



SIXTH SEMESTER



SIXTH SEMESTER (COMPUTER ENGINEERING)

Sr. No.	SUBJECTS	STUDY SCHEME Hours/Week		Credits	MARKS IN EVALUATION SCHEME										Total Marks of Internal
					INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT							
		Th	Pr		Th	Pr	Tot	Th	Hrs	Pr	Hrs	Tot			
6.1	Network Security	3	3	4	25	25	50	100	3	50	3	150	200		
6.2.	Mobile Application Development	3	6	6	25	25	50	100	3	50	3	150	200		
6.3	Application Development Using Web Framework	-	6	3	-	50	50	-	-	100	3	100	150		
6.4	*Entrepreneurship Development & Management	3	-	3	25	-	25	100	3	-	-	100	125		
6.5	Project Work	-	9	4	-	50	50	-	-	100	3	100	150		
Soft Skills-IV		-	2	-	-	25	25	-	-	-	-	-	25		
	Total	9	26	20	75	175	250	300	-	300	-	600	850		

6.1 NETWORK SECURITY

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RATIONALE

This course has been designed keeping in view basic computer users and information system managers. The students are acquainted with the concepts needed to secure a network, understanding risks and how to deal with them. It is hoped that the students will have a wider perspective on security in general and better understanding of how to reduce and manage the security risks.

LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Identify various types of network, security threats and security techniques
- Know about different attackers
- Explain the need of security
- Execute algorithms for encryption and decryption
- Install firewall and detection system
- Explain the method of recovering data and taking backup



DETAILED CONTENTS

(08

1. Introduction Periods)

Need for securing a network; Principles of Security, Type of attacks, introduction to cyber crime, cyber law-Indian Perspective (IT Act 2000 and amended 2008), cyber ethics, ethical hacking. Hacking, Skimming, attacker, phreaker, hackivist, bluejacking, bluesnarfing, IOS Jailbreaking.

2. Securing Data over Internet

(10 Periods)

Introduction to basic encryption and decryption, concept of symmetric and asymmetric key cryptography, overview of DES, RSA and PGP. Introduction to Hashing: MD5, SSL, SSH, HTTPS, Digital Signatures, Digital certification, IPsec

3. Virus, Worms and Trojans

(08 Periods)

Definitions, preventive measures – access control, checksum verification, process configuration, virus scanners, heuristic scanners, application level virus scanners, deploying virus protection, Zombie, Ransomware

4. Firewalls

(04 Periods)

Definition and types of firewalls, firewall configuration, Limitations of firewall. Whitelisting Vs blacklisting.

5. Intrusion Detection System (IDS)/IPS

(02 Periods)

Introduction; IDS limitations – teardrop attacks, counter measures; Host based IDS set up

6 Handling Cyber Assets- Configuration policy as per standards, Disposable policy

(04 periods)

7. Virtual Private Network (VPN)

(06 eriods)

Basics, setting of VPN, VPN diagram, configuration of required objects, exchanging keys, modifying security policy

8. Disaster and Recovery

(06 Periods)

Disaster categories; network disasters – cabling, topology, single point of failure, save configuration files; server disasters – UPS, RAID, Clustering, Backups, server recovery

Note: A visit to an organization must be organized for the demonstration about network security and exposure to available software

INSTRUCTIONAL STRATEGY

Since the facilities are not available in the polytechnic, students need exposure to various security systems and software available in some organisations, universities and engineering colleges. For this, visits may be organized for students. The teachers should also be exposed in this area. Some practicals can be conducted in the laboratory.

MEANS OF ASSESSMENT

- Assignments and quiz/class tests, mid-term and end-term written tests
- Actual laboratory and practical work exercises and viva-voce
- Software installation, operation, development and viva-voce

LIST OF PRACTICALS

1. Installation and comparison of various anti virus software
2. Installation and study of various parameters of firewall.
3. Writing program in C to Encrypt/Decrypt using XOR key.
4. Study of VPN.
5. Study of various hacking tools.
6. Practical applications of digital signature.

RECOMMENDED BOOKS

1. Cryptography and Network Security by Forouzon; Tata McGraw Hill Education Pvt Ltd, New Delhi
2. Cryptography and Network Security by Atul Kahate; Tata McGraw Hill Education Pvt Ltd, New Delhi
3. Cryptography and Network Security by Padmanabham; Wiley India Pvt Ltd. Daryaganj, New Delhi
4. Network Security by Eric Cole, Bible; Wiley India Pvt Ltd. Daryaganj, New Delhi
5. Network Security by William Stalling
6. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

<http://swayam.gov.in>

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1.	08	15
2.	10	20
3.	08	15
4.	04	10
5.	02	05
6.	04	10
6.	06	15
7.	06	10
Total	48	100

6.2 MOBILE APPLICATION DEVELOPMENT

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RATIONALE

Knowing the details of Mobile and their working principle are need of the every common man. Mobile Application development is the very hot business domain. Majority of the corporate have a separate division for the development of mobile applications. It is essential that diploma students must know the way to apply advanced data communicating methods and networking protocols for wireless and mobile devices. Hence this subject.

LEARNING OUTCOMES

After undergoing this subject, the students will be able to :

- Compare the characteristics, basic concepts and systems issues in different mobile computing technologies.
- Illustrate architecture and protocols in Mobile computing and to identify the trends and latest development of the technologies in the area
- Compare the network protocols governing the mobile communication
- Describe different kinds of mobile OS prevailing in the market
- Illustrate the usage of different components of Android OS in detail
- Develop a mobile application using different components of Android
- Write a program in Android to store data in databases

DETAILED CONTENTS

1. Introduction to Mobile Computing , WiFi , Bluetooth

(08 periods)

1.1 Introduction : Evolution of Mobile Computing, Important terminologies, Mobile computing functions, Mobile computing security issues, Mobile computing Devices, Networks: Wired , Wireless , Adhoc, Comparison of wired and wireless mechanism, Various types of wireless communication technologies used in Mobiles, Antennas , Basics of Base Station and Medium access control and Mobile station.

1.2 Architecture : Architecture of Mobile Computing, 3- Tier Architecture, Presentation (Tier-1), Application (Tier -2), Data (Tier – 3)

1.3 Mobile computing through Telephony: Evolution through telephony

1.4 Wireless LAN: Introduction - Applications of WLAN, Infrared versus Radio Transmission, Features of WI-FI and WI-MAX, Bluetooth : Introduction and application

2. Introduction to ANDROID

(10 periods)

2.1 ANDROID : Android Versions, Features of Android, Architecture of Android, Android Market, Android Runtime (Dalvik Virtual Machine)

2.2 ANDROID SDK & ADT : Android SDK, Android Development Tool (ADT), Installing and configuring Android, Android Virtual Device (AVD)

2.3 ACTIVITIES & INTENTS : Understanding Activites, Linking activities and indents, Calling built-in applications using intents, Fragments Displaying Notifications

2.4 User Interface : Views and Viewgroups, Layouts, Display Orientation , Action Bar, Listening for UI Notifications

3. Views

(16 periods)

3.1 Basic Views : Textview, Button, Image Button, EditText, CheckBox, ToggleButton, RadioButton and RadioGroup Views, ProgressBar View, Auto Complete Text View

3.2 Advanced Views : Time Picker View and Date Picker View, List Views, Image

View, Menus, Analog and Digital View, Dialog Boxes

3.3 Displaying Pictures & Menus with Views: Image View, Gallery View, ImageSwitcher, GridView
- Creating the Helper Methods, Options Menu, Context Menu

3.4 SMS, Phone: Sending SMS, Receiving SMS, Making phone call ZOOM call

4. Location Based Service and SQLite

(14 periods)

4.1 Location Based Services : Obtaining the Maps API Key- Displaying the Map, Navigating to a specific location, Adding Marker , Geo Coding and reverse

4.2 Location Based Service and SQLite

4.3 Location Based Services : Obtaining the Maps API Key, Displaying the

4.4 Content Provider : Sharing data, view contacts, Add contacts, Modify contacts, Delete Contacts

4.5 Storage : Store and Retrieve data's in Internal and External Storage, SQLite, Creating and using databases

4.6 Android Service : Consuming Web service using HTTP , downloading binary Data, Downloading Text Content, Accessing Web Service

MEANS OF ASSESSMENT

- Assignments and quiz/class tests, mid-term and end-term written tests
- Actual laboratory and practical work, exercises and viva-voce
- Software installation, operation, development and viva-voce

RECOMMENDED BOOKS

1. Beginning Android 4 Application Development by Wei-Meng Lee ; Wiley India
2. Android Apps for Absolute Beginners by Jackson; Apress
- 3 Mobile Computing by Asoke K Talukder, Hasan Ahmed, Roopa R Yavagal; Tata McGraw Hill
- 4 Mobile communications Jochen Schiller ; Pearson Education,
5. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

<http://swayam.gov.in>

LIST OF EXPERIMENTS:

1. Write a program to demonstrate activity (Application Life Cycle)
2. Write a program to demonstrate different types of layouts
3. Write a program to implement simple calculator using text view, edit view, option button and button
4. Write a program to demonstrate list view
5. Write a program to demonstrate photo gallery
6. Write a program to demonstrate Date picker and time picker
7. Develop an simple application with context menu and option menu
8. Develop an application to send SMS
9. Write a program to view, edit contact
- 10 Write a program to send e-mail
- 11 Write a program to demonstrate a service
- 12 Write a program to demonstrate web view to display web site
- 13 Write a program to display map of given location/position using map view
- 14 Write a program to demonstrate the application of intent class
15. Write a program to create a text file in a external memory
- 16 Write a program to store and fetch data from SQL life database.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1.	08	15
2.	10	20
3.	16	35
4.	14	30
Total	48	100

6.3 APPLICATION DEVELOPMENT USING WEB FRAMEWORK

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RATIONALE

This course will cover the practical aspects of Web App development using various frameworks. The course equips the students with resources for design, development and production of web applications. Students will be introduced to popular web application frameworks for building scalable web applications. The main objective for this course is to motivate student's interest in learning Web-app development by giving them an insight into its possibilities through practical applications. In addition, the course also provides a sufficiently broad but practical introduction to Server-side web technologies..

LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Identify basic aspects of web-frameworks.
- Apply the basic concepts, principles and practices of Web-site development using server-side technologies (PHP & MySql)
- Install Word Press
- Create and manage Blogs, Websites using WordPress.
- Use PHP & MySql with WordPress
- Install Moodle framework
- Create Web Application using Moodle
- Manage features of Moodle sites : Accounts, Enrollment, Roles & Permission
- Take backup of site content

DETAILED CONTENTS

(Theoretical Instructions)

1. Practice on Various Web Technologies

Practice on HTML, CSS, Java Script, Ajax. Practice on Server side scripting i.e. PHP & MySQL

2. Introduction to Web Frameworks

Introduction to WordPress, How WordPress Works, Introduction to Moodle, Pedagogy, Moodle site - basic structure

3. WordPress

Installation of WordPress, Introduction to Blogging, Creating Blogs, Using Images, Wrapping Text Around Images, Comments, Post Formats, Linking to Posts, Pages, and Categories, Using Smilies, Links Manager, WordPress Feeds, Customizing Feeds, Use Gravatars in WordPress, Writing Code in Your Posts, Using Password Protection, Developing a Colour Scheme, Designing Headers, CSS Horizontal Menus, Dynamic Menu Highlighting, Navigation Links, Next and Previous Links, Styling for Print, Designing Your Post Meta Data Section, Separating Categories in your Post Meta Data Section, Customizing the Read More, Formatting Date and Time, Finding CSS Styles, Creating Individual Pages, Uploading Files, Using WordPress Themes, Templates, Template Tags, Template Hierarchy, Validating a Website, Know Your Sources, WordPress Site Maintenance

4. Moodle

Installing Moodle, Installing plugins, Version Upgrading, Verify Database Schema, Managing a Moodle site, Managing authentication, Manual accounts, No login, Email-based self-registration, IMAP authentication, Browse list of users, Bulk user actions, Add a new user, Upload users, User profile, Managing enrolment plugins, Manual enrolment, Guest access, Category enrolments, External database enrolment, Managing Roles and permissions, Assign roles, Site administrator, Manager role, Course creator role, Teacher role, Non-editing teacher role, Student role, Guest role, Roles settings, Permissions, Password salting.
Site appearance, Front page, Front page settings, My Moodle, User profiles, Navigation, Course list, Themes, Theme settings, Standard themes, Installing a new theme, Header and footer, Language settings, Language customization, Server settings, System paths, Session handling, HTTP, Maintenance mode, Cleanup, Environment, Site registration, Config changes report, Using web services, Publishing a course, Blogs, Blog settings, Using Blogs, Comments, Tags, RSS feeds settings, Using RSS feeds, Using Calendar, Site backup, Course backup, Course restore, Automated course backup.

LIST OF PRACTICALS

1. Practice on HTML, CSS, Java Script, Ajax.PHP & MySql
2. Install WordPress & Create Blogs
3. Manage blogs features e.g. Images, Text Around Images, Comments, Post Formats, Linking, Pages, Categories, Smilies, Feeds, Gravatars, Password Protection
4. Practice various designing features: Colour Scheme, Headers, CSS Horizontal Menus, Dynamic Menu, Highlighting, Navigation Links, Print
5. Read More, Formatting Date and Time, Finding CSS Styles, Creating Individual Pages, Uploading Files, Using WordPress Themes, Templates, Template Tags, Template Hierarchy, Validating a Website, Know Your Sources, WordPress Site Maintenance
6. Integrate PHP & MySql with WordPress
7. Install Moodle & various plugins,
8. Create a Moodle site and Database Schema
9. Design Site appearance, Front page, Front page settings, My Moodle, User profiles, Navigation, Course list, Themes, Theme settings, Header and footer, Language settings, Using web services, Publishing a course, Blogs, RSS feeds
10. Manage Moodle site, Managing authentication, Manual accounts, No login, Email-based self-registration, Account
11. Create Roles and permissions, Assign roles,
12. Implement Password salting.
13. Perform Site backup, Course backup, Course restore, Automated course backup

INSTRUCTIONAL STRATEGY

Since the entire course content is web based, students can practice it online. The teachers should have practice on this framework. Entire course is hands-on based so practicals should be conducted in the laboratory.

RECOMMENDED RESOURCES

1. <http://www.wpbeginner.com/beginners-guide/how-to-learn-wordpress-for-free-in-a-week-or-less/>
2. https://docs.moodle.org/22/en/Table_of_Contents
3. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

<http://swayam.gov.in>

6.4 ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

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RATIONALE

In the present day scenario, it has become imperative to impart entrepreneurship and management concepts to students so that a significant percentage of them can be directed towards setting up and managing their own small enterprises. It may be further added that an entrepreneurial mindset with managerial skills helps the student in the job market. This subject focuses on imparting the necessary competencies and skills of enterprise set up and its management.

LEARNING OUTCOMES

After undergoing this course, the students will be able to :

- Know about various schemes of assistance by entrepreneurial support agencies
- Conduct market survey
- Prepare project report
- Explain the principles of management including its functions in an organisation.
- Have insight into different types of organizations and their structures.
- Inculcate leadership qualities to motivate self and others.
- Manage human resources at the shop-floor
- Maintain and be a part of healthy work culture in an organisation.
- Use marketing skills for the benefit of the organization .
- Maintain books of accounts and take financial decisions.
- Undertake store management.
- Use modern concepts like TQM, JIT and CRM.

**DETAILED CONTENTS**
SECTION – A ENTREPRENEURSHIP**1. Introduction****(10 Periods)**

- Concept /Meaning and its need
- Qualities and functions of entrepreneur and barriers in entrepreneurship
- Sole proprietorship and partnership forms and other forms of business organisations
- Schemes of assistance by entrepreneurial support agencies at National, State, District – level, organisation: NSIC, NRDC, DC, MSME, SIDBI, NABARD, NIESBUD, HARDICON Ltd., Commercial Banks, SFC's TCO, KVIB, DIC, Technology Business Incubators (TBI) and Science and Technology Entrepreneur Parks

2. Market Survey and Opportunity Identification/Ideation (08 Periods)

- Scanning of the business environment
- Salient features of National and Haryana State industrial policies and resultant business opportunities
- Types and conduct of market survey
- Assessment of demand and supply in potential areas of growth
- Identifying business opportunity
- Considerations in product selection
- Converting an idea into a business opportunity

3. Project report Preparation**(06 Periods)**

- Preliminary project report
- Detailed project report including technical, economic and market feasibility
- Common errors in project report preparations
- Exercises on preparation of project report
- Sample project report

SECTION –B MANAGEMENT**4. Introduction to Management****(04 Periods)**

- Definitions and importance of management
- Functions of management: Importance and process of planning, organising, staffing, directing and controlling
- Principles of management (Henri Fayol, F.W. Taylor)
- Concept and structure of an organisation
- Types of industrial organisations and their advantages

- Line organisation, staff organisation
- Line and staff organisation
- Functional Organisation

5. Leadership and Motivation

(03 Periods)

a) Leadership

- Definition and Need
- Qualities and functions of a leader
- Manager Vs leader
- Types of leadership
- Case studies of great leaders

- Factors affecting motivation
- Theories of motivation (Maslow, Herzberg, Douglas, McGregor)

6. Management Scope in Different Areas

(06 Periods)

a) Human Resource Management

- Introduction and objective
- Introduction to Man power planning, recruitment and selection
- Introduction to performance appraisal methods

b) Material and Store Management

- Introduction functions, and objectives
- ABC Analysis and EOQ

c) Marketing and sales

- Introduction, importance, and its functions
- Physical distribution
- Introduction to promotion mix
- Sales promotion

d) Financial Management

- Introductions, importance and its functions
- knowledge of income tax, sales tax, excise duty, custom duty, VAT, GST

7. Work Culture

(04 Periods)

7.1. Introduction and importance of Healthy Work Culture in organization

7.2. Components of Culture

7.3. Importance of attitude, values and behaviour

Behavioural Science – Individual and group behavior.

7.4. Professional ethics – Concept and need of Professional Ethics and human values.

8. Basic of Accounting and Finance

(04 Periods)

a) Basic of Accounting:

- Meaning and definition of accounting
- Double entry system of book keeping
- Trading account, PLA account and balance sheet of a company
- Profit Maximization v/s Wealth Maximization

b) Objectives of Financial Management

9. Miscellaneous Topics

(03 Periods)

a) Total Quality Management (TQM)

- Statistical process control
- Total employees Involvement
- Just in time (JIT)

b) Intellectual Property Right (IPR)

- Introduction, definition and its importance
- Infringement related to patents, copy right, trade mark

INSTRUCTIONAL STRATEGY

Some of the topics may be taught using question/answer, assignment, seminar or case study method. The teacher will discuss stories and case studies with students, which in turn

will develop appropriate managerial and entrepreneurial qualities in the students. In addition, expert lecturers may also be arranged from outside experts and students may be taken to nearby industrial organisations on visit. Approach extracted reading and handouts may be provided.

MEANS OF ASSESSMENT

Assignments and quiz/class tests, mid-term and end-term written tests, model/prototype making

RECOMMENDED BOOKS

1. A Handbook of Entrepreneurship, Edited by BS Rathore and Dr JS Saini; Aapga Publications, Panchkula (Haryana)
2. Entrepreneurship Development and Management by J.S.Narang; Dhanpat Rai & Sons, Delhi.
3. Entrepreneurship Development by CB Gupta and P Srinivasan, Sultan Chand and Sons, New Delhi
4. Handbook of Small Scale Industry by PM Bhandari
5. Entrepreneurship Development and Management by MK Garg
6. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

Websites for Reference:

<http://swayam.gov.in>

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	10	20
2	08	16
3	06	14
4	04	10
5	03	06
6	06	14
7	04	08
8	04	08
9	03	06
Total	48	100



6.5 PROJECT WORK

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RATIONALE

Industry Based Project Work aims at developing innovative skills in the students whereby they apply the knowledge and skills gained through the course by undertaking a project. The individual students have different aptitudes and strengths. Project work, therefore, should match the individual strengths of students. The prime emphasis of the project work is to understand and apply the basic knowledge of the principles of software engineering practices in real life situations, so as to participate and manage a large software engineering projects in future.

LEARNING OUTCOMES

After undergoing the subject, the student will be able to:

- Implement the theoretical and practical knowledge and skills gained through various subjects/courses into an application suitable for a real practical working environment, preferably in an industrial environment.
- Develop software packages or applications and implement these for the actual needs of the community/industry.
- Explain the working of industrial environment and its work ethics.
- Explain what entrepreneurship is and how to become an entrepreneur.
- Identify and contrast gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required.
- Carry out cooperative learning through synchronous guided discussions within the class in key areas, asynchronous document sharing and discussions, as well as prepare collaborative edition of the final project report.
- Field computing and to achieve real life experience in software design.
- Apply the knowledge about disaster management in practical situations.

General Guidelines

- The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students. For this purpose, students should be asked to identify the type of project work, they would like to execute. The activity of problem identification should begin well in advance (say at the end of second year). Students

should be allotted a problem of interest to him/her as a major project work. It is also essential that the faculty of the respective department may have a brainstorming session to identify suitable project assignments for their students. The project assignment can be individual assignment or a group assignment. There should not be more than 3 students if the project work is given to a group. The project work identified in collaboration with industry should be preferred.

• This project work should not be considered as merely conventional industrial training in which students are sent at work places with either minimal or no supervision. This experience is required to be planned in advance and supervised on regular basis by the polytechnic faculty. For the fulfillment of above objectives, polytechnics may establish close linkage with 8-10 relevant organization for providing such an experience to students. It is necessary that each organization is visited well in advance and activities to be performed by students are well defined. The chosen activities should be such that it matches with the curricular interest to students and of professional value to industrial/ field organizations. Each teacher is expected to supervise and guide 5-6 students.

The project assignments may consist of:

- ✓ Installation of computer systems, peripherals and software
- ✓ Programming customer based applications
- ✓ Web page designing including database connectivity
- ✓ Database applications
- ✓ Networking
- ✓ Software Development
- ✓ Fabrication of components/equipment (computer related components)
- ✓ Fault-diagnosis and rectification of computer systems and peripherals
- ✓ Bringing improvements in the existing systems/equipment
- ✓ Projects related to Multimedia
- ✓ Projects related to Computer Graphics
- ✓ Web Hosting
- ✓ Configuration of Network Operating System (Windows, Linux)
- ✓ Configuration of servers (Proxy, DNS etc)
- ✓ Data analysis
- ✓ Data acquisition through multiple interfaces. Following are the broad suggestive areas of project work
- ✓ Database Management Systems.
- ✓ Software Engineering and Software Development.
- ✓ Web page Designing.
- ✓ Computer Graphics and Animation.
- ✓ Multimedia Systems.
- ✓ Computer Networks.
- ✓ Internet and e-commerce.
- ✓ Computer Security and Cryptography.
- ✓ Computer hardware and embedded systems.
- ✓ Improving existing systems / equipments.
- ✓ Any other related area found worth.

A suggestive criterion for assessing student performance by the external (person from industry) and internal (teacher) examiner is given in table below:

Sr. No.	Performance Criteria	Max. Marks	Rating Scale				
			Excel lent	Very Good	Good	Fair	Poor
1.	Selection of project assignment	10%	10	8	6	4	2
2.	Planning and execution of considerations	10%	10	8	6	4	2
3.	Quality of performance	20%	20	16	12	8	4
4.	Providing solution of the problems or production of final product	20%	20	16	12	8	4
5.	Sense of responsibility	10%	10	8	6	4	2
6.	Self expression/ communication skills	5%	5	4	3	2	1

7.	Interpersonal skills/human relations	5%	5	4	3	2	1
8.	Report writing skills	10%	10	8	6	4	2
9	Viva voce	10%	10	8	6	4	2
Total marks		100	100	80	60	40	20

The overall grading of the practical training shall be made as per following table. In order to qualify for the diploma, students must get "Overall Good grade" failing which the students may be given one more chance to improve and re-evaluate before being disqualified and declared "not eligible to receive diploma". It is also important to note that the students must get more than six "goods" or above "good" grade in different performance criteria items in order to get "Overall Good" grade.

	Range of maximum marks	Overall grade
i)	More than 80	Excellent
ii)	79 < > 65	Very good
iii)	64 < > 50	Good
iv)	49 < > 40	Fair
v)	Less than 40	Poor

Important Notes

1. This criteria must be followed by the internal and external examiner and they should see the daily, weekly and monthly reports while awarding marks as per the above criteria.
2. The criteria for evaluation of the students have been worked out for 200 maximum marks. The internal and external examiners will evaluate students separately and give marks as per the study and evaluation scheme of examination.
3. The external examiner, preferably, a person from industry/organization, who has been associated with the project-oriented professional training of the students, should evaluate the students performance as per the above criteria.
4. It is also proposed that two students or two projects which are rated best be given merit certificate at the time of annual day of the institute. It would be better if specific nearby industries are approached for instituting such awards. The teachers are free to evolve other criteria of assessment, depending upon the type of project work. It is proposed that the institute may organize an annual exhibition of the project work done by the students and invite leading Industrial organisations in such an exhibition.

**SOFT SKILLS – IV****LTP**
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The present day world requires professionals who are not only well qualified and competent but also possess good communication skills. The diploma students not only need to possess subject related knowledge but also soft skills to get good jobs or to rise steadily at their work place. The objective of this subject is to prepare students for employability in job market.

LEARNING OUTCOMES

After undergoing this course, the students will be able to:

- Communicate effectively.
- Apply techniques of effective time management
- Develop habits to overcome stress
- Face problems with confidence
- Exhibit attributes required to appear for an interview
- Learn about current and future career opportunities
- Exhibit entrepreneurial skills
- Use QC/QT tools

DETAILED CONTENTS

- Communication Skills - Presentation
- Time management
- Stress Management
- Problem solving
- Career opportunities-Current and future
- Entrepreneurial Skills

- Quality and Quality tools used in industry

In addition, the students must participate in the following activities to be organized in the institute

- Sports
- NCC/NSS
- Cultural Event

Note: Extension Lectures by experts may be organized. There will be no examination for this subject.

