mayer
7. PC Hardware interfaces by Michael Gook
8. Computer Fundamentals by P. K. Sinha
9. Upgrading and Repairing of PCs by Scott Muller
10. IBM PC and Clones by B. Govindrajalu

-

Computer System Management – I

Code: CHN 403-T

Unit1: Preventive Maintenance

Contributors to Failures

Environmental: Heat, Cold, Dust, and Noise Interference

Electrical: Power Line problems, EMI, Corrosion, Magnetism,

Storage Devices:

Hard Disk Drive Maintenance

Floppy Disk Drive Head Cleaning

Flash Drives (USB Pen Drives, MMC cards)

Preventive Maintenance of PC: - (Hardware & System Software)

Power Supply Maintenance: Stabilizers, UPS, SMPS, Cables

Preventive Maintenance of Printers.

Unit 2: Trouble Shooting -I

Introduction to Basic trouble shooting

General Trouble Shooting Rules

Personal Attitude for Trouble Shooting

Need of Situation

Software Interrupt Applications.

Common Troubles with Modern PC

Component Failure Recovery.

Disk Drive Failure

Display Failure

Motherboard & RAM Failure

Port Failures (Parallel, Serial & USB Ports)

Repair Generated Failure

Fault Finding & General Repairs

Unit 3: Trouble Shooting -II

Safety Precautions during trouble shooting & repairs

H/w & S/w fault isolation Techniques

Diagnostic Software Programs & Utilities.

Specific Trouble Shooting & Repairs

Startup Problems

Run Problems

Display Problems: Adaptor Cards (PCI & AGP), Device Driver Configuration, Graphics Resolution, Graphics Accelerator board.

Disk Drive Problems (HDD, CDROMs, FDD, Writers etc.)

Keyboard & Mouse trouble Shooting.

Printer Problems

Unit4: Introduction to Business Continuity Process & Disaster Recovery Planning

- Preventive Maintenance Schedules.

- Causes for Incidents & Disaster

- Minimize & Recovery Alternatives

Access Controls: Logical & Physical

i) Backup & Restore Policies, Procedure & Implementations

- Importance of Disaster Recovery Plan

Books for References:

1. Assembly Language for PC – John Socha, Peter Norton
2. Microprocessor and Interfacing- D.V. Hall
3. The 8086 Microprocessor Programming and Interfacing the PC –K. Ayala
4. Programming with X86 processor –Venugopal
5. Information System Control and Audit – Ron Weber.
6. PC Hardware (A+ Certificate guide) by Mike Mayer
7. PC Hardware interfaces by Michael Gook
8. Computer Fundamentals by P. K. Sinha
9. Upgrading and Repairing of PCs by Scott Muller
10. IBM PC and Clones by B. Govindrajalu

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Microprocessor & Interfacing Techniques I

Code: CHN 404-P

List of Practicals:

Practicals should be done with TASM/ NASM

1. Arithmetic Programs
2. Code Conversion Programs
3. Program for strings and arrays
4. Programs with DOS interrupt
5. Program with BIOS interrupt
6. Writing driver programs for mouse operation
7. Writing Com program
8. Interfacing with PC ports
9. Study of USB communication
10. Study of Various Android Applications – Any 10
11. PC to PC communication

Microprocessor & Interfacing Techniques II

Code: CHN 405-P

1. Installation of Operating System – Windows7/Win8 Win2012 / Linux /
2. Installation of Drivers: INF, Graphics, Sound, Ethernet, Modem, etc.
3. Trouble Shooting: Trouble Shoot a PC for No Display, Hard disk Drive Failure
4. Network Sharing: Share a Drive on LAN, Share a Printer on LAN, Share a Folder on LAN
5. Trouble Shoot a Virus infected PC using a Antivirus Program (Free ware: AVAST, Fire Threat)
6. Remote Desktop Sharing – Using Team viewer, ShowmyPC, Ammyy Admin
7. LAN: Site Preparation for Installation of LAN
8. Software Installation: MS-Office, TASM, Tally, Acrobat etc
9. Antivirus: Need, Installation and Updation types

Computer System Management – I

Code: CHN 406 -P

List of Practicals

Introduction to Basic trouble shooting

General Trouble Shooting Rules

Personal Attitude for Trouble Shooting

Need of Situation

Software Interrupt Applications.

Common Troubles with Modern PC

Component Failure Recovery.

Disk Drive Failure

Display Failure

Motherboard & RAM Failure

Port Failures (Parallel, Serial & USB Ports)

Repair Generated Failure

Fault Finding & General Repairs

Safety Precautions during trouble shooting & repairs

H/w & S/w fault isolation Techniques

Diagnostic Software Programs & Utilities.

Specific Trouble Shooting & Repairs

Startup Problems

Run Problems

Display Problems: Adaptor Cards (PCI & AGP), Device Driver

Configuration, Graphics Resolution, Graphics Accelerator board.

Disk Drive Problems (HDD, CDROMs, FDD, Writers etc.)

Keyboard & Mouse trouble Shooting.

Printer Problems



CIRCULAR NO.SU/Sci.& Tech./B.Voc./22/2019

It is hereby inform to all concerned that, on the recommendation of the Dean, Faculty of Science & Technology **curriculum under B.Voc. programme viz: Certificate, Diploma, Advanced Diploma and Degree Courses** in his emergency powers under section 12(7) of the Maharashtra Public Universities Act, 2016 on behalf of the Academic Council as enclosed herewith:-

1.	Second Year curriculum of B.Voc.Drip Technology
2.	Second Year curriculum of B.Voc.Dairy Products
3.	Second Year curriculum of B.Voc. Bio-product Technicians
4.	Second Year curriculum of B.Voc. Automobile Technology
5.	Second Year curriculum of B.Voc.Industrial Automation
6.	Second and Third Year curriculum of B.Voc.Farm Equipment & Machinery.
7.	Second Year curriculum of Computer Hardware Networking & Maintenance.

This is effective from the Academic Year 2019-20 and onwards.

This curriculum are also available on the University website www.bamu.ac.in

All concerned are requested to note the contents of this circular and bring notice to the students, teachers and staff for their information and necessary action.

University Campus,
Aurangabad-431 004.
Ref.No. SU/B.Voc/2019/4684-99
Date:- 16-11-2019

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*Deputy Registrar,
Syllabus Section.*

Copy forwarded with compliments to :-

- 1] **The Principals, affiliated concerned Colleges,
Dr. Babasaheb Ambedkar Marathwada University.**
- 2] **The Director, University Network & Information Centre, UNIC,
with a request to upload this Circular on University Website.**
Copy to :-
 - 1] The Director, Board of Examinations & Evaluation, Dr.BAMU,A'bad.
 - 2] The Section Officer, [B.Voc. Unit] Examination Branch,
 - 3] The Section officer, [Eligibility Unit], Dr.BAMU,A'bad.
 - 4] The Programmer [Computer Unit-1] Examinations, Dr.BAMU,A'bad.
 - 5] The Programmer [Computer Unit-2] Examinations, Dr.BAMU,A'bad.
 - 6] The In-charge, [E-Suvidha Kendra], Rajarshi Shahu Maharaj Pariksha Bhavan, Dr. Babasaheb Ambedkar Marathwada University.
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**D.R. BABASAHEB AMBEDKAR
MARATHWADA UNIVERSITY,
AURANGABAD.**



**Curriculum of B.Voc. Degree in Computer
Hardware & Networking Maintenance under
Choice Based Credit and Grading System**

III & IV semester

UNDER THE FACULTY OF SCIENCE & TECHNOLOGY

[Effective from 2019-20 & onwards]

Course Structure
Bachelor of Vocation (B. Voc)
Computer Hardware & Networking Maintenance

Sr. No.	Course Code	Name of the Course	Contact Hrs Per Week		Evaluation Scheme		Credit
			L	P	CIA	SEE	
Semester – III		General Education Components					
1	CHN 501	Business Communication Skill - I	4	0	20	80	4
2	CHN 502	Business Statistics	4	0	20	80	4
3	CHN 503	Personality Development	4	0	20	80	4
Semester- III		Skill Education Components					
1	CHN 601-T	Computer Hardware Theory- I	4	0	20	80	4
2	CHN 602-T	Computer Hardware Theory- II	4	0	20	80	4
3	CHN 603-T	Computer Hardware Theory- III	4	0	20	80	4
4	CHN 604-P	Computer Hardware Practical- I	0	4	0	50	2
5	CHN 605-P	Computer Hardware Practical- II	0	4	0	50	2
6	CHN 606-P	Computer Hardware Practical- III	0	4	0	50	2
			Total Credits				30

Semester III

General Education Components

CHN 501: Business Communication Skills-I

Credit: 4

Marks: 80+20

UNIT- I: Communication Theory

- 1) Concept: Definition of communication and its characteristics
- 2) Role Communication in Business:
- 3) Types of Communication: Vertical, Horizontal, Diagonal, Grapevine
- 4) Method of Communication: Verbal, Oral, Written
- 5) Written and Oral Communication: Nature Importance and Need

UNIT -II: Business Correspondence

- 1) **Personal Correspondence** Job Application, Writing covering letter, Resume b) Letter of Appointment
- 2) **Transactional Writing** :Standard Business Layout-,Letter of Complaint- Claims , Letter of order-Enquiry, Consumer Grievance letter and Drafting E-Mail,

UNIT-III: Business Communication-Group Communication- Discussion/ Meeting / Interview-Team Skill

- 1) **Meeting**: Preparing Notice and Agenda for the Meeting; Preparing Minutes for the Meeting
- 2) **Interview** : Taking Interview; Preparing for Interview
- 3) Note Making Practice

UNIT -IV: Prose For Business Inspiration

- 1) On the Education of the Man of Business Arthur Helps
- 2) India's Tech King , From www.Wipro.com
- 3) In the Office- A. S. Hornby
- 4) The Man Who Emailed The World Po Bronson
- 5) When Ideas Make Money – Shamila Ganeshan

UNIT -V: Grammar

- 1) The Sentence
 - A) Simple Sentences
 - B) Clauses and its Kinds
 - C) Complex Sentences
 - D) Compound Sentence
- 2) Use of Punctuation and Capitalization

PRESCRIBED TEXT:

- 1) **English for Entrepreneurs.** Board of Studies in English, Cambridge University Press, 2004.
- 2) **English Grammar: A Book of Sentence Structure and Vocabulary.** Board of Studies in English, Cambridge University Press, 2004
- 3) **Basic English Grammar and Composition.** of Studies in English, macmillan Publishers India Ltd. Mumbai: 2013
- 4) **Communication Skills.** Nageshwar Rao and Rajendra P. Das. Reprinted. Himalaya Publishing House, Mumbai. 2006.
- 5) **Business Communication.** Urmila Rai and S. M. Rai. Tenth edit. Himalaya Publishing House, Mumbai. 2008.

RECOMMENDED READING:

Contemporary English Grammar Structure and Composition. Rev. Edition by David Green, Macmillan Publishers India Ltd, 2010.

Business Communication. Rajesh Viswanathan. First edit. Himalaya Publishing House, Mumbai. 2010.

Recommended Websites Links:

Communication Skills <https://nptel.ac.in/courses/109104031/>

Strategic Communication for Sustainable Development
<https://nptel.ac.in/courses/110105073/>

CHN 502: Business Statistics – I

Credit: 4

Marks: 80+20

Unit - I: Introduction of Statistics

Meaning and definition of statistics, Nature and Function of Statistics, Importance and scope of Statistics, Limitations of Statistics.

Unit - II: Collection of Data

Introduction, Types of Data, Primary Data, Secondary Data, Methods of Collecting Primary Data, Collection of Secondary Data,

Unit - III: Measures of Central Tendency

Introduction, Meaning of Average, Objective and Function of Average, Types of series -Simple, Discrete and Continuous series., Arithmetic mean- its merits and demerits., Median and Mode - its merits and demerits.

Unit- IV: Measures of Dispersion

Introduction, Meaning and definition of Dispersion, Range, Mean deviation, Standard deviation. Variance, Co-efficient of Variation.

Unit- V: Correlation Analysis and Index Number

Meaning and types of correlation. Karl Pearson's coefficient of correlation. Properties of correlation of coefficient. , Rank Correlation. Meaning of Index Number., Uses and limitations of Index Number., Lapser's, Pascha's and Fisher's Ideal index Numbers.

3. Statistical Methods

Reference Books:

1. Allen, I. G. D. (1974), Mathematical Analysis for economists, Macmillan Press, London.
2. Croxton, F.13: D.J. Cowden and S. Klein (1973), applied General Statistics, Prentice Hall of India.
3. Monga G.S. (1972), Mathematics and Statistics for li:conomists, Vikas Publishing House, New Delhi.
4. Speigal, M.l. (1972), Theory and problems of Statistics, McGraw Hill Book, London.
5. Good, A.M., Gupta M. K. and Dasgupta B. (1987), Fundamentals of Statistics, Vol. I (Sixth Revised ed.), The World Press Pvt. Ltd.

CHN 503: Personality Development

Credit: 4

Marks: 80+20

Unit-I: Introduction

Definition & Basics of Personality, Determinants of Personality- biological, psychological and socio- cultural factors., Need for personality development Self-Awareness and Self-Motivation Self-analysis through SWOT and Johari window, Elements of motivation Techniques and strategies for self-motivation, Motivation checklist and Goal setting based on principle of SMART, Self-motivation and life, Importance of self-esteem and enhancement of self-esteem

Unit-II: Power of positive thinking

Nurturing creativity, decision-making and problem solving, Traits of positive thinkers and high achievers, Goals and techniques for positive thinking Enhancement of concentration through positive thinking, Practicing a positive life style. Public Speaking Skills: Importance of public speaking, Voice Modulation, Audience Analysis Speaking with confidence, Body Language

Unit- III: Communication Process in Society

Meaning, types: verbal & nonverbal Communication, Importance of body language, Interpersonal communication Barriers to effective communication; Listening: importance, causes of poor listening, strategies of effective listening, selective listening, Effective Public Speaking & Presentation Skills - Practical sessions, Introduction to Transactional analysis.

Unit IV: Time Management, Career Guidance and career counselling, Interview

Types, characteristics, principles Techniques of interviewing, facing an interview Participatory Training Methodology: Planning, Conducting & Evaluating Training programs, Group discussions, Seminars, Workshops, Camps, Conferences, and Meetings.

Unit-V: Interpersonal Skills

Concept of team in work situation, promotion of team spirit, characteristics of team player, Awareness of one's own leadership style and performance. Nurturing leadership qualities. Emotional intelligence and leadership effectiveness- self-awareness, self-management, self-motivation, empathy and social skills, Negotiation skills- preparation and planning, definition of ground rules, clarification and justification, bargaining and problem solving, closure and implementation

Reference Books:

1. Mile, D.J (2004). Power of positive thinking. Delhi: Rohan Book Company.
2. Pravesh Kumar (2005). All about self- Motivation. New Delhi: Goodwill Publishing House.
3. Dudley, G.A. (2004). Double your learning power. Delhi: Konark Press. Thomas Publishing Group Ltd.
4. Lorayne, H. (2004). How to develop a super power memory. Delhi: Konark Press. Thomas Publishing Group Ltd.
5. Hurlock, E.B (2006). Personality Development, 28th Reprint. New Delhi: Tata McGraw Hill.
6. Swaminathan. V.D & Kaliappan. K.V(2001). Psychology for Effective Living. Chennai. The Madras Psychology Society.
7. Robbins, S.B.(2005). Organizational Behavior. New Delhi: Prentice Hall of India.
8. Smith, B (2004). Body Language. Delhi: Rohan Book Company.
9. Hurlock, E.B (2006). Personality Development, 28th Reprint. New Delhi: Tata Mcgraw Hill.

Skill Education Components

CHN 601-T: Computer Hardware Theory – I

Credit: 4

Marks: 80+20

Unit I: Computer Assembling

Assembling motherboard with other parts, SMPS, Processor Assembling, RAM, Assembling cabinet, Assembling Ethernet card

Unit II: Operating system Installation & Troubleshooting

BIOS Configuration: Study of BIOS Set-up- Advance set-up, Boot configuration, Boot Menu, Dos 6.22, Windows XP, Windows Vista, Windows 7 and Windows 8 and RedHat Linux and Multi Boot Operating System

Hard Disk: Formatting of Hard disk, Partitioning of Hard disk in different logical drives, Disk defragmentation, Disk clean up, Scan disk etc.,

Unit III: Device Installation

Graphics Card, Sound Card, LAN Card, Wireless LAN Card, SCSI Card, External Drive, Flash Cards, Web Camera, CCTV Camera, Mobile Devices, Pen Drive, Firewire Cards, Modem, Plotter, Wireless LAN, Access Point etc.

Unit IV: Various types of Software Installation

MS-Office2003, Office 2007, Office 2010, Photoshop 7 and CS5, PageMaker 6.5, Corel-Draw X3, Auto-CAD, Tally 7.0 and ERP, Acrobat Reader X, Java, Visual Studio, C & C++, Multimedia software's, and Internet Browsers like- IE9, Google Chrome, Mozilla Firefox etc.

Unit V: Installation of Device Drivers

Different types of Motherboard drivers, LAN, Audio, and Video. Configuration of External devices: Physical set-up of Printers- Performing test print out, Printing of document etc, Scanner set-up, Webcam, Bluetooth device etc.

REFERENCE BOOK:

- (1) Windows 98 BPB Publication
- (2) Windows XP Professional edition complete BPB Publication
- (3) Office XP complete BPB publication

CHN 602-T: Computer Hardware Theory – II

Credit: 4

Marks: 80+20

Unit I: Maintenance of PC

Creating Data Backup Discs, Creating System Recovery Discs, Removing Unused Programs Running the Disk Clean-up Program, Running the Disk Defragmenter Program Checking for Hard Disk Drive Errors Understanding Hard Disk Drive Space Recommended Maintenance Schedule

Unit II: Troubleshooting PC Problems

Audio, Video, CD and DVD Drives, Display Monitor, Hard Disk Drive, Hardware Installation, Internet Access, Keyboard and Mouse , Performance , Miscellaneous

Unit III: Diagnostic Tools & PC Maintenance

Introduction, Virus and its types, Effect of Virus for Computer System, Scanning and Antivirus remover tools, Antivirus Utilities for Diagnostic, Safety and Preventive Maintenance Tools, Data Recovery, Concept of Fax and E-mail, PC care and Maintenance, Electrical Power Issues, Troubleshooting PC Hardware:- O/S Troubleshooting issues in computer System

Unit IV: Repairing Software Problems

Software Repair Overview, Restarting Your PC, Turning Off Your PC, Updating Drivers, Microsoft System Restore, Application and Driver Recovery, System Recovery Overview, Creating System Recovery Discs, Creating a Recovery Tools CD Running System Recovery from Recovery Discs Running System Recovery from the Hard Disk Drive

Unit V: Utilities

Compression Utilities: WinZip, PKZIP, Concept of compression, Defragmenting Hard disk using defrag, Scan Disk for checking disk space, lost files and recovery, Formatting Hard disk, Floppy Disk, Setting System Date and Time, Antivirus Package CD Writing Software – Nero etc.

Books for References:

1. Assembly Language for PC – John Socha, Peter Norton
2. Microprocessor and Interfacing- D.V. Hall
3. The 8086 Microprocessor Programming and Interfacing the PC –K. Ayala
4. Programming with X86 processor –Venugopal
5. Information System Control and Audit – Ron Weber.
6. PC Hardware (A+ Certificate guide) by Mike Mayer
7. PC Hardware interfaces by Michael Gook
8. Computer Fundamentals by P. K. Sinha
9. Upgrading and Repairing of PCs by Scott Muller
10. IBM PC and Clones by B. Govindrajalu

CHN 603-T: Computer Hardware Theory – III

Credit: 4

Marks: 80+20

Unit I: Preventive Maintenance

Contributors to Failures, Environmental: Heat, Cold, Dust, Noise Interference
Electrical: Power Line problems, EMI, Corrosion, Magnetism,
Storage Devices: Hard Disk Drive Maintenance, Floppy Disk Drive Head Cleaning. Flash Drives (USB Pen Drives, MMC cards),
Preventive Maintenance of PC: - (Hardware & System Software)
Power Supply Maintenance: Stabilizers, UPS, SMPS, Cables, Preventive Maintenance of Printers.

Unit 2: Trouble Shooting

Introduction to Basic trouble shooting, General Trouble Shooting Rules
Personal Attitude for Trouble Shooting, Need of Situation, Software Interrupt
Aplica, Common Troubles with Modern PC
Component Failure Recovery: Disk Drive Failure, Display Failure,
Motherboard & RAM Failure, Port Failures (Parallel, Serial & USB Ports),
Repair Generated Failure Fault Finding & General Repairs
Safety Precautions during trouble shooting & repairs
H/w & S/w fault isolation Techniques
Diagnostic Software Programs & Utilities.
Specific Trouble Shooting & Repairs: Startup Problems, Run Problems
Display Problems: Adaptor Cards (PCI & AGP), Device Driver Configuration, Graphics Resolution, Graphics Accelerator board.
Disk Drive Problems (HDD, CDROMs, FDD, and Writers etc.) & Mouse trouble Shooting. Installing Printers, Printer Problems

Unit3: Introduction to Business Continuity Process & Disaster Recovery Planning

Preventive Maintenance Schedules, Causes for Incidents & Disaster

Minimize & Recovery Alternatives, Access Controls: Logical & Physical, Backup & Restore Policies, Procedure & Implementations, Importance of Disaster Recovery Plan

Unit IV: Configuring Services

Printing services, Active Directory services, DNS services, DHCP services, RAS, Volumes and Disk management, Auditing and Resource Access, Gateway services, Terminal services, Configuring & Implementing VPN, Local and Domain security policy, Group Policies.

Unit V: Handheld Devices

Installation of operating system to handheld devices Notebook, Tablet etc.

Books for References:

1. Assembly Language for PC – John Socha, Peter Norton
2. Microprocessor and Interfacing- D.V. Hall
3. The 8086 Microprocessor Programming and Interfacing the PC –K. Ayala
4. Programming with X86 processor –Venugopal
5. Information System Control and Audit – Ron Weber.
6. PC Hardware (A+ Certificate guide) by Mike Mayer
7. PC Hardware interfaces by Michael Gook
8. Computer Fundamentals by P. K. Sinha
9. Upgrading and Repairing of PCs by Scott Muller
10. IBM PC and Clones by B. Govindrajalu

CHN 604-P: Computer Hardware Practical – I

Credit: 2

Marks: 50

1. Switch Board Wiring and Testing
2. Soldering and De-Soldering Practice
3. Component Testing and Symbols
4. Voltage Measurement of Different Circuits
5. Testing and Measurement of SMPS
6. Half wave, Full wave & Bridge rectifiers
7. Electronic Project (Minor Project)
8. Assembling of a Computer
9. Installation of different Operating Systems
10. Installation of different device drivers
11. Installation of different Application Software
12. Biometric Security Device Installation and Configuration
13. To Run All Dos Command (Internal and External Dos Command)
14. Assembling and Dissembling Of a Computer System

CHN 605-P: Computer Hardware Practical – II

Credit: 2

Marks: 50

1. Installation of Operating System – Windows7/Win8 Win2012 / Linux /
2. Installation of Drivers: INF, Graphics, Sound, Ethernet, Modem, etc.
3. Trouble Shooting: Trouble Shoot a PC for No Display, Hard disk Drive Failure
4. Network Sharing: Share a Drive on LAN, Share a Printer on LAN, Share a Folder on LAN
5. Trouble Shoot a Virus infected PC using a Antivirus Program (Free ware : AVAST, Fire Threat)
6. Remote Desktop Sharing – Using Team viewer, ShowmyPC, Ammyy Admin
7. LAN: Site Preparation for Installation of LAN
8. Software Installation: MS-Office, TASM, Tally, Acrobat etc
9. Antivirus: Need, Installation and Updation types

CHN 606-P: Computer Hardware Practical – III

Credit: 2

Marks: 50

1. Installation of Different Operating Systems: Windows XP, Windows 7
2. Troubleshooting and Repair Operating System: Windows XP, Windows 7
3. Tacking Data Backup and System Formatting and OS Installation
4. Installation of Different Device and Drivers PCI, PCI-E, AGP
5. Installation of Ms Office 2003, Ms-Office 2007 and Ms-Office 2010
6. Installation of On Board and PCI Device Driver
7. Installation of Web Camera and CCTV Camera Drivers and Software
8. Installation of Application Software: Photoshop 7.0, Page Maker 6.5,
9. Installation of CD-DVD Burning Software like: Nero 7.0 & PowerISO 4.0
10. Installation of Tally 7.2 and Tally ERP 9.0 and Tack Data Backup
11. Installation and Troubleshooting Different types of Antivirus Software
12. Installation Dual Operating System like: Windows XP and Windows 7
13. Installation and Troubleshooting of Scanner (Photo & Bar Code Scanner)
14. To Repair and Troubleshooting of SMPS, Monitor, Printer and Motherboard

Course Structure
Bachelor of Vocation (B. Voc)
Computer Hardware & Networking Maintenance

Sr. No.	Course Code	Name of the Course	Contact Hrs Per Week		Evaluation Scheme		Credit
			L	P	CIA	SEE	
Semester – IV		General Education Components					
1	CHN 701	Business Communication Skill - II	4	0	20	80	4
2	CHN 702	Organizational Behavior	4	0	20	80	4
3	CHN 703	Environment Science	4	0	20	80	4
Semester- IV		Skill Education Components					
1	CHN 801-T	Computer Network Theory - I	4	0	20	80	4
2	CHN 802-T	Computer Network Theory - II	4	0	20	80	4
3	CHN 803-T	Computer Network Theory - III	4	0	20	80	4
4	CHN 804-P	Computer Network Practical- I	0	4	0	50	2
5	CHN 805-P	Computer Network Practical-II	0	4	0	50	2
6	CHN 806-P	Internship Training – I	0	4	0	50	2
Total Credits							30

General Education Components

CHN 701: Business Communication Skills-II

Credit: 4

Marks: 80+20

UNIT -I: Communication Theory

1) Communication with Media:

- Notice, Minutes, Manual, Leaflet, Complaints and suggestion;
- Visual media communication: slide Presentation, Pictures and Photograph, poster and advertisement
- Non-Verbal Media Communication

2) Written communication: Reports

- Types of report, characteristics of good report, essential requisites of good report writing; Planning the Report, Outlining Issues for Analysis, writing the report

UNIT-II: Business Correspondence

- 1) Handling Business complaint
- 2) Preparing Agenda for Meeting
- 3) Writing Minutes for Meetings
- 4) Making notes of Business Conversations
- 5) Business Promotions and language for Advertising

UNIT -III: Writing Skill

- 1) Letter Writing: Formal; Informal Email Writing
- 2) Essay writing
- 3) Precise and Comprehension
- 4) Paraphrasing and Expansion
- 5) Official Reports

UNIT -IV: Prose for Business Inspiration

- 1) India's Tech King- from www.wipro.com
- 2) A Speech by N. R. Narayan Murthy
- 3) Saving Money by M. Leaf
- 4) The Beauty Industry- Aldous Huxley
- 5) Facebook Booking is Making us Miserable- Daniel Gulati

UNIT-V: Grammar

- 1) Sentence Pattern
 - a) Subject + Intransitive verb
 - b) Subject + Transitive Verb+ Direct Object
 - c) Subject + Verb + Object + Adverb Particle
 - d) Subject +Verb+ Indirect Object + Direct Object
 - e) Subject + Verb + Direct Object + Preposition + Indirect Object
 - f) Subject + Verb + Object + Complements
 - g) Subject + to be + Complement
- 2) **Word Formation**
 - a) Use of Prefixes
 - b) Use of Suffixes

PRESCRIBED TEXT:

- 1) **English for Entrepreneurs.** Board of Studies in English, Cambridge University Press, 2004.
- 2) **English Grammar: A Book of Sentence Structure and Vocabulary.** Board of Studies in English, Cambridge University Press, 2004
- 3) **Basic English Grammar and Composition.** of Studies in English, macmillan Publishers India Ltd. Mumbai: 2013
- 4) **Communication Skills.** Nageshwar Rao and Rajendra P. Das. Reprinted. Himalaya Publishing House, Mumbai. 2006.
- 5) **Business Communication.** Urmila Rai and S. M. Rai. Tenth edit. Himalaya Publishing House, Mumbai. 2008.

RECOMMENDED READING:

Contemporary English Grammar Structure and Composition. Rev. Edition by David Green, Macmillan Publishers India Ltd, 2010.

Business Communication. Rajesh Viswanathan. First edit. Himalaya Publishing House, Mumbai. 2010.

Recommended Websites:

International Business Communication <https://nptel.ac.in/courses/110105052/>

Business English Communication <https://nptel.ac.in/courses/109106129/>

CHN 702: Organizational Behaviour

Credit: 4

Marks: 80 + 20

Unit I. Introduction of Organizational Behaviour

Definition, key elements of OB, Nature and Scope of OB, need for studying OB, contributing disciplines to OB, challenges faced by management, organizational Behaviour process, models of organizational Behaviour.

Unit II. Approaches to organizational Behaviour

Historical perspective, scientific management, Behavioural Approach to Management, contingency Approach, Hawthorns Studies.

Unit III. Individual Behaviour

Individual differences, Determinates of personality, Types, Theories of personality, How Personality Develops, Perception, Factors affecting perception, Perception and its application in OB, Attitude Concepts, types, measurement of attitude, meaning of learning, learning principles.

Unit IV. Motivation Concepts

Meaning and definition of Motivation, Motivation cycle or process, types of motivation, theories of motivation.

REFERENCE BOOKS:

- (1) M.N. Mishra :- 'Organisational Behaviour' Vikas Publishing.
- (2) Subba Rao :- 'Organisational Behaviour' Himalaya Publishing.
- (3) S.S. Khanka :- 'Organisational Behaviour' S. Chand and Co.
- (4) J.S. Chandan :- 'Organisational Behaviour' Vikas

CHN 703: Environment Science

Credit: 4

Marks: 80 + 20

Unit I: Environment Science:

Definition of environment science, Nature & Scope of environment, Types of environment.

Unit II: Natural Resources:

Renewable and non-renewable resources Forest resources, Water resources, Mineral resources, Food resources, Energy resources & Land resources

Unit III: Ecosystems:

Concept of an ecosystem, Structure & function of an ecosystem Producers, consumers and decomposers, Energy flow in the ecosystem, Ecological succession, Food chains, food webs and ecological pyramids, Introduction, types, characteristic features, structure and function of the following ecosystem: Forest ecosystems, Grassland ecosystem, Desert ecosystem

Unit IV: Biodiversity:

Introduction, Definition, genetic, species and ecosystem diversity, Value of biodiversity: consumptive use, productive use, social, ethical & values. Biodiversity at Global, National & local levels, Hotspots of biodiversity, Conservation of biodiversity

Unit V: Environmental Pollution & Social issues

Pollution: Definition, Types of Pollution: Air Pollution, Water Pollution, Soil Pollution, Sound Pollution. Social issues: From unsustainable to sustainable development, Water conservation, rain water harvesting, watershed management, Climate change, global warming, acid rain, ozone layer depletion.

Reference:

1. Biodiversity of India, Bharucha, Erach, 2003, the Mapping Publishing.
2. Eco-Economy: Building an Economy for the Earth, Brown, Lester R., 2002, Orient Longman.
3. Environmental Biology, Agarwal K C., 2001, Nidi Publishers.
4. Amphibians of Peninsular India, Daniels, R. J., 2004, Universities Press.
5. Disaster Management, Harsh K Gupta (ed.), 2003, Universities Press.

Skill Education Components

CHN 801-T: Computer Network Theory – I

Credit: 4

Marks: 80 + 20

Unit I: Computer Network History

Basic Network Concepts, Network Operating Systems, Types of Networks, Network Interface Card, Hub, Cables, Expansion Devices, Wireless Networking, Connecting a Peer-to-Peer Network, Setting Up Windows Networking, Installing the NIC Driver, Installing the Clients and Protocols.

Unit II: Overview of Networking

Introduction to networks and networking, LAN, VLAN, CAN, MAN, WAN, Internet and Intranet etc. Uses and benefits of Network, Server-client based network, peer to peer networks.

Unit III: Network Hardware and Components

Concept of Server, client, node, segment, backbone, host etc. Analog and Digital transmission, Network Interface Card, Crimping tools and Color standards for Straight crimping and Cross crimping Functions of NIC, Repeaters, Hub, Switches, Routers, Bridges, Router etc.

Unit IV: Transmission Media and Topologies

Media types: STP cable, UTP cable, Coaxial cable, Fiber cable, Base band and Broadband transmission, Cables and Connectors, Physical and logical topologies, Bus, Star, Ring and Mesh topologies.

Unit V: Protocols and Services

HTTP, FTP and other Different types of protocols, OSI Model, Media Access Method, DNS services, DHCP services, WINS services and RAS services, Web services, Proxy Services etc.

REFERENCE BOOK

- (1) Networking Complete BPB Publication
- (2) Computer Networking Andrew S. Tanenbawani By PHI

CHN 802-T: Computer Network Theory – II

Credit: 4

Marks: 80 + 20

Unit I: TCP/IP and Sub-netting

Introduction about TCP/IP and Sub-netting, configuring IP address and subnettings with different Routers and Network, TCP/IP Errors and Solutions.

Unit II: Physical and Data Link Layer

The Theoretical Basis for Data Communication, Wireless Transmission, Communication Satellites, Digital Modulation and Multiplexing, The Mobile Telephone System

Unit III: Network Layer

Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms, Internetworking

Unit IV: Session Layer and Transport Layer

The Transport Service, Elements of Transport Protocols, Congestion Control.

Unit V: Application Layer and Presentation Layer

DNS— Domain Name System, Electronic Mail, Streaming Audio And Video, Content Delivery

REFRENCE BOOK

1. Network Routing: Algorithms, Protocols, and Architectures Deepankar Medhi and Karthikeyan Ramasamy (Morgan Kaufmann Series in Networking)
2. Network Algorithmic: An Interdisciplinary Approach to Designing Fast Networked Devices George Varghese (Morgan Kaufmann Series in Networking)

CHN 803-T: Computer Network Theory – III

Credit: 4

Marks: 80 + 20

Unit I: Internet

Development of Internet, network architecture, How internet works, browsers, servers, ISP concept, Network Addressing scheme MAC, IP address.

Unit II: Communication Concepts

Computer Communication and Networking concepts, Forms of data transmission, Analog and Digital Communication channels, Bandwidth, Narrow, voice & broad band, Data transmission Media - Wire, Fiber optics, Cable, Satellite, Microwave, Telephone network, Different Networking Topology.

Unit III: Network Security

Cryptography, Digital Signature
Communication security: IPsec, Firewalls, Wireless security

Unit IV: Digital Transmission

Analog to Digital conversion, Line coding, Unipolar Encoding, Polar Encoding, Bipolar Encoding , Block coding

Unit V: Networking and Network Routing

An Introduction Addressing and Internet Service: An Overview, Network Routing, IP Address subnetting, Service Architecture, Protocol Stack Architecture, Router Architecture, static, dynamic routing

Book references:

1. Stallings, W., "Cryptography and Network Security: Theory and Practice", Second Edition, John Wiley
2. Schneier, B., "Applied Cryptography - Protocols, Algorithms, and Source Code in C", Second Edition. John Wiley and Sons, 1995
3. Stein L., "Web Security: A Step-by-Step Reference Guide", Addison Wesley Longman, Inc., 1998
4. Anderson R., "Security Engineering: A Guide to Building Dependable Distributed Systems", Wiley
5. Cheswick W., Bellovin S. , "Firewalls and Internet Security: Repelling the Wily Hacker", 2nd ed., Addison-Wesley

CHN 804-P: Computer Network Practical – I

Credit: 2

Marks: 50

1. Installing and Configuring Windows 2003 and 2008 Server
2. Cable Crimping using Different Color Codes (Straight and Cross Cable)
3. Installation and configuring Peer to Peer and Server-Client Network
4. Installation and Configuring Active Directory Services
5. Installation and Configuring DNS & DHCP Services
6. Installation and Configuring FTP, HTTP Services
7. Backup and Restoration for ADS, DHCP and User Data
8. FAT and NTFS Sharing Permission
9. Configuring & Implementing Unmanageable Network Switch
10. Configuring & Implementing Manageable Network Switch

CHN 805-P: Computer Network Practical – II

Credit: 2

Marks: 50

1. Configuring a Local Security Policies & Domain Security Policies
2. Installing Printer in Windows XP, Windows 7, Windows 2003 & 2008 Server
3. Configuring Gateway Service for Internet Connectivity
4. Configuring ADSL+2 Router for BSNL Internet Connectivity
5. Configuring Wireless Access Point
6. Installation and Configuring Wire Network
7. Installation and Configuring Wireless Network
8. Installation of AD-hoc Wireless Network
9. Installation and Configure Different Antivirus Software and Admin Console
10. Remote Desktop, Remote Assistance, Telnet, HyperTerminal, TeamViewer

CHN 806-P: Internship Training – I

Credit: 2

Marks: 50



CIRCULAR NO.SU/SYLLABUS/B.VOC./ 24/2021.

It is hereby inform to all concerned that, on the recommendation of, Chairman Ad-hoc Board for B.Voc courses, the **Academic Council at its meeting held on 15 Feb 2021 has decided that to accept the curriculum of following B.Voc. Course under Choice Based Credit and Grading System** from the academic year 2020-2021 & onwards.

Sr.No	Subject Name	Semester
1.	Computer Hardware & Networking Maintenance	Third Year- Sem- V & VI
2.	Accounting	Third Year- Sem- V & VI
3.	Banking	Third Year- Sem- V & VI
4.	Professional Accounting and Taxation	Third Year- Sem- V & VI
5.	Sustainable Agriculture	Third Year- Sem- V & VI
6.	Professional Accounting and Taxation	Sem- III & IV (Revised)

This is effective from the Academic Year 2020-21 and onwards under the Faculty of Science & Technology Studies and Commerce & Management Studies.

This curriculum is also available on the University website www.bamu.ac.in.

All concerned are requested to note the contents of the circular and bring notice to the students, teachers and staff for their information and necessary action.

University campus,
Aurangabad-431 004.
Ref. No.SU/B.voc./syllabus./2020-21/
Date: 18.03.2021 30198 - 30209

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Amol M
Deputy Registrar,
Academic Section.
(Syllabus)

Copy forwarded with compliments to :-

- 1] **The Principals, affiliated concerned Colleges,
Dr. Babasaheb Ambedkar Marathwada University.**
- 2] **The Director, University Network & Information Centre, UNIC, with a request to upload the curriculum along with this Circular on University Website.**

Copy to :-

- 1] The Director, Board of Examinations & Evaluation, Dr.BAMU, A'bad
- 2] **The Concerned Section Officer, Examination Branch,**
- 3] The Section Officer, [Eligibility Unit],
- 4] **The Programmer [Computer Unit-1] Examinations,**
- 5] **The Programmer [Computer Unit-2] Examinations,**
- 6] The In-charge, [E-Suvidha Kendra],
- 7] The Public Relation Officer,
- 8] The B.Voc Section,Dr.BAMU,A'bad
- 9] The Record Keeper,

DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY AURANGABAD



**SYLLABUS OF
BACHELOR OF VOCATIONAL**

IN

**Computer Hardware & Networking
Maintenance**

Third Year SEMESTER V to VI

Choice Based Credit System

Effective from the Academic Year

2020-21 & Onwards



**Matsyodari Shikshan Sanstha's
Ankushrao Tope College, Jalna**

**Bachelor of Vocational
(Computer Hardware & Networking Maintenance)
Choice Based Credit System
Third Year - Semester V & VI
Three Year Degree Course
(With Effective from: June 2020-21)**

Course Structure
Bachelor of Vocation (B. Voc)
Computer Hardware & Networking Maintenance

Sr. No.	Course Code	Name of the Course	Contact Hrs Per Week		Evaluation Scheme		Credit
			L	P	CIA	SEE	
Semester – I		General Education Components					
1	CHN 101	Functional Marathi – I	4	0	20	80	4
2	CHN 102	Professional English – I	4	0	20	80	4
3	CHN 103	Professional Work – I	4	0	20	80	4
Semester - I		Skill Education Components					
1	CHN 201-T	Fundamentals of Computer	4	0	20	80	4
2	CHN 202-T	Operating System	4	0	20	80	4
3	CHN 203-T	Computer Organization & Microprocessor	4	0	20	80	4
4	CHN 204-P	Fundamentals of Computer	0	4	0	50	2
5	CHN 205-P	Operating System	0	4	0	50	2
6	CHN 206-P	Computer Organization & Microprocessor	0	4	0	50	2
			Total Credits				30

Course Structure
Bachelor of Vocation (B. Voc)
Computer Hardware & Networking Maintenance

Sr. No.	Course Code	Name of the Course	Contact Hrs Per Week		Evaluation Scheme		Credit
			L	P	CIA	SEE	
Semester – II		General Education Components					
1	CHN 301	Functional Marathi – II	4	0	20	80	4
2	CHN 302	Professional English – II	4	0	20	80	4
3	CHN 303	Professional Work – II	4	0	20	80	4
Semester - II		Skill Education Components					
1	CHN 401-T	Microprocessor & Interfacing Techniques I	4	0	20	80	4
2	CHN 402-T	Microprocessor & Interfacing Techniques II	4	0	20	80	4
3	CHN 403-T	Computer System Management – I	4	0	20	80	4
4	CHN 404-P	Microprocessor & Interfacing Techniques I	0	4	0	50	2
5	CHN 405-P	Microprocessor & Interfacing Techniques II	0	4	0	50	2
6	CHN 406-P	Computer System Management – I	0	4	0	50	2
			Total Credits				30

Course Structure

Bachelor of Vocation (B. Voc)

Computer Hardware & Networking Maintenance

Sr. No.	Course Code	Name of the Course	Contact Hrs Per Week		Evaluation Scheme		Credit
			L	P	CIA	SEE	
Semester - III		General Education Components					
1	CHN 501	Business Communication Skill - I	4	0	20	80	4
2	CHN 502	Business Statistics	4	0	20	80	4
3	CHN 503	Personality Development	4	0	20	80	4
Semester- III		Skill Education Components					
1	CHN 601-T	Computer Hardware Theory- I	4	0	20	80	4
2	CHN 602-T	Computer Hardware Theory- II	4	0	20	80	4
3	CHN 603-T	Computer Hardware Theory- III	4	0	20	80	4
4	CHN 604-P	Computer Hardware Practical- I	0	4	0	50	2
5	CHN 605-P	Computer Hardware Practical- II	0	4	0	50	2
6	CHN 606-P	Computer Hardware Practical- III	0	4	0	50	2
		Total Credits				30	

Course Structure

Bachelor of Vocation (B. Voc)

Computer Hardware & Networking Maintenance

Sr. No.	Course Code	Name of the Course	Contact Hrs Per Week		Evaluation Scheme		Credit
			L	P	CIA	SEE	
Semester - IV		General Education Components					
1	CHN 701	Business Communication Skill - II	4	0	20	80	4
2	CHN 702	Organizational Behavior	4	0	20	80	4
3	CHN 703	Environment Science	4	0	20	80	4
Semester- IV		Skill Education Components					
1	CHN 801-T	Computer Network Theory - I	4	0	20	80	4
2	CHN 802-T	Computer Network Theory - II	4	0	20	80	4
3	CHN 803-T	Computer Network Theory - III	4	0	20	80	4
4	CHN 804-P	Computer Network Practical- I	0	4	0	50	2
5	CHN 805-P	Computer Network Practical-II	0	4	0	50	2
6	CHN 806-P	Internship Training - I	0	4	0	50	2
Total Credits						30	

Matsyodari Shikshan Sanstha's
Ankushrao Tope College, Jalna(MS)



Curriculum Structure

Bachelor of Vocation

**(B. Voc Computer Hardware &
Networking Maintenance)**

II

Choice Based Credit System

(Effective from July 2019-20)

The Bachelor in Vocation programme is divided into six semesters having 192 credits. Each semester has courses categorized under **General Education Components** and **Skill Development Components**.

Preamble:

University Grants Commission sanctions proposal of three year Bachelor programme in Vocation (B. Voc.) program which are being run at Ankushrao Tope College, Jalna affiliated by Dr. Babasaheb Ambedkar Marathwada University, Aurangabad from 2018-19. The curriculum design of this program is undertaken in the following framework-

- a) Although there has been remarkable progress in all sectors of education in last couple of decades, the less regulated area of the education sector-vocational training—seems to have lost its significance/importance. This has led to the widening gap between the supply and demand for skilled manpower across various industries and R&D organizations. This shortage of skills has translated directly into unemployment among an increasing number of graduates who pass-out every year and are forced to be re-trained in order to become marketable.

These programme are designed to produce skilled manpower so that wide variety of options in job sectors would be available and it will improve the opportunities for the unemployed youths in the country in both the private and public sectors.

- b) According to a study conducted by the Associated Chambers of Commerce and Industry of India (ASSOCHAM), there will be a deficit of 40 million working professionals by the year 2020 and the employers would face the difficulty of filling positions because of the dearth of suitable talent and skilled person.

These programme aim to provide concrete solution for these problems and would facilitate to improve:

- (i) **Quality of training**
- (ii) **High drop-out rates**
- (iii) **Linkages with Universities and Banking Sector**
- (iv) **Inadequacy of resources**

- c) These programme are intended to offer practical training and skills needed to pursue an occupation straight away. It will provide options to the students to select the courses of their choice which are directly aligned to land a job in a chosen profession or a skilled trade. One of the end results of these programme is to enable an individual to attain self-employment.

Course Structure**Bachelor of Vocation (B. Voc)****Computer Hardware & Networking Maintenance**

Sr. No.	Course Code	Name of the Course	Contact Hrs Per Week		Evaluation Scheme		Credit
			L	P	CIA	SEE	
Semester – V		General Education Components					
1	CHN 901	Business Management	4	0	20	80	4
2	CHN 902	Research Methodology	4	0	20	80	4
3	CHN 903	Stress Management	4	0	20	80	4
Semester- V		Skill Education Components					
Core Course							
1	CHN 1001-T	Programming in C	4	0	20	80	4
Elective Course							
2	CHN 1002-T	Digital Electronics OR IT Tools & Web Designing	4	0	20	80	4
3	CHN 1003-P	Programming in C – Practical	0	4	0	50	2
4	CHN 1004-P	Digital Electronics Practical OR IT Tools & Web Designing Practical	0	4	0	50	2
5	CHN 1005-P	Project – I	0	4	0	50	2
6	CHN 1006-P	Internship Training – III	120		100	0	4
Total Credits							30

Course Structure**Bachelor of Vocation (B. Voc)****Computer Hardware & Networking Maintenance**

Sr. No.	Course Code	Name of the Course	Contact Hrs Per Week		Evaluation Scheme		Credit
			L	P	CIA	SEE	
Semester – VI		General Education Components					
1	CHN 1101	E-Commerce	4	0	20	80	4
2	CHN 1102	Soft Skills for Business	4	0	20	80	4
3	CHN 1103	Auditing	4	0	20	80	4
Semester- VI		Skill Education Components					
Core Course							
1	CHN 1201-T	Programming in C++	4	0	20	80	4
Elective Course							
2	CHN 1202-T	Network Essentials & Management OR Database Management System	4	0	20	80	4
3	CHN 1203-P	Programming in C++ Practical	0	4	0	50	2
4	CHN 1204-P	Network Essentials & Management Practical OR Database Management System Practical	0	4	0	50	2
5	CHN 1205-P	Project – II	0	4	0	50	2
6	CHN 1206-P	Internship Training – IV	120		100	0	4
Total Credits							30

Semester V

General Education Components
Business Management

Code: CHN 901

Credit: 04

Unit -I. Introduction to Management

Meaning, Definitions, Nature, Characteristics, Importance of Management, Scope and functions of Management.

Unit -II. Planning & Decision Making

Meaning, Definitions, Characteristics & Importance of Planning, Limitations of planning, Types of plans, **Decision Making**- Meaning, Definitions, Characteristics &, Technique of decision making. Problems in decision making.

Unit -III. Organizing & Co-ordination

Meaning, Definitions, Importance of organization. The Process of organization, Types of organization, principles of organization. **Co-ordination**: Meaning, Definition, features and Importance of Co-ordination. The elements of coordination, Steps for achieving effective co-ordination.

Unit - IV. Staffing

Meaning, Definitions, objectives, Characteristics & Importance of staffing. Man power planning, source of recruitment, selection procedure, **Training**- types of training, Performance appraisal – meaning & importance.

Unit -V. Leadership & Controlling

Meaning, Definitions, Characteristics & Importance of Leadership, Types of leaders. **Controlling**: Meaning, Definitions, Elements of control, The control process, importance of control, Essential Steps in control Procedure, control technique, requirement of good Control system.

References/Suggested Books Reading:

1. Principles of Management; - J. K. Mitra, Oxford University Press.
2. Principles of Management; -T. Ramaswami, Himalaya Publishing House.
3. Principles of Management; - L. M. Prasad, Sultan Chand & Sons
4. Principles & Practice of Management -Vol. I ;-Saxena S.C.
5. Principles and Functions of Management; - Prof. Suresh Bhirud., Prof. Bhaskar Naphade, Diamond Publications.

Research Methodology**Code: CHN 902****Credit: 04****Marks: 80 + 20 = 100****Unit I- Introduction**

Meaning, nature, Scope and objective of social science research- hypothesis, stages of scientific research, Motivating factors of social research.

Unit II- Research Design

Meaning and need of Research Design- Types of Research Design (only introduction)-descriptive, diagnostic and experimental.

Unit III- Methods of Data collection

Primary Data- Observation Interview, questioner, schedule

Secondary Data – Personal documents, Public documents and its limitations.

Unit IV- Data Presentation and Analysis

One – dimensional diagrams, Two - dimensional diagrams, Graphs of time series.

Unit V- Report Writing

Nature, types and contents of reports- Stapes in drafting the reports.

References :

- 1.Micheal V.P., Research methodology in management, Himalaya Publishing house 2009.
- 2.Thanulingam N., Research methodology, Himalaya Publishing house.
3. Nandgopal R., Research methodology in business, Himalaya Publishing house.
- 4.Kothari C.R., Research methodology Method and Techniques, New delhi.

Stress Management

Code: CHN 903

Credit: 04

Marks: $80 + 20 = 100$

Unit-I. Scientific Concept of Stress

The History of the Stress Concept /Pioneers of the field, Scientific Definitions of the Stress Concept, Theoretical Constructs of the Stress Concept, Identification of the Main Stressor as a Dependent Variable, Intervening Variable and Independent Variable

Unit-II Comprehensive Stress Management

An Insight to Comprehensive Stress Management, Eustress, Life-Situation & Intrapersonal Interventions, Eliminating Unnecessary Stressors, Interpersonal Techniques, Assertiveness Conflict Resolution, Effective Time Management and Communication, Perception, Interventions: The role of Personality

Unit-III Decreasing Stressful Behaviours

Introduction to Meditation, Autogenic Training and Imagery Progressive Relaxation
The Role of Biofeedback, Physiological Arousal and Behaviour Change Interventions

Unit-IV Process of Stress and Adjustment

Specific Applications - a Review, Occupational Stress – its Causes and Consequences, Stress and the College Student, Family Stressors, Adjustment in the Later Years – Stress and the Elderly

Unit-V Stress Management Programs.

An Evaluation of Stress Management Programs, Implications of Stress Management Programs, Group Coaching Programs, Designing Stress Management Program.

Reference Book :

- Greenberg, Jerrold, S. Comprehensive Stress Management. NY:McGraw-Hill, latest edition.
- Cooper, C.L. & Payne, R.P (1994). Causes,Coping & Consequences of Stress at Work. Wiley.
- Arling, G. (1987) Strain, Social Support and Distress in Old Age. Journal of Gerontology, 42, 107-113.
- Giga, S., Cooper, C.L. & Faragher, B. (2003). The Development of a Framework for a Comprehensive Approach to Stress Management: Interventions at Work. International Journal of Stress Management, 10, 280-296

WWW RESOURCES

The American Institute of Stress
www.stress.org
Distress
www.distress.com
www.aabt.org
Self Improvement Resources
www.selfgrowth.com

Skill Education Components
Programming in C **Code: CHN 1001-T**

Credit: 04

Marks: 80 + 20 = 100

UNIT I

Overview of C: History & Importance of C, Structure of a C Program.
Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant.

UNIT II

Input/output: Unformatted & formatted I/O function, Input functions (scanf(), getch(), getche(), getchar(), gets()), output functions (printf(), putch(), putchar(), puts()).
Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators. Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity.

UNIT III

Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, goto statement.

Decision making & looping: For, while, do-while loop, jumps in loops, break, continue statement.

UNIT IV

Functions: Introduction, types of functions. Defining functions, Arguments, Function prototype, actual parameters and formal parameters, Calling function, Returning function results, Call by value, Recursion.

Structure & Union

Structure: Introduction, Declaration and initializing structure, Accessing Structure members, Nested structures, Arrays of structure, typedef statement.

UNIT V

Unions: Declaration, Difference between structure and union
Storage classes in C: auto, extern, register and static storage class, their scope, storage, lifetime.
Arrays: Definition, types, initialization, processing an array. Structure and Union.

TEXT BOOKS

 Byron Gottfried, Programming with C, McGraw Hill Education, 2018.
 E. Balagurusamy, Computing Fundamentals and C Programming, McGraw Hill Education, 2017.

REFERENCE BOOKS

 Jeri R. Hanly and Elliot B. Koffman; Problem Solving and Program Design in C; Pearson Education
India, 2013.
 Yashvant Kanetker; Let us C, BPB, 2017.

Digital Electronics

Code: CHN 1002-T

Credit: 04

Marks: 80 + 20 = 100

UNIT – I : Number Systems and Arithmetic

- Number System: Decimal, Octal, Hexadecimal & Binary Number System
- Conversion within Binary, Octal, Hexadecimal & Decimal Number System.
- Binary Arithmetic: Binary addition, subtraction, multiplication & division
- Binary subtraction using 1' complement, 2's complement method.
- Hexadecimal arithmetic: Addition, subtraction, multiplication & division

Unit – II: Boolean algebra and Logic Gates

- Postulates of Boolean algebra
- Theorems of Boolean algebra: Complementation, commutative, AND, OR, Associative, Distributive, Absorption laws, De morgan's theorems
- Reducing Boolean expressions
- Logic Gates: AND, OR, NOT, Ex-OR, Ex-NOR
- NAND as Universal building block
- Logic diagrams of Boolean expressions Boolean expressions for logic diagrams

Unit – III: Minimization Techniques

- Introduction, Minterms and Maxterms
- K-Map, K-map for 2 variables
- K-map for 3 variables
- K-map for 4 variables

Combinational and Arithmetic Logic Circuits

- Half Adder & Full Adder
- Binary parallel Adder
- Half Subtractor, Full Subtractor
- Adder/Subtractor in 2's complement system
- BCD to Decimal decoder
- 2: 4 demultiplexer, 4 line to 1 line multiplexer

Unit – IV: Flip Flops

- Introduction: RS FF, Clocked RS FF, D FF
- Triggering, preset and clear
- JK FF, T FF, Race around condition, Master slave FF

Unit – V: Counters

- Introduction: Asynchronous/ ripple counter
- Modulus Counter, MOD-12 counter
- Synchronous counter: Synchronous serial & synch parallel counter
- BCD counter, Ring counter

Shift Registers

- Introduction, Buffer register
- Serial- in serial -out Serial-in parallel-out
- Parallel-in serial-out, parallel-in parallel-out

Text Book:

1. Digital Electronics and Micro-Computers – R.K.Gaur , Dhanpat Rai Publication

Reference Book:

1. Digital Electronics and Logic Design – N.G.Palan, Technova Publication

IT Tools & Web Designing**Code: CHN 1002-T****Credit: 04****Marks: 80 + 20 = 100****Unit I: Basic concepts**

- Web standard: Standard Process, Advantage of Standard, Current Web Standard.
- Basic web designing: Introduction to web browser, architecture of web browser, web page, Static & dynamic web pages, home page, web-site. Web-servers & clients.
- Basics of Internet, Internet Domains
- Protocols definition, Overview of TCP/IP, Telnet, FTP
- Communication between browser and web server

Unit II: Introduction to HTML

- Structure of HTML program
- HTML paired tags, Singular Tag
- Text formatting: paragraph, line break, headings, drawing lines.
- Text styles: Bold, italics, underline.
- Centering & Spacing

Unit III: HTML

- Lists: types of lists viz. unordered, ordered, definition lists
- Adding graphics: image, background, border, using width and height attributes.
- Tables: creation and setting attributes of table, width & border attribute, Cell Padding, Cell Spacing, Colspan & Rowspan Attributes, background color.
- Linking documents (Links): External document references, internal document references.
- Introduction to frames: frameset and frame tag.

Unit IV: Introduction to DHTML

- Overview of dynamic HTML.
- Cascading Style Sheets: Font Attributes, Color & background Attributes, Text Attributes, border & Margin Attributes, List Attributes.
- Class
- Using the ..., <DIV> ... </DIV> Tag.
- External Style Sheets.

Unit V: Introduction to javascript

- Javascript in web pages, Advantages of Javascript, Writing Javascript into HTML, Basic Programming Techniques, Operators and expressions in Javascript,

Text Books:

1. Web Enabled commercial Application Development Using HTML, DHTML, JavaScript by -Ivon Bayross.
2. Complete reference HTML
3. JavaScript Bible.

'C' Programming Practical

Code: CHN 1003-P

Credit: 02

Marks: 50

List of Experiments:

1. Find Area, Perimeter of Triangle & Rectangle.
2. Find maximum amongst 3 numbers.
3. Program for nested loops.
4. Program to Calculate x^y
5. Program to check Prime Number, Program reverse of digit.
6. Program to find Armstrong Number.
7. Program to print the Fibonacci Series
8. Searching and element from array.
9. Transpose of matrices
10. Multiplication of matrices
11. Sorting array using bubble sort technique
12. Program for factorial.

Note: Any other five program of faculty's interest.

Digital Electronics Practical**Code: CHN 1004-P****Credit: 02****Marks: 50**

Instruction: The Laboratory work will have to be performed during the semester consisting of any of the 8 experiments from the given list below:

List of Experiments:

1. Study and Testing of measuring instruments: Digital and Analog multimeters, CROs and Signal Generators – measurement of AC & DC voltages, measurement of frequency.
2. Study of Components: Identification and testing of resistors, capacitors, inductors, diodes, LEDs & transistors
3. Study of Logic Gates: Study of truth table of basic gates, realization of Boolean functions
4. Study of Half adder and Full Adder
5. Study of Half Subtractor and Full Subtractor
6. Study of Implementation of a 3:8 decoder,
7. Study of 4-line to 16 bit decoder
8. Study of BCD to 7-segment decoder
9. Study of Generating a Boolean expression with a multiplexer
10. Study of Clocked JK Flip Flop
11. Study of 4-bit ripple counter

IT Tools & Web Designing Practical**Code: CHN 1004-P****Credit: 02****Marks: 50**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Project - I**Code: CHN 1005-P****Credit: 02****Marks: 50**

Purpose of the project work is:

- (i) To develop abilities of diagnosing problems.
- (ii) Prepare documents for electronic work.
- (iii) Work as a team.

The student is expected to work on a project in consultation and acceptance with the instructor on either system software or hardware aspects related to industrial environment. The student is also expected to fabricate different cards used in PC, their testing and assembly of PC.

The end targets for the project should be well defined and evaluation should place major importance on meeting these targets.

Internship Training – III

Code: CHN 1006-P

Credit: 04

Marks: 100

3 Weeks structured & supervised branch specific task oriented industrial/field exposure to be organized at the end of session. The students will submit a report. This will be evaluated at institution level for 100 marks by Project examiner for viva and report presented by the student.

Semester VI

General Education Components

E-Commerce

Credit: 04

Code: CHN 1101

Marks: 80 + 20 = 100

Unit I. Introduction to Electronic Commerce –Evolution and Models

Introduction, History/Evolution of Electronic Commerce, Roadmap of E-Commerce in India, Functions and Scope of E-Commerce, Benefits and Challenges of E-Commerce, E-Commerce Business Strategies for Marketing, Sales and Promotions.

Unit II. Business Models of E-Commerce & E-enterprise

Characteristics of Business to Business(B2B), Business to Consumers (B2C), Business to Government (B2G), Concepts of other models of E-commerce. Applications of E-commerce and E-enterprise, Managing the E-enterprise- Introduction, Managing the E-enterprise, Organisation of Business in an E-enterprise, Benefits and Limitations of E- enterprise

Unit III. World Wide Web and EDI

World Wide Web-Reasons for building own website, Benefits of Website, Registering a Domain Name, Role of web site in B2C E-commerce; push and pull approaches; Web site design principles, EDI and paperless trading; Pros & Cons of EDI; Related new technologies use in Ecommerce.

Unit IV. E-marketing

E-Marketing- Scope and Techniques of E-Marketing, Traditional web promotion; Web counters; Web advertisements, Role of Social media, E-Commerce Customer Strategies for Purchasing and support activities, Planning for Electronic Commerce and its initiates, The pros and cons of online shopping, Justify an Internet business.

Unit V Electronic Payment System

Electronic Payment System-Characteristics of E-payment system, SET Protocol for credit card payment, prepaid e-payment service, post-paid E-payment system, Types of payment systems, Operational, credit and legal risks of E-payment system, Risk management options for E-payment systems, Set standards / principles for E-payment.

References/ Suggested Book Readings:

1. Bharat Bhasker, Electronic Commerce – Frame work technologies and Applications, 3rd Edition- Tata McGraw Hill Publications, 2008.
2. Pandey, Srivastava and Shukla, E-Commerce and its Application, S. Chand
3. Kamlesh K. Bajaj and Debjani Nag, Ecommerce- the cutting edge of Business, Tata McGraw Hill Publications, 2008
4. E- Commerce Strategies, Technology and applications (David) Tata McGraw Hill

Soft Skills for Business**Code: CHN 1102****Credit: 04****Marks: 80 + 20 = 100****Unit I: Elements of communication**

Meaning, importance, objectives of communication Process of communication, Types, Nonverbal Communication-Body language, gestures, postures, Facial expression, Dress code. The cross-cultural Dimensions of business communication Listening & speaking. Eliciting Response, Business and social etiquette

Unit II: Public speaking

Importance, principles of effective speaking & presentations Speech for introduction of a speaker Speech for vote of thanks Occasional speech Use of technology

Unit III: Interview Techniques

Importance Art of conducting and giving interviews Placement interviews Discipline interview

Unit IV: Meeting

Importance Participating and conducting group discussions Brain storming, e-meeting Preparing Agenda and minutes of the meeting

Unit V: Skill development

Preparation of bio data and career plan.

Reference Books:

- 1) Essentials of Business communication- Rajendra Pal & J S Korlahalli
- 2) Effective Business Communication-Asha Kaul
- 3) Communication skills- Sanjay kumar & Pushp lata
- 4) The Functional aspects of Communication skills- Dr. P Prasad

Auditing**Code: CHN 1103****Credit: 04****Marks: 80 + 20 = 100****Unit-I: Introduction**

Meaning, objectives, scope of Auditing, Importance & Types of Auditing, General principles, types of errors and frauds, Audit programme, Audit note book.

Unit-II: Internal check system:

Meaning of Internal check system, Internal control System: meaning, objectives and significance, Internal check auditors.

Unit-III : Vouching:

Meaning, Definition & objectives of Vouching, vouching of cash & credit transactions, Duties of Auditor relating to vouching.

Unit IV: Verification & Valuation of Asset & liabilities

Meaning, Definition of Verification, Difference between Vouching & Verification, verification of asset and liabilities. Valuation of Assets & Liabilities, Need and significance of Valuation., Duties of Auditor relating to Verification & Valuation.

Unit V : Audit of Limited Companies

Company Auditors –appointment of Auditor, power, duties and liabilities of auditor, remuneration of Auditor, and removal of Auditor.

Audit reports: meaning and definition of auditor's report, types of reports, standard report and qualified report.

References/Suggested Books Reading:

1. Tondon B.N.; Contemporary Auditing, Tata McGraw, New Delhi.
2. Pagare Dinkar; Principles of Auditing, S. Chand & Company, New Delhi.
3. Sharma T.R.; Auditing Principles and Practice, Sahitya Bhavan, Agra.
4. Jagdish Prasad; Auditing Principles
5. S.K. Basu; Auditing, Vikas Publication.

Skill Education Components

Programming in C++

Code: CHN1201-T

Credit: 04

Marks: 80 + 20 = 100

Unit – I: Introduction of OOPs

Procedural Vs Object Oriented Programming, Basic concepts of Object Oriented Programming, Class, Object, Data Abstraction, Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing. Benefits and applications of OOP, History and overview of C++, C++ program structure. Reference variables, Scope resolution operator, Member dereferencing operators, new and delete, cin and cout, The endl and setw manipulator.

Unit – II: Functions in C++

Function prototype, Call by reference (using reference variable), Return by reference, Inline function, Default arguments, Const arguments.

Function overloading:

Different numbers and different kinds of arguments

Unit – III: Objects and Classes:

Specifying a class, private and public, Defining member functions, Nesting of member function, Object as data types, Memory allocation for objects, static data members and member functions. Array of objects, Objects as function argument, returning objects, Friend function and its characteristics.

Unit – IV: Constructors and Destructors

Introduction, default and parameterized constructors, Multiple constructors in a class, Copy Constructor, Destructors

Unit – V: Operator Overloading

Overloading unary operators, Rules for operator overloading, Overloading without friend function and using friend function, Overloading binary operators such as arithmetic and relational operators, Concatenating Strings, Comparison operators.

Reference Books:

1. Object Oriented Programming with C++ E. Balagurusamy, Tata McGraw-Hill Publishing
2. Object Oriented Programming In C ++ Robert Lafore, Galgotia

Network Essentials & Management**Code: CHN 1202-T****Credit: 04****Marks: 80 + 20 = 100****Unit I: Introduction and Installation of Server**

Installation of server like windows 2003 and 2008, user account administration , group management, implementing DNS server, creating a Domain account, File system NTFS permission.

Unit II: Network Administration

Installing and Configuring Wire & Wireless Network, Network Troubleshooting, Installing Manageable Switches, Routers, Wi-Fi Device, Printer, CCTV Camera, IP Camera and Other Network Devices, Storage Solution- TAP Drive

Unit III: WANs and Remote Connectivity

Public networks, Remote connectivity for server and clients, Indoor and Outdoor Wireless, WLAN- WIFI and WIMAX, PCI Wireless Card, USB Wireless Card, Wireless Access Point, Security of networks like Firewalls Hardware and Software, VPN.

Unit IV: Introduction and installation of Linux

History of Linux, Linux distributions, Features of Linux, advantages of Linux Installation of Red Hat and SUSE Linux and Fedora Edition, System requirements, Disk partition, Mount points, Installation method, creating the boot disk.

Unit V: Networking with Linux

Installing and setting up a Network card, Setting TCP/IP parameters with Linux, Testing the network, Utilities of Linux, TAR Program, Send Mail, Send mail Configuration, Pine, Browsers, NFS and Samba Configuration, Network Printing and Interoperability with windows.

REFERENCE BOOK

(1) Networking Complete BPB Publication

(2) Computer Networking Andrew S. Tanenbawian By PHI

Database Management System

Code: CHN 1202-T

Credit: 04

Marks: 80 + 20 = 100

Unit – I: Basic Concept

- Data Definition, Types of Data, Record and File, File based System & Processing
- Database System Application, Purpose of Database System
- Abstraction & Data Integration
- Three level Architecture proposal for a DBMS.
- Component of a DBMS: Users, Facilities & Structure.
- Advantageous & Disadvantageous of DBMS.

Unit – II: Data Modeling & Design

- Data Association – Entities, Attributes & Association, Relationship among Entities, Representation of Association & Relationships
- Data Model: Importance of Data Model, Types of Data Model: Relational, ER, Semi-structured, Object-Oriented, Network & Hierarchical Data Model.

Advantageous & Disadvantageous of above model.

Unit – III: Entity-Relationship Data Model

- Entity , Entity Set, Types of Entities, Strong & Weak Entity, Representation
- Attribute, Types of Attributes , Representation
- Relationship : Binary & Ternary , Representation
- Mapping Cardinality, Entity-Relationship Design Issues

Unit – IV: Relational Data Model

- Basic Structure of Relational Data Model, Database Schema
- Constraints : Integrity Rule 1 & 2
- Normal Form: Anomalies, Functional Dependency, Dependency Diagram, First Normal Form, Second Normal Form, Third Normal Form, Conversion from Universal to 1 NF, INF to 2 NF and 2NF to 3NF.

Unit – V: Relational Algebra

- Basic Operation – Union , Intersection, Difference and Cartesian Product
- Advance Operation- Projection, Selection, Join (Inner and Outer) & Division
- Examples based on above Operation.
- Relation Algebraic Queries.

Introduction to Oracle

- Oracle Software : Versions of Oracles, Products of Oracle, Tools of Oracle
- SQL: Logging to SQL/ iSQL, SQL plus worksheet.

REFERENCE BOOK

- 1) Database System Concepts (Sixth Edition) AviSilberschatz, Henry F. Korth,S. Sudarshan
- 2) An Introduction to Database Systems by Bipin C. Desai

Programming in C++ Practical Code: CHN1203-P**Credit: 02****Marks: 50**

Minimum 10 Practicals to be performed as per the guidelines of teaching Faculty depending upon all theory units of concerned subject.

Network Essentials & Management Practical**Code: CHN 1204-P****Credit: 02****Marks: 50**

1. Study of Networking Devices & tools
2. Study of IP Address with Class
3. Virtual Setup of Practical setup of Intra-Network.
4. Installation of Server & Client System
5. Peripheral Device Sharing of Devices in LAN
6. Proxy Network Setting.

Note : Any Five Addition practical Assignment as per faculty directive.

Database Management System Practical**Code: CHN1204-P****Credit: 02****Marks: 50**

- 1) Design five schemas for any organization like: College, school, hospital, travel agency, company, bank etc.
- 2) Normalize the above five selected schemas as per 1NF,2NF and 3NF
- 3) Draw E-R Diagram for the same.
- 4) Solve at least ten Relational Algebraic Queries

Project - II**Code: CHN 1205-P****Credit: 02****Marks: 50**

Purpose of the project work is:

- (i) To develop abilities of diagnosing problems.
- (ii) Prepare documents for electronic work.
- (iii) Work as a team.

The student is expected to work on a project in consultation and acceptance with the instructor on either system software or hardware aspects related to industrial environment. The student is also expected to fabricate different cards used in PC, their testing and assembly of PC.

The end targets for the project should be well defined and evaluation should place major importance on meeting these targets.

Internship Training – IV**Code: CHN 1206-P****Credit: 04****Marks: 100**

3 Weeks structured & supervised branch specific task oriented industrial/field exposure to be organized at the end of session. The students will submit a report. This will be evaluated at institution level for 100 marks by Project examiner for viva and report presented by the student.