Course Name   **: Computer Engineering Group**

Course Code   **: CO/CD/CM/CW**

Semester   **: Sixth for CO/CM/CW and Seventh for CD**

Subject Title   **: Linux Programming**

Subject Code   **: 17816**

Teaching and Examination Scheme:

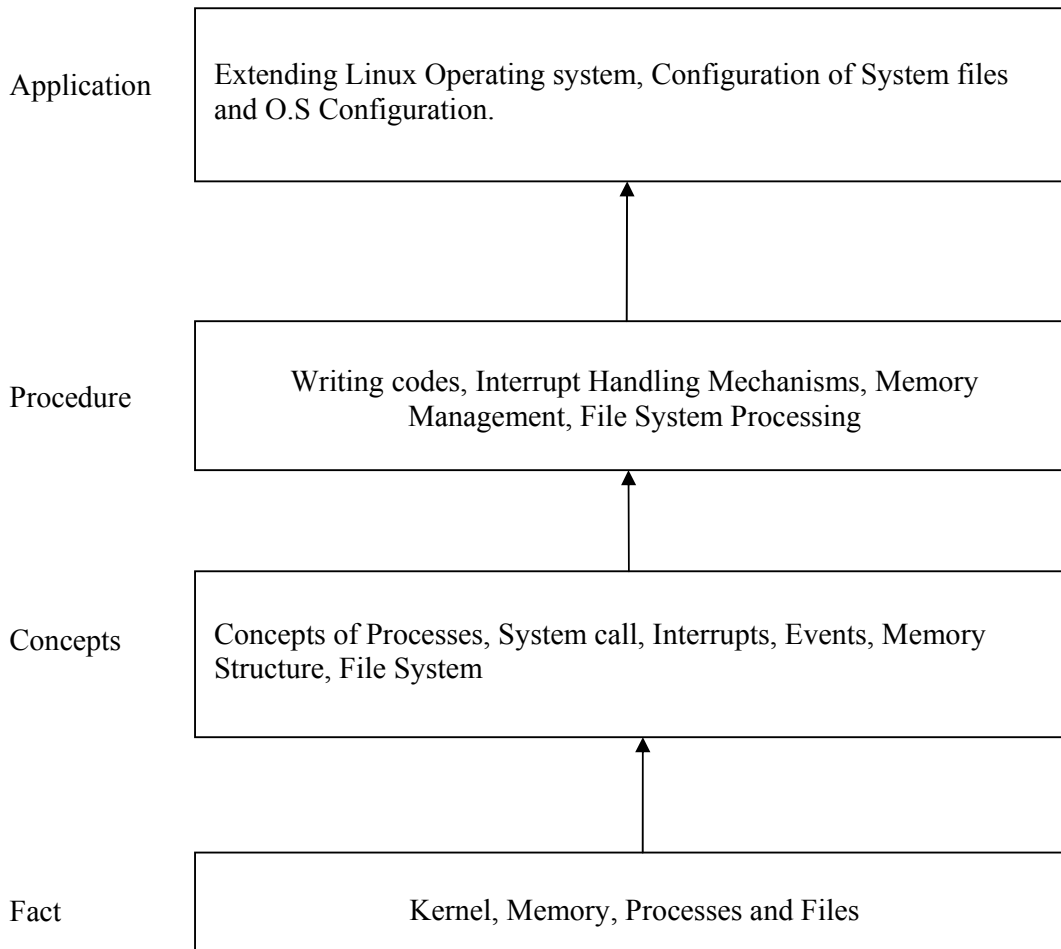| Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
01	--	04	--	--	50#	--	25@	75

Rationale:

Linux is one of the most successful open source operating system which includes all the features of modern operating systems like virtual memory, virtual file systems, lightweight processes, signals, inter process communications etc. Linux is well supported and demand for Linux programmer is increasing. This subject aims at extending the knowledge of operating systems and give students exposure to Kernel and system calls. Probing beyond the superficial features, students will get valuable insights into how things really work inside their machine. Thus Advanced Linux programming aims at giving students practice of writing codes that directly talk to the kernel.

General Objectives:

Students will be able to

1. Understand Kernel Basics.
2. Understand use of System Calls.
3. Understand file operations as carried by Linux O.S.
4. Understand Memory Management Basics, processes and process handling.
5. Understand interrupt handlers and exception handling.

Learning Structure:

Application
| Extending Linux Operating system, Configuration of System files and O.S Configuration. |

↑

Procedure
| Writing codes, Interrupt Handling Mechanisms, Memory Management, File System Processing |

↑

Concepts
| Concepts of Processes, System call, Interrupts, Events, Memory Structure, File System |

↑

Fact
| Kernel, Memory, Processes and Files |

Contents:

Sr. No.	Name of Topic/Sub topic	Hrs
1	**Linux Shell and Commands Overview** **Objectives :** ➢ Describe shell and its basic. ➢ Implement process related commands. ➢ Mount and Unmount media. 1.1 About Linux Looking in to the Linux kernel The GNU Utilities The Linux Desktop environment 1.2 Linux Distributions Core Linux distribution Specialized Linux distribution The Linux console 1.3 Monitoring Program Peeking at the processes Real time process monitoring Stopping processes 1.4 Monitoring Disk Space Monitoring media Using the df command Using the du command 1.5 Working with the data Files Storing Data Searching the Data Compressing Data Archiving Data	02

Sr. No.	Name of Topic/Sub topic	Hrs
2	**Environment Variables and File permissions** **Objectives :** ➢ Implement Set and unset Local and Global Environment Variables. ➢ State special files and utilities to track and manage user accounts. ➢ State special files and utilities to track and manage groups. ➢ Describe use of Linux File security system. 2.1 Environment variables Global environment variables Local environment variables Setting Environment Variables Setting Local environment variables Setting Global environment variables 2.2 Removing Environment Variables Default Shell Environment Variables Setting the PATH Environment Variables 2.3 Local System Environment Variables Logging Shell Interactive Shell Non- Interactive Shell Variable Arrays, Using Command Aliases 2.4 Linux Security The /etc/passwd file ,The /etc/shadow file Adding a new user, Removing the user Modifying the user 2.5 Using Linux Groups The /etc/group file Creating New group Modifying group 2.6 Decoding File Permission Using File Permission symbols Default File Permission Changing Security Setting Changing permission Changing ownership and sharing files	02

Sr. No.	Name of Topic/Sub topic	Hrs

3	**Script Building and Conditional Commands**
	Objectives :
	  ➢ Write and execute script files.
	  ➢ Use Input-Output Redirection and pipes.
	  ➢ Use Mathematical Operations in a shell script.
	3.1 Using Multiple Commands, Creating a Script File
	   Displaying Messages
	3.2 Using Variables
	   Environmental Variables, User Variables
	   The back tick
	3.3 Redirecting Input and Output
	   Output Redirection, Input Redirection
	   Pipes
	3.4 Performing Math
	   The expr command ,Using brackets
	   A floating-point solution
	   Existing the script
	   Checking the exit status
	   The exit command
	3.5 Working with the if-then Statement
	   The if-then-else Statement
	   Nesting ifs
	3.6 The test Command
	   Numeric comparisons
	   String comparisons
	   File comparisons
	3.7 Compound Condition Testing
	   Advanced if-then features
	   Using double parentheses
	   Using double brackets
	   The case Command
		04

Sr. No.	Name of Topic/Sub topic	Hrs

4	**Looping commands and Working with User Input**
	
	Objectives :
	
	  ➤ Use iterations in shell script.
	  ➤ Use structured commands to control the flow of shell script.
	  ➤ Write script for handling command line parameter.
	  ➤ Write script for interacting with the user.
	
	4.1 The for Command
	   Reading values in a list , Reading complex values in a list
	   Reading a list from a variable
	   Reading a value from command
	   Changing The field separator
	   Reading the directory using the wildcards
	
	4.2 The while Command
	   Basic while formats
	   Using multiple test command
	   The until command
	   Nesting Loops
	   Looping on File Data
	   Controlling the loop
	   The break command
	   The continue command
	   Processing the Out of a Loop
	
	4.3 Command Line Parameters
	   Reading parameter
	   Reading the program name
	   Testing parameter
	
	4.4 Special Parameter Variable
	   Counting parameters
	   Grabbing all the data
	Being shifty
		04

Sr. No.	Name of Topic/Sub topic	Hrs
5	**Presenting data and Creating functions** **Objectives :** ➢ Use data redirection to the file. ➢ Create own redirection. ➢ Build basic screen functions. ➢ Create function library**.** 5.1 Understanding Input and Output Standard file description Redirecting errors Redirecting Output in script 5.2 Creating your Own Redirection Creating output file descriptors Redirecting file description Creating a read /write file description Closing file description Listing Open file description 5.3 Suppressing Command Output Using Temporary Creating a local temporary file Creating a temporary file in /tmp Creating a local temporary directory Logging Message 5.4 Basic Script Function Creating Function Using function Returning value The default exit status Using the return command Using function Output 5.5 Using a Variable Function Passing parameter to a Function Handling Variable in a Function Array Variable And Function Passing Array to a Function Returning Array from Function Function Recursion	02

Sr. No.	Name of Topic/Sub topic	Hrs

6	**Using sed and gawk, Writing Scripts for System Administrator**
	Objectives :
	  ➢ Use sed and gawk tools to manipulate contents of text files.
	  ➢ Use command line editor for working with text elements.
	  ➢ Write script for system administration**.**
	6.1 Text manipulation
	    The sed editor
	    The gawk program
	6.2 The sed Editor Basic
	    More substitution option
	    using address
	    Deleting line
	    Inserting and appending text
	    Changing line
	    The transfer command
	    Printing revisited
	    Using files with sed
		02

	Total	**16**

List of Practicals:
Intellectual Skills

1. Implement various Linux commands.

2. Create user accounts and assign various permission

3. Write shell scripts

4.

Motor Skills
Effective use of computer system and proper use of Linux operating system

Sr. No.	Title of Experiment	No. of Hours

1	Implement following commands with their options:
	  • ps and kill.
	  • df and du.
	  • mount and umount.
		04

2	Implement grep and tar.	04
3	Implement setting of global and local environment variable, shell environment variables.	04

4	• Create users, groups .Set permissions and ownership.
	  • View the /etc/passwd file and describe its syntax.
	  • View the /etc/shadow file and describe its syntax.
	  • View the /etc/group file and describe its syntax.
		04

5	Implement setting up and releasing of special permissions (SGID, SUID and sticky bit) and state their effects.	04
6	Implement I/O Redirection and Pipes.	04

7	• Write shell script to demonstrate use of conditional and loop control statements. • Write a shell script that shows effects of quotes on the Output of a variable. • Write a shell script that looks through all the files in the current directory for the string POSIX and then prints the name of these files to the standard output.		06
8	Write shell script to implement following test commands : • For string comparisons. • For numeric comparisons. • For file comparisons		06
9	Write shell script that : • Uses command line parameters. • Counts number of parameters. • Implements shift command. • Implements processing option with parameter values.		04
10	Write shell script : • To implement redirection of Input script. • For redirecting file descriptors. • Creating input file descriptor.		06
11	Practice sed editor and gawk utility.		06
12	• Write a shell script using functions. Modify it to handle function with parameters, function returning values. • Write shell script for handling array variables. • Write shell script that uses function returning true or false result.		06
13	• Write a shell script which checks disk space and store the value to the variable and display it. • Write a shell script that tests connectivity with the PCs whose IPs are provided as command line parameters.		06
	Total		**64**

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
1	Richard Blum	Linux: Command Line and Shell Scripting	Wiley India
2	Richard Pearson	Linux : Complete Reference	Tata McGraw Hill
3	Jon Emmons Terry Clark	Easy Linux Commands	SPD Publication
4	Neil Mathew	Beginning Linux Programming	Wiley India

Course Name : Computer Engineering Group

Course Code　: CO/CM/IF/CW/CD

Semester　　　: Sixth for CO/CM/IF/CW and Seventh for CD

Subject Title　: Industrial Projects

Subject Code : 17817

Teaching and Examination Scheme:

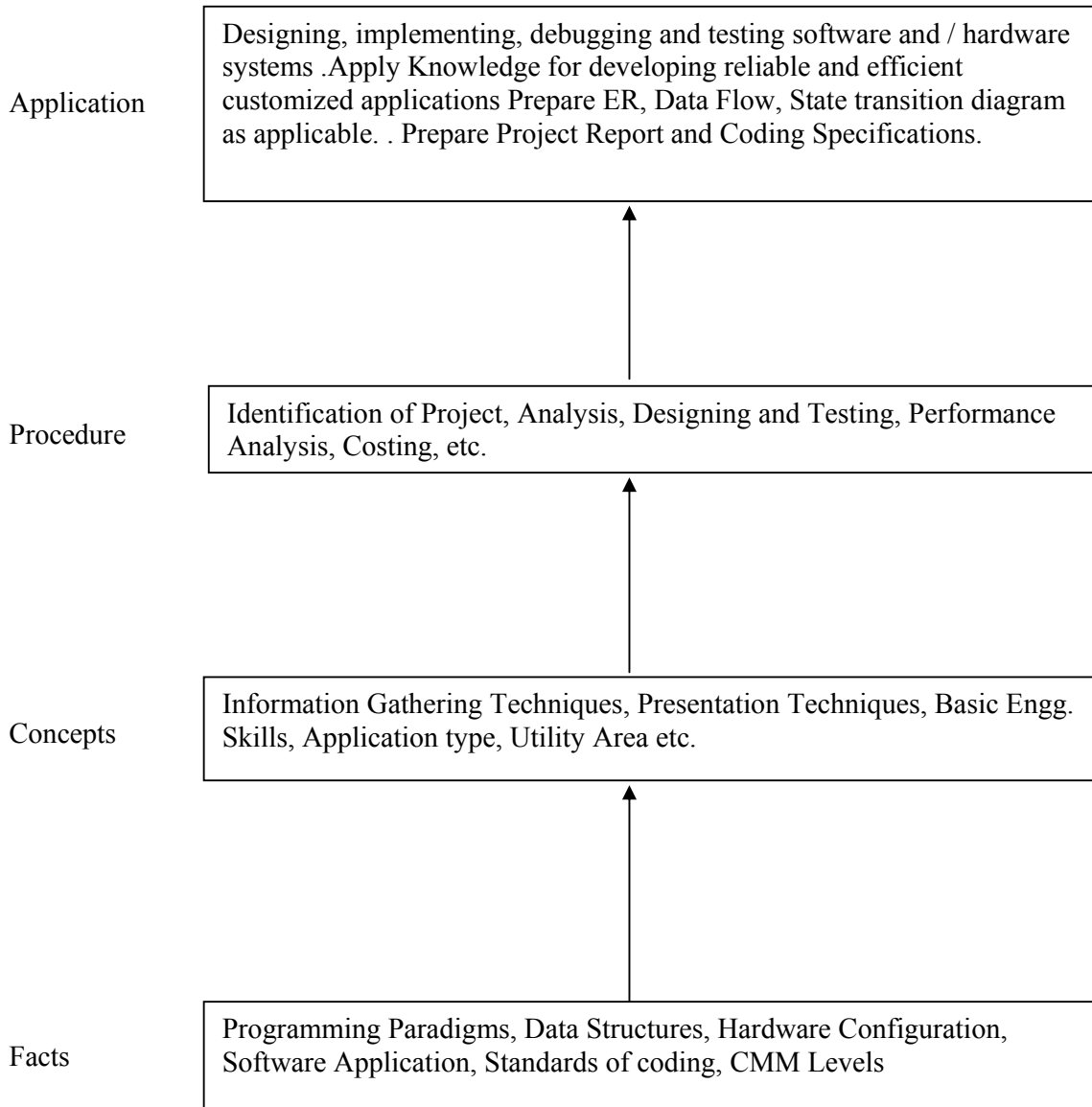| Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
--	--	04	--	--	--	50#	50@	100

Rationale:

　　　　In the field of Computer and Information Technology various technologies (hardware and Software) needs to be integrated and proper paradigms needs to be implemented to develop any kind of computer applications . Hence it becomes essential to get hands on experience for developing industrial applications. This subject is essential to understand the implementation of the system development process i.e. analyse, design, coding, debugging and testing. This will help the students to acquire skills and attitudes to work as programmer, Network administrator, and Technical assistant.

　　　　Furthermore the student will be able to find out various sources of technical information and develop self-study techniques to prepare a project and write a project report.

General Objectives:

The students should be able to:

1. Work in Groups, Plan the work, and Coordinate the work.
2. Develop leadership qualities.
3. Develop Innovative ideas.
4. Practically implement the acquired knowledge.
5. Develop basic technical Skills by hands on experience.
6. Document and Write project report.
7. Develop skills to use latest technology in Computer/Information Technology field.
8. Analyse the different types of Case studies.
9. Testing of software and hardware.
10. Maintaining systems and accessories.

Learning Structure:

Application

> Designing, implementing, debugging and testing software and / hardware systems .Apply Knowledge for developing reliable and efficient customized applications Prepare ER, Data Flow, State transition diagram as applicable. . Prepare Project Report and Coding Specifications.

↑

Procedure

> Identification of Project, Analysis, Designing and Testing, Performance Analysis, Costing, etc.

↑

Concepts

> Information Gathering Techniques, Presentation Techniques, Basic Engg. Skills, Application type, Utility Area etc.

↑

Facts

> Programming Paradigms, Data Structures, Hardware Configuration, Software Application, Standards of coding, CMM Levels

Note: **1.** One Project from any one of the following groups.

         2. Form a group of maximum four students.

Contents:

Two hours should be allotted for giving the Instructions for preparing a Project Report (Refer Guideline Document for Format of Project Report)

Group	Projects
Software Oriented Projects	1. Develop Application Software for Hotels / Hospital / Shopping Mall / Cinema Theatre / Commercial Complex / Educational Institute / Industrial Complex / utility services on Mobile / smart phones, mobile phone games, GIS, GSM, CDMA coding for various applications. 2. Develop In-house Systems. 3. Case Studies Related to Industries - Operation / Maintenance / Repair and Fault Finding. (Refer Guideline Document). 4. Develop Information Processing System. 5. Develop Web Based Applications using Web Technologies. 6. Develop Network monitoring system. 7. Develop systems for financial organisation. 8. Develop System Program based system like compilers, editors, spreadsheets, mini database systems. 9. Develop mobile phone based software to transfer pathological data to smart phone of Doctor to take second opinion before prescription 10. Design and Implement Disaster Management software by taking help from Gigapan images which are coming from floated cameras in the cyclones. 11. Design and implement software to check virus and malware of mobile phones 12. Design local language operating system/Graphical User Interface for Tablet PC. 13. Design wearable computers for the physically challenged person. We are assuming that due some accident persons vision is blurred. Here microphone should whisper in the ear of this person by taking input from camera images and anaysing and recognizing places and persons. Here we are assuming wearable computer means with spectacle mountable monitors and wallet size CPU.
Hardware Oriented Projects	1. Develop Intrusion Detection System(IDS) and Intrusion Prevention System(IPS) 2. Develop Speech Recognition System. Focus should be on Machine learning. 3. Develop Image Processing Systems. 4. Develop Expert Systems. Here use cognative concept. 5. Develop Artificial Intelligence based Systems. Use neural network concept here. 6. Develop various types of Interfacing Applications. 7. Develop device Controllers. 8. Design and implement energy saving devices for example people sensing fans and auto-off at the railway station, bus station 9. Holiday sensing traffic light controllers, which will modify automatically traffic lights time according to number of vehicles. We are assuming on holidays traffic is heavy.

	10. Create panoramic images using Gigapan cameras. This camera is giving various frames. 11. Design automatic human body vital parameters by sensors to dignose the human. 12. Design cheaper night vision camera suitable for military operations. Keep program in the microcontrollers to process images. 13. Design operating system for washing machine or refrigerator. This is based on RTOS.
Seminar	Seminar on any relevant latest technical topic based on latest research, recent trends, new methods and developments in the field of Computer Engineering / Information Technology.

Learning Resources:
1. Magazines:

Sr. No.	Magazines
1.	IEEE Transactions/Journals
2.	Computer Today.
3.	PC Quest.
4.	Data Quest
5.	Any Journal Related to Computer/Information Technology/Electronics field.
6.	Computer World
7.	Chip
8.	IT World

2. Website:

Using any search engine, such as http://www.google.co.in/ the relevant information can be searched on the Internet.

Course Name : Computer Engineering Group

Course Code : CO/CM/IF/CW/CD

Semester   : Sixth for CO/CM/IF/CW and Seventh for CD

Subject Title : Entrepreneurship Development

Subject Code : 17818

Teaching and Examination Scheme:

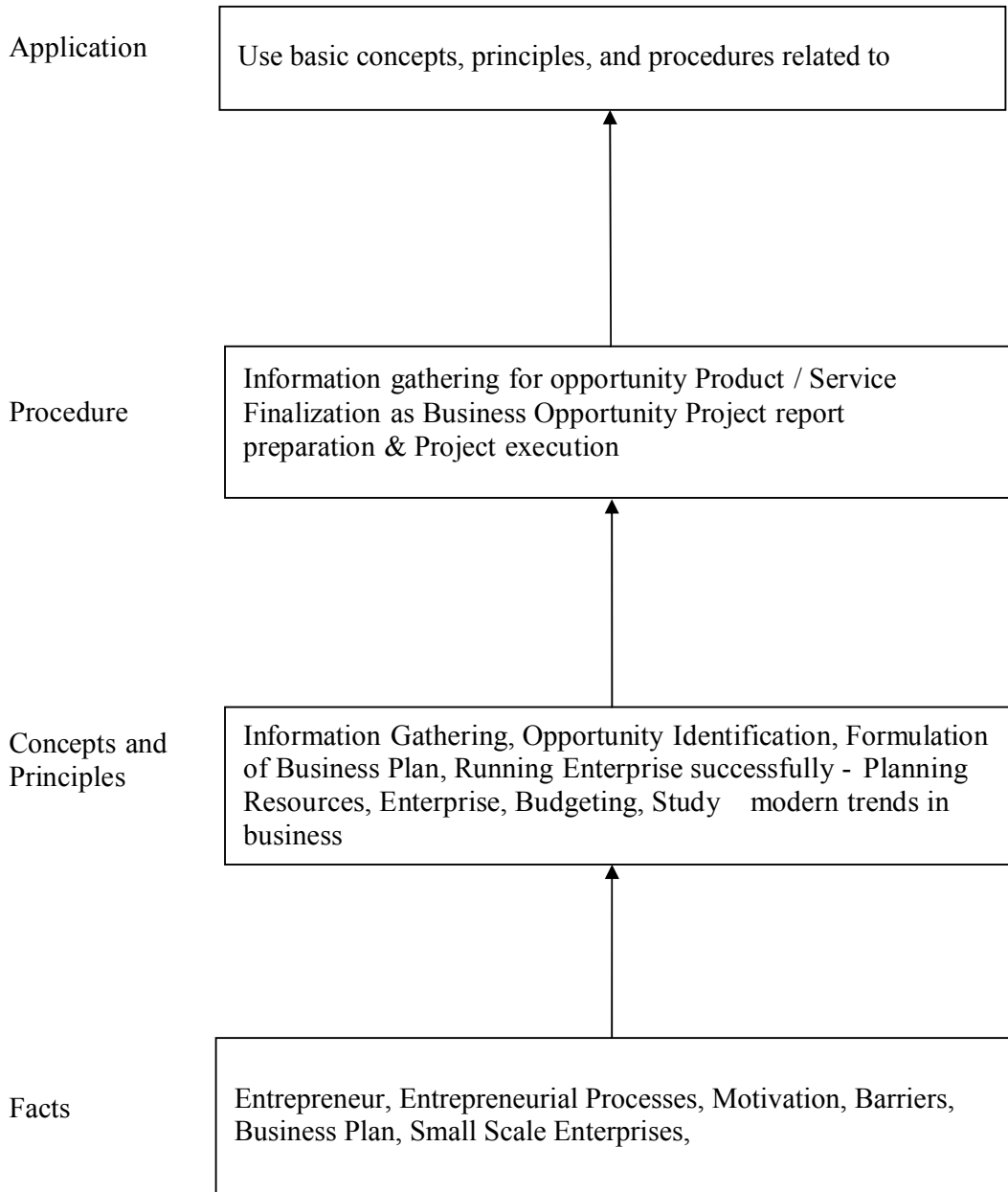| Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS.	TH	PR	OR	TW	TOTAL
01	01	--	--	--	--	--	25@	25

Rationale:

Globalization, liberalization & privatization along with revolution in Information Technology, have thrown up new opportunities that are transforming lives of the masses. Talented and enterprising personalities are exploring such opportunities & translating opportunities into business ventures such as- BPO, Contract Manufacturing, Trading, Service sectors etc. The student community also needs to explore the emerging opportunities. It is therefore necessary to inculcate the entrepreneurial values during their educational tenure. This will help the younger generation in changing their attitude and take the challenging growth oriented tasks instead of waiting for white- collar jobs. This subject will help in developing the awareness and interest in entrepreneurship and create employment for others.

Objectives:

Students will be able to

1) Identify entrepreneurship opportunity.

2) Acquire entrepreneurial values and attitude.

3) Use the information to prepare project report for business venture.

4) Develop awareness about enterprise management.

Learning Structure:

Application

Use basic concepts, principles, and procedures related to

Procedure

Information gathering for opportunity Product / Service Finalization as Business Opportunity Project report preparation & Project execution

Concepts and Principles

Information Gathering, Opportunity Identification, Formulation of Business Plan, Running Enterprise successfully - Planning Resources, Enterprise, Budgeting, Study   modern trends in business

Facts

Entrepreneur, Entrepreneurial Processes, Motivation, Barriers, Business Plan, Small Scale Enterprises,

Topic	Name of Topic	Hours
01	**Entrepreneurship, Creativity & Opportunities** • Concept, Classification & Characteristics of Entrepreneur • Creativity and Risk taking, Risk Situation, Types of risk & risk takers. • Business Reforms. • Process of Liberalization. • Reform Policies. • Impact of Liberalization. • Emerging high growth areas. • Business Idea Methods and techniques to generate business idea. • Transforming Ideas in to opportunities transformation involves • Assessment of idea &Feasibility of opportunity • SWOT Analysis	03
02	**Information and Support Systems** • Information Needed and Their Sources: • Information related to project, Information related to support system, Information related to procedures and formalities • Support Systems • Small Scale Business Planning, Requirements. • Govt. & Institutional Agencies, Formalities • Statutory Requirements and Agencies.	02
03	**Market Assessment** • Marketing - Concept and Importance • Market Identification, Survey Key components • Market Assessment	02
04	**Business Finance & Accounts** ➢ Business Finance • Cost of Project • Sources of Finance • Assessment of working capital • Product costing • Profitability • Break Even Analysis • Financial Ratios and Significance ➢ Business Account • Accounting Principles, Methodology • Book Keeping • Financial Statements • Concept of Audit	03

05	**Business Plan & Project Report**
	• Business plan steps involved from concept to commissioning Activity Recourses, Time, Cost
	• Project Report
	• Meaning and Importance
	• Components of project report/profile (Give list)
	
	  5.1) **Project Appraisal**
	
	  1) Meaning and definition
	  2) Technical, Economic feasibility
	  3) Cost benefit Analysis
		03

06	**Enterprise Management And Modern Trends** ➢ Enterprise Management: • Essential roles of Entrepreneur in managing enterprise • Product Cycle: Concept and importance • Probable Causes Of Sickness • Quality Assurance: Importance of Quality, Importance of testing • E-Commerce: Concept and Process ➢ **Global Entrepreneur** • Assess yourself-are you an entrepreneur? • Prepare project report and study its feasibility.	03
	Total	**16**

List of Assignments:
1. Write the SWOT Analysis required for an successful entrepreneur.
2. Collect the required information, formalities and supporting systems for starting a small scale business.
3. Collect information regarding key parameters required for market analysis of an electrical industry.
4. Search for current available sources of finance to start a new business and write a report.
5. Write a report on different accounting methods, financial statements and audit.
6. Write a report on preparing a good business plan.
7. Collect information on E-commerce system and write a report on how it is useful for entrepreneurs.
8. Prepare a report on how to become a successful entrepreneur?

Learning Resources:

1) Books:

Sr. No.	Author	Title	Publisher
1	J. S. Saini B. S. Rathore	Entrepreneurship Theory and Practice	Wheeler Publisher, New Delhi
2	Prepared by Colombo plan staff college for Technician Education.	Entrepreneurship Development	Tata Mc Graw Hill Publishing co. ltd. New Delhi.

3	J. B. Patel D. G. Allampally	A Manual on How to Prepare a Project Report	EDI STUDY MATERIAL Near Village Bhat , Via Ahmadabad Airport & Indira Bridge, P.O. Bhat 382428 , Gujrat,IndiaP.H. (079) 3969163, 3969153 E-mail : ediindia@sancharnet.in/olpe@ediindia.org Website : http://www.ediindia.org
4	Gautam Jain Debmuni Gupta	New Initiatives in Entrepreneurship Education & Training	
5	Schaper, Michael Volery	Entrepreneurship-Small Business	Wiley India,2011
6	Alpana, Trehan	Entrepreneurship	Dreamtech, 2011