STATE COUNCIL FOR TECHNICAL EDUCATION AND VOCATIONAL TRAINING, ODISHA

TEACHING AND EVALUATION SCHEME FOR 5th Semester (IT) (wef 2020-21)

Subject Number	Subject Code	Subject	Periods/week			Evaluation Scheme			
			L	T	P	Internal Assessment/ Sessional	End Sem Exams	Exams (Hours)	Total
		Theory							
Th.1		Entrepreneurship and Management & Smart Technology	4		-	20	80	3	100
Th.2		Internet and Web Technology	4		-	20	80	3	100
Th.3		Software Engineering	4		-	20	80	3	100
Th.4		Computer Graphics and Multimedia	4			20	80	3	100
Th.5		Mobile Computing	4			20	80	3	100
		Total	20			100	400	-	500
		Practical							
Pr.1		Web Development Lab	-	-	4	25	50	3	75
Pr.2		Computer Graphics & Multimedia Lab	-	-	4	25	50	3	75
Pr.3		Python Programming Lab			4	25	50	3	75
Pr.4		Project Phase-I	-	-	4	25	-	-	25
		Student Centered Activities(SCA)		-	3	-	-	-	-
		Total	-	-	19	100	150	-	250
		Grand Total	**20**		**19**	**200**	**550**	**-**	**750**

Abbreviations: L-Lecturer, T-Tutorial, P-Practical . Each class is of minimum 55 minutes duration

Minimum Pass Mark in each Theory subject is 35% and in each Practical subject is 50% and in Aggregate is 40%

SCA shall comprise of Extension Lectures/ Personality Development/ Environmental issues /Quiz /Hobbies/ Field visits/ cultural activities/Library studies/Classes on MOOCS/SWAYAM etc. ,Seminar and SCA shall be conducted in a section.

There shall be 1 Internal Assessment done for each of the Theory Subject. Sessional Marks shall be total of the performance of individual different jobs/ experiments in a subject throughout the semester

Th1. ENTREPRENEURSHIP and MANAGEMENT & SMART TECHNOLOGY
(Common to all Branches)

Theory	4 Periods per week	Internal Assessment	20 Marks
Total Periods	60 Periods	End Sem Exam	80 Marks
Examination	3hours	Total Marks	100Marks

Topic Wise Distribution of Periods

Sl No.	Topic	Periods
1	Entrepreneurship	10
2	Market Survey and Opportunity Identification(Business Planning)	8
3	Project report Preparation	4
4	Management Principles	5
5	Functional Areas of Management	10
6	Leadership and Motivation	6
7	Work Culture, TQM & Safety	5
8	Legislation	6
9	Smart Technology	6
	TOTAL	60

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 mind set with managerial skill helps the student in the job market. The students can also be introduced with Startup and Smart Technology concept, which shall radically change the working environment in the coming days in the face of Industry 4.0
In this subject, the Students shall be introduced/ exposed to different concepts and Terminologies in brief only, so that he/she can have broad idea about different concepts/items taught in this subject. Solving numerical problem on any topic/item is beyond the scope of this subject.

OBJECTIVES
After undergoing this course, the students will be able to :
* Know about Entrepreneurship, Types of Industries and Startups
* Know about various schemes of assistance by entrepreneurial support agencies
* Conduct market survey
* Prepare project report
* know the management Principles and functional areas of management
* Inculcate leadership qualities to motivate self and others.
* Maintain and be a part of healthy work culture in an organisation.
* Use modern concepts like TQM
* Know the General Safety Rules
* Know about IOT and its Application in SMART Environment.

DETAILED CONTENTS

1. **Entrepreneurship**
* Concept /Meaning of Entrepreneurship
* Need of Entrepreneurship
* Characteristics, Qualities and Types of entrepreneur, Functions
* Barriers in entrepreneurship

- Entrepreneurs vrs. Manager
- Forms of Business Ownership: Sole proprietorship, partnership forms and others
- Types of Industries, Concept of Start-ups
- Entrepreneurial support agencies at National, State, District Level(Sources): DIC, NSIC,OSIC, SIDBI, NABARD, Commercial Banks, KVIC etc.
- Technology Business Incubators (TBI) and Science and Technology Entrepreneur Parks

2. **Market Survey and Opportunity Identification (Business Planning)**

- Business Planning
- SSI, Ancillary Units, Tiny Units, Service sector Units
- Time schedule Plan, Agencies to be contacted for Project Implementation
- Assessment of Demand and supply and Potential areas of Growth
- Identifying Business Opportunity
- Final Product selection

3. **Project report Preparation**

- Preliminary project report
- Detailed project report, Techno economic Feasibility
- Project Viability

4. **Management Principles**
- Definitions of management
- Principles of management
- Functions of management (planning, organising, staffing, directing and controlling etc.)
- Level of Management in an Organisation

5. **Functional Areas of Management**
   a) Production management
   - Functions, Activities
   - Productivity
   - Quality control
   - Production Planning and control
   b) Inventory Management
   - Need for Inventory management
   - Models/Techniques of Inventory management
   c) Financial Management
   - Functions of Financial management
   - Management of Working capital
   - Costing (only concept)
   - Break even Analysis
   - Brief idea about Accounting Terminologies: Book Keeping, Journal entry, Petty Cash book, P&L Accounts, Balance Sheets(only Concepts)
   d) Marketing Management
   - Concept of Marketing and Marketing Management
   - Marketing Techniques (only concepts)
   - Concept of 4P s (Price, Place, Product, Promotion)
   e) Human Resource Management
   - Functions of Personnel Management
   - Manpower Planning, Recruitment, Sources of manpower, Selection process, Method of Testing, Methods of Training & Development, Payment of Wages

6. **Leadership and Motivation**
   a) Leadership
   - Definition and Need/Importance

- Qualities and functions of a leader
- Manager Vs Leader
- Style of Leadership (Autocratic, Democratic, Participative)

   b) Motivation
- Definition and characteristics
- Importance of motivation
- Factors affecting motivation
- Theories of motivation (Maslow)
- Methods of Improving Motivation
- Importance of Communication in Business
- Types and Barriers of Communication

7. **Work Culture, TQM & Safety**
- Human relationship and Performance in Organization
- Relations with Peers, Superiors and Subordinates
- TQM concepts: Quality Policy, Quality Management, Quality system
- Accidents and Safety, Cause, preventive measures, General Safety Rules , Personal Protection Equipment(PPE)

8. **Legislation**
   a) Intellectual Property Rights(IPR), Patents, Trademarks, Copyrights
   b) Features of Factories Act 1948 with Amendment (only salient points)
   c) Features of Payment of Wages Act 1936 (only salient points)

9. **Smart Technology**
- Concept of IOT, How IOT works
- Components of IOT, Characteristics of IOT, Categories of IOT
- Applications of IOT- Smart Cities, Smart Transportation, Smart Home, Smart Healthcare, Smart Industry, Smart Agriculture, Smart Energy Management etc.

Syllabus to be covered before IA: Chapter 1,2,3,4

RECOMMENDED BOOKS

1. Entrepreneurship Development and Management by R.K Singhal, Katson Books., New Delhi
2. Entrepreneurship Development and Management by U Saroj and V Mahendiratta, Abhishek Publications, Chandigarh
3. Entrepreneurship Development and Management by Vasant Desai, Himalaya Pub.House
4. Industrial Engineering and Management by O.P Khanna ,Dhanpat Rai and Sons
5. Industrial Engineering and Management by Banga and Sharma, Khanna Publications
6. Internet of Things by Jeeva Jose, Khanna Publications, New Delhi
7. Online Resource on Startups and other concepts

8. https://www.fundable.com/learn/resources/guides/startup

Th-2 INTERNET AND WEB TECHNOLOGY
(Common to CSE/IT)

Theory	4 Periods per week	Internal Assessment	20 Marks
Total Periods	60 Periods	End Sem Exam	80 Marks
Examination	3hours	Total Marks	100Marks

A.   Topic wise distribution of periods

Sl. No.	Topics	Periods
1	Internet Basics	6
2	Internet Connectivity & WWW	9
3	Internet Security	6
4	Internet Application	6
5	Website Classifications	3
6	Development of Portals Using HTML	9
7	Client side Scripting with JavaScript	6
8	Server Side Scripting	5
9	Server Side Programming using PHP	10
	TOTAL	60

B. RATIONALE : Now a days the usage of internet has become very essential in various areas like education, entertainment, business, sports etc. This subject will expose the learner to have an idea about the applications and services of Internet. Further the learner will able to plan and design a website to achieve the goal.

C. **Objective:** After completion of this course the student will be able to**:**

- Understand the concept of Internet and its wide application in various areas**.**
- Understand different internet connectivity and ISP.
- Understand the Internet security and Applications
- Know the methods of development of Portals using HTML
- Know the Client side Scripting using JavaScript
- Know the server side Scripting using PHP
- Know the what is ASP and what can it do

D. DETAIL CONTENTS:
1.0 Internet Basics
1.1 Computer network
1.2 Concept of Internet, Intranet, Modem
1.3. IP Address, Internet Domains, CIDR Notation, ISP, TCP/IP

2.0 Internet Connectivity & WWW
2.1 Introduction ot connectivity
2.2 Medium and methods of connectivity, ISDN, VSAT, RF Link
2.3 Working of Internet
2.4 Introduction to WWW, Application Level Protocol
2.5 Web Browser, URL, Hyper text, Hyperlinks, Hypermedia,
2.6 Search Engine, Proxy sever, CGI, URI, Dreamweaver

3.0 Internet Security
3.1 Introduction to security
3.2 Types of security, Authentication & Authorization

3.3 Firewalls, Encryption & Decryption, SSL

4.0 Internet Application
4.1 E-Mail, Email protocols
4.2 Telnet
4.3 FTP
4.4 Newsgroup
4.5 Chartroom
4.6 Internet Relay Chat
4.7 Video Conferencing
4.8 E-Commerce

5.0 Website Classifications
5.1 Static Websites
5.2 Dynamic websites
5.3 Web portals
5.4 Social Networking Sites
5.5 RSS Feed, Blog, Netiquette

6.0 Development of Portals Using HTML
6.1 Design a webpage, Good Web Design
6.2 HTML Introduction
6.3 HTML Tags, Anchor Tag, Table Tag
6.4 HTML Frames, Forms
6.5 Disadvantages of HTML
6.6 Separating style from structure with style sheets
6.7 CSS Rules, Types of CSS

7.0 Client side Scripting with JavaScript
7.1 Introduction to script, Client side Scripting, Types of Scripting
7.2 Variables in JavaScript, Built-in Function
7.3 Arrays in JavaScript, Conditional statements, Loops
7.4 Document Object Model
7.5 Creating Functions, objects in JavaScript
7.6 Event handling in JavaScript
7.7 Embedding JavaScript with HTML
7.8 Working with Cookies
7.9 Connecting database using JavaScript in HTML Page
7.10 Working with Browser, validating and submitting Forms

8.0 Server Side Scripting
8.1 Introduction to server side Scripting
8.2 Components of SSS
8.3 Difference between CSS and SSS
8.4 Server side Scripting method
8.5 JavaScript on server
8.6 SQL

9.0 Server Side Programming using PHP
9.1 Introduction to PHP
9.2 Variables, string, operator types
9.3 Conditional statement, Loops
9.4 Array
9.5 GET and POST Method and Sessions

Coverage of Syllabus upto Internal Exams (I.A.)
Chapter 1,2,3,4

Books Recommended:-

Sl.No	Name of Authors	Title of the Book	Name of the Publisher
01	Neha Dutta, Adesh Pandey	Internet and Web Designing	Katson Books
02	Sisodia	Internet & Web page Design	BPB Publication
03	U.K Roy	Web Technologies	Oxford Univ.Press

Th-3 SOFTWARE ENGINEERING

(Common to CSE/IT)

Theory	4 Periods per week	Internal Assessment	20 Marks
Total Periods	60	End Sem Exam	80 Marks
Examination	3hours	Total Marks	100Marks

Topic wise distribution of periods

Sl. No.	Topics	Periods
1	INTRODUCTION TO SOFTWARE ENGINEERING	06
2	SOFTWARE PROJECT MANAGEMENT	10
3	REQUIREMENT ANALYSIS AND SPECIFICATION	06
4	SOFTWARE DESIGN	10
5	USER INTERFACE DESIGN	08
6	SOFTWARE CODING & TESTING	12
7	SOFTWARE RELIABILITY	08
	TOTAL	60

RATIONALE: Software Engineering technology is now a days largely adopted by most computer based applications to bridge the gap between a human user & the computer. By this multiple media are implemented and used in computer based application to enhance their understanding ability before a common man. This will expose the students to various project building and testing techniques which they will encounter during there professional life as a software engineer or manager.

OBJECTIVE: After completion of this course the student will be able to**:**

- Understand the concept of Software Engineering**.**
- Understand how costs, schedule and quality drive a software project.
- Understand the role of software process and a process model in a project.
- Understand planning and estimation of a software project.
- Understand the role of SRS in a project and how requirements are validated
- Know the key design concepts of software engineering.
- Learn the structured code inspection process.
- Learn how testing is planned and testing done.

1.0   Introduction to Software Engineering

1.1 Program vs. Software product
1.2 Emergence of Software Engineering.
1.3 Computer Systems Engineering
1.4 Software Life Cycle Models
     1.4.1 Classical Water fall model
     1.4.2 Iterative Water fall model
     1.4.3   Prototyping model
     1.4.4   Evolutionary model
     1.4.5   Spiral model

2.0   Software Project Management

2.1 Responsibility of Project Manager
2.2 Project Planning

2.3 Metrics for Project size estimation (LOC and FP)
2.4 Project Estimation Techniques
2.5 COCOMO Models, Basic, Intermediate and complete
2.6 Scheduling
2.7 Organization and Team structure
2.8 Staffing
2.9 Risk Management
2.10   Configuration Management

3.0   Requirement Analysis and specification

3.1 Requirements gathering and analysis
3.2 Software Requirements Specification
      3.2.1   Contents of SRS
      3.2.2   Characteristics of Good SRS
      3.2.3   Organization of SRS
      3.2.4   Techniques for representing complexing logic

4.0   Software Design

4.1 What is a Good S/W design
4.2   Cohesion and coupling
4.3 Neat arrangement
4.4   S/W Design approaches
4.5   Structured analysis
4.6   Data Flow Diagrams
4.7   Symbols used in DFD
4.8   Designing DFD
4.9   Developing DFD model of a system
4.10 Shortcomings of DFD
4.11 Structured design
4.12 Principles of transformation of DFD to Structure Chart
4.13 Transform analysis and Transaction Analysis
4.14 Design Review

5.0   User Interface Design

5.1 Characteristics of Good Interface
5.2 Basic concepts of UID
5.3 Types of User interfaces
5.4 Components based GUI development

6.0   Software Coding & Testing

6.1 Coding
6.2.Code Review
.   6.2.1 Code walk through
.   6.2.2 Code inspections and software Documentation
6.3 Testing
6.4 Unit testing
6.5 Black Box Testing
6.6 Equivalence class partitioning and boundary value analysis
6.7 White Box Testing
6.8 Different White Box methodologies statement coverage branch coverage, condition coverage, path coverage, cyclomatic complexity data flow based testing and mutation testing
6.9   Debugging approaches
6.10 Debugging guidelines

6.11 Integration Testing

6.12 Phased and incremental integration testing

6.13 System testing alphas beta and acceptance testing

6.14 Performance Testing, Error seeding

6.15 General issues associated with testing

7.0   Software Reliability

7.1 Software Reliability

7.2 Different reliability metrics

7.3 Reliability growth modeling

7.4 Software quality

7.5 Software Quality Management System

BOOKS

Sl.No	Name of Authors	Title of the Book	Name of the publisher
01	Rajib Mall	Fundamentals of Software Engineering	PHI
02	Deepak Jain	Software Engineering: Principles and Practice	Oxford university press
03	Jawadekar	Software Engineering: A Primer	TMH

Th-4 Computer Graphics and Multimedia

Theory	4 Periods per week	Internal Assessment	20 Marks
Total Periods	60	End Sem Exam	80 Marks
Examination	3hours	Total Marks	100Marks

A.   **Topic wise distribution of periods**

Sl. No.	Topics	Periods
1	APPLICATIONS OF COMPUTER GRAPHICS & MULTIMEDIA	02
2	OVERVIEW OF GRAPHICS SYSTEM	05
3	GRAPHICS OUTPUT PRIMITIVE	05
4	TWO DIMENSIONAL GEOMETRIC TRANSFORMATIONS	03
5	TWO DIMENSIONAL VIEWING	04
6	THREE DIMENSIONAL OBJECT REPRESENTATIONS	10
7	THREE DIMENSIONAL GEOMETRIC & MODELING TRANSFORMATIONS	04
8	THREE DIMENSIONAL VIEWING	06
9	ILLUMINATION MODEL & SURFACE RENDERING METHODS	04
10	INTRODUCTION TO DIGITAL AUDIO	06
11	INTRODUCTION TO DIGITAL IMAGE	06
12	INTRODUCTION TO VIDEO	05
	TOTAL	60

B. RATIONALE: Now a days the graphics and multimedia is the most popular topic in the development of computer technology in education, entertainment, business, sports etc. This subject will expose the learner to have an idea about the text, sound, video, graphics and animation. It will also give an idea about the 2D and 3D view of an object for better understanding.

C. OBJECTIVE: After completion of this course the student will be able to**:**
- Understand the basic use of graphics.
- Understand the use of graphics in different application area.
- Understand how to view and modify the image in 2D.
- Understand how to view and modify the image in 3D.
- Understand different image format.
- Understand different audio and video format.

D. DETAIL CONTENTS:

    1. Applications of Computer Graphics & Multimedia

    1.1   Computer graphics in CAD
    1.2   Presentation Graphics
    1.3   Computer Art
    1.4   Entertainment
    1.5   Education & Training
    1.6   Visualization
    1.7   Image Processing
    1.8   Graphic User Interface
    1.9   Multimedia Concepts.

    2. Overview of Graphics System

2.1   Graphics System
2.2   Raster Scan Display
2.3   Random Scan Display
2.4   Graphics Input Devices
2.5   Graphics Software.

3. Graphics Output primitive

3.1   Points & Lines
3.2   DDA Line Drawing Algorithm
3.3   Bresenham's Line drawing Algorithm
3.4   Mid Point Circle algorithm
3.5   Filled Area Primitives
3.6   Boundary fill algorithm, Flood fill algorithm

4. Two Dimensional Geometric Transformations

4.1   Translation
4.2   Rotation
4.3   Scaling
4.4   Reflection
4.5   Shear
4.6   Matrix representation and Homogenous coordinate system
4.7   Composite transformation

5. Two Dimensional Viewing

5.1   Viewing pipeline
5.2   Viewing coordinate reference frame
5.3   Window to view port coordinate transformation
5.4   Line clipping concept
5.5   Polygon clipping concept.

6. Three Dimensional Object Representations

6.1   Polygon surface
6.2   Polygon table
6.3   Plane equation
6.4   Polygon mesh
6.5   Quadric surfaces
6.6   Sphere, Ellipsoid
6.7   Spline representation
6.8   Bezier curves & Surfaces
6.9   B-Spline curves & surfaces.

7. Three Dimensional Geometric & Modeling Transformations

7.1   Translation
7.2   Rotation
7.3   Scaling
7.4   Reflection
7.5   Shear
7.6   Composite transformation
7.7   Modeling & Coordinate transformation.

8. Three Dimensional Viewing

8.1   Viewing pipeline
8.2   Viewing coordinates
8.3   Parallel projection

8.4   Perspective projection
8.5   Concept of 3D clipping.

9. Illumination Model & Surface Rendering Methods

9.1   Different light sources used in 3D modeling
9.2   Basic Illumination model
9.3   Ambient light
9.4   Diffuse reflection
9.5   Specular reflection,

10. Introduction to Digital Audio

10.1 Basics of Acoustics, Psychoacoustics
10.2 Musical sound and noise, elementary sound system
10.3 Microphones, Amplifiers, digital audio formats
10.4 Audio compression (LPC, Sub Band Encoding)

11. Introduction to Digital Image

11.1 Vector and raster Graphics
11.2 Digital representation of image, colour, 16 bit, 24 bit colour depth
11.3 Colour Characteristics-Hue, saturation, Luminance
11.4 Colour Palette
11.5 Image formats-JPEG, BMP, TIFF, GIFF
11.6 Image evaluation
11.7Layers
11.8 Filters
11.9 Image manipulation-scaling, cropping, rotation

12. Introduction to Video

12.1Video in Multimedia
12.2 Basics of Motion-Video
12.3 Sources of Motion-Video
12.4 Video formats, lines, frames, fields
12.5 TV Broadcast standards-PAL, NTSC, SECAM
12.6 MPEG Compression

Coverage of Syllabus upto Internal Exams (I.A.)

Chapter 1,2,3,4

Book Recommended :-

Sl.No	Name of Authors	Title of the Book	Name of the publisher
01	Donald Hearn , M.Pauline Baker	Computer Graphics	PHI
02	Buford	Multimedia Systems	Pearson
03	S.Pandey, M.Pandey	Multimedia Systems,Tech. & Communications	Katson

Th-5 MOBILE COMPUTING
(Common to CSE/IT)

Theory	4 Periods per week	Internal Assessment	20 Marks
Total Periods	60	End Sem Exam	80 Marks
Examination	3hours	Total Marks	100Marks

Topic wise distribution of periods

Sl. No.	Topics	Periods
1	Introduction to Wireless networks & Mobile Computing	06
2	Introduction to Mobile Development Framework	06
3	Wireless Transmission	06
4	Medium Access Control	06
5	Wireless LANs	06
6	Ubiquitous Wireless Communication	06
7	Mobile IP	06
8	Mobile Computing	06
9	Wireless Telecomm Networks	06
10	Messaging Services	06
	TOTAL	60

RATIONALE : Now a days the communication technology has become very fast in development of various application areas. This subject will expose the learner to have an idea how the wireless network works along with the architecture of Mobile computing.

OBJECTIVE: After completion of this course the student will be able to**:**

- To learn Mobile Computing Principles and Architecture
- To understand Mobility Management, GSM, and GPRS networks
- To know Short Message Service (SMS) technology, GPRS, WAP, CDMA, 3G
- Understand Wireless LAN, WiFi, and WLL (Wireless Local Loop) Architecture
- Understand the concept of Mobile IP.
- Learn Bluetooth, RFID, and Satellite Communications.
- To Know Next Generation Networks (NGN)

COURSE CONTENT

1. Introduction to Wireless networks & Mobile Computing
1.1 Networks
1.2 Wireless Networks
1.3 Mobile Computing
1.4 Mobile Computing Characteristics
1.5 Application of Mobile Computing

2. Introduction to Mobile Development Framework
2.1 C/S architecture
2.2 n-tier architecture
2.3 n-tier architecture and www
2.4 Peer-to Peer architecture
 2.5 Mobile agent architecture

3. Wireless Transmission
3.1 Introduction
3.2 Signals
3.3 Period, Frequency and Bandwidth.
3.4 Antennas
3.5 Signal Propagation
3.6 Multiplexing
3.7 Modulation
3.8 Spread Spectrum
3.9 Cellular System

4. Medium Access Control
4.1 Introduction
4.2 Hidden/ Exposed Terminals
4.3 The basic Access Method
4.4 Near / Far Terminals
4.5 SDMA, FDMA,TDMA, CDMA

5. Wireless LANs
5.1 Wireless LAN and communication
5.2 Infrared
5.3 Radio Frequency
5.4 IR Advantages and Disadvantages
5.5 RF Advantages and Disadvantages
5.6 Wireless Network Architecture Logical
5.7 Types of WLAN
5.8 IEEE 802.11
5.9 MAC layer
5.10 Security
5.11 Synchronization
5.12 Power Management
5.13 Roaming
5.14 Bluetooth Overview

6. Ubiquitous Wireless Communication
6.1 Introduction
6.2 Scenario of Mobile Communication
6.3 Mobile Communication Generations 1G to 3G
6.4 3rd Generation Mobile Communication Network
6.5 Universal Mobile telecommunication System (UMTS)

7. Mobile IP
7.1 Overview
7.2 Working with mobile IP
7.3 Mobile IP Entities
7.4 Mobility Agents
7.5 Components of Mobile IP
7.6 Mobile IPv6 Features
7.7 Mobile IPv6 Address Types
7.8 Mobile IPv6 Address Scope
7.9 Mobile IP Operation

8. Mobile Computing
8.1 WWW architecture for Mobile computing
8.2 Need of WAP
8.3 Benefits of WAP
8.4 Examples of WAP
8.5 WAP- Architecture

8.6 WAP protocols
8.7 WML
8.8 WAP Push architecture
8.9 Push-Pull based data acquisition
8.10 I-mode
8.11 WAP 2.x

9. Wireless Telecomm Networks
9.1 GSM
 9.2 GPRS
9.3 IS-95
9.4 CDMA-2000
9.5 W-CDMA
9.6 Wireless Sensor Networks

10. Messaging Services
10.1 Short Message Services (SMS)
10.2 Multimedia Message Services (MMS)
10.3 Multimedia transmission over wireless

Reference Books

Sl.No	Name of Authors	Title of the Book	Name of the publisher
01	Dr. N.NJani, Kamaljit I. Lakhtaria, Dr. Ashish N. Jani & Nita Kanabar	Mobile Computing	S.Chand & Company Ltd

Pr-1   WEB DEVELOPMENT LAB

Practical	4 Periods per week	Term Work	25 Marks
Total Periods	60 Periods	Term End Exam	50 Marks
Examination	3 Hours	TOTAL MARKS	75 Marks

RATIONALE:

This course will enable the students to understand and develop competency amongst the students to design professional database backed dynamic and feature based web sites. The course covers the use of programming with PHP and the concepts of database with My SQL.

OBJECTIVES

After going through the subject, the student will be able to

- Compare and contrast the use of various mark-up languages.
- Perform various logical operations in PHP
- Create simple programmes to validate forms in PHP
- Perform database connectivity using PHP

DETAILED CONTENTS

1.   DEVELOPING PORTALS USING HTML

Introduction to HTML 5 and CSS 3. Basic structure of HTML, designing a web page, inserting liks images, horizontal rules, comments. Formatting text, title, headings, colors, fonts, sizes, simple tables and forms. HTML tags, hyperlinks. Adding graphics and images, image maps, image files. Using tables, forms, style sheets and frames. Floating of web site/pages.

2.   PHP

Introduction to PHP: How PHP Works , The php.ini File, Basic PHP Syntax, PHP variables, statements, operators, decision making, loops, arrays, strings, forms, get and post methods, functions.
Introduction to cookies, storage of cookies at client side, Using information of cookies. Creating single or multiple server side sessions. Timeout in sessions, Event management in PHP. Introduction to content management systems based on PHP.

3.   PHP and My SQL

Introduction to My SQL, connecting to My SQL, database, creation, insertion, deletion and retrieval of My SQL data using PHP.

LIST OF PRACTICALS

1.   Design PHP based web pages using correct PHP, CSS, and XHTML syntax, structure.
2.   Create Web forms and pages that properly use HTTP GET and POST protocol as appropriate.
3   Design SQL language within My SQL and PHP to access and manipulate databases.
4.   Install and configure both PHP and My SQL.
5   Create PHP code that utilizes the commonly used API library functions built in to PHP.
6.   Design and create a complete web site that demonstrates good PHP/My SQL client/server design.
7.   To store a cookie using PHP on client side.
8.   To save the user session on server side.
9.   Design website.

RECOMMENDED BOOKS

Sl.No	Name of Authors	Title of the Book	Name of the publisher
01	by Julie C. Meloni	Sams Teach Yourself PHP, MySQL, and Apache All in One"	SAMS ,ISBN 0-672-32976-X
02	by Ivan Byross	Web enabled development application	Commercial;TMH
03	Wiley India	HTML, CSS, JavaScript, Perl, Python and PHP by Schafer Textbooks	

PR-2 Computer Graphics & Multimedia Lab

Total Periods	60	Maximum Marks	75 Marks
Lab. Periods:	4 Periods /week	Term Works	25 Marks
Examination	3hours	End Semester Examination	50 Marks

RATIONALE:
- Multimedia is creative combination of Multimedia Elements (Text, Video, Audio, Animation, Images).It combines audio, image, video, graphics, and text, multimedia deepens the need for efficient representation, networking, and support.

- It excites ears, eyes , fingertips and our thought (head).

- It is Science and Art

- It can be Interactive or Non Interactive

- It conveys concepts through words, pictures, and sounds

- The process of employing a variety of digital images, synchronized and perhaps embedded within one another, or within an application, to present and transmit information.

World is moving in direction of Multimedia Highway which is convergence of various services for several services anytime anywhere in the world. This content is being created to create a e-reference for students, professionals, learners in field of multimedia.

OBJECTIVES

After going through the subject, the student will be able to

- Write programs involving different multimedia formats
- Create simple 2D animations Write Java 3D components and reason about their behaviour
- Create dynamic 3D environments.

LIST OF PRACTICALS

Graphics
1. Program to implement a line using slope intercept formula.
2. Program to implement line using DDA algorithm.
3. Program to implement line using Bresenham's algorithm.
4. Program to implement circle using mid-point algorithm.
5. Program to implement translation of a line and triangle.
6. Program to implement rotation of a line and triangle.
7. Program to implement scaling transformation.
8. Write a program using function & Fill the Circle with Red color.

Photoshop
1. The concept of Photoshop.
2. How to open a document. How to save the document .
3. How to create a new document with the needed resolution.
4. How to select an area, copy and paste the selection.
5. How to save images for the web and their formats.
6. The use of layers and the history palette. How to print our document.
7. How to use the text editor. How to Crop Image in Photoshop & Sharpen Image?

8. Procedure to Removing & Adding Backgrounds images. Procedure to Convert Color Photos to Black & White.
9. How to Create a Passport size images? How to Change Eye Color & Hair Color?
10. How to Add Rain in Photoshop? How to make a GIFs File?

Flash

1. Procedure to create an animation to represent the growing moon.
2. Procedure to create an animation to indicate a ball bouncing on steps.
3. Procedure to simulate movement of a cloud. Procedure to draw the fan blades and to give proper animation. Procedure to display the background given (filename: tulip.jpg) through your name.
4. Procedure to create an animation with the following features.
5. Procedure to design a visiting card containing at least one graphic and text information.
6. Procedure to prepare a cover page for the book in your subject area. Plan your own design. Procedure to adjust the brightness and contrast of the picture so that it gives an elegant look.
7. Procedure to position the picture preferably on a plain background of a colour of your choice - positioning includes rotation and scaling.
8. Procedure to type a word and apply the effects shadow embosses.

RECOMMENDED BOOKS

Sl.No	Name of Authors	Title of the Book	Name of the publisher
1	MALAY K. PAKHIRA	Computer Graphics, Multimedia and Animation	PHI
2	D. P. MUKHERJEE	FUNDAMENTALS OF COMPUTER GRAPHICS AND MULTIMEDIA	PHI

PR-3 PYTHON PROGRAMMING LAB

Total Periods	60	Maximum Marks	75 Marks
Lab. Periods:	4 Periods /week	Term Works	25 Marks
Examination	3hours	End Semester Examination	50Marks

RATIONALE

This course introduces to the students the Python language. Upon completion of this course, the student will be able to write non trivial Python programs dealing with a wide variety of subject matter domains. Topics include language components, the IDLE/IDE environment, control flow constructs, strings, I/O, collections, classes, modules, and regular expressions

LEARNING OUTCOMES
After undergoing the course, the students will be able to:
- Execute Python code in a variety of environments
- Use correct Python syntax in Python programs
- Use the correct Python control flow construct
- Write Python programs using various collection data types
- Write home grown Python functions
- Use many of the standard Python modules such as os, sys, math, and time
- Trap various errors via the Python Exception Handling model
- Use the IO model in Python to read and write disk files
- Create their own classes and use existing Python classes. Understand and use the Object Oriented paradigm in Python programs
- Use the Python Regular Expression capabilities for data verification

DETAILED CONTENTS
1.   Introduction
- Brief History of Python
- Python Versions
- Installing Python
- Environment Variables
- Executing Python from the Command Line
- IDLE
- Editing Python Files
- Python Documentation
- Getting Help
- Dynamic Types
- Python Reserved Words
- Naming Conventions

2.   Basic Python Syntax
- Basic Syntax
- Comments
- String Values
- String Methods
- The format Method
- String Operators

- Numeric Data Types
- Conversion Functions
- Simple Output
- Simple Input
- The % Method
- The print Function

3. Language Components
- Indenting Requirements
- The if Statement
- Relational and Logical Operators
- Bit Wise Operators
- The while Loop
- break and continue
- The for Loop

4. Collections
- Introduction
- Lists
- Tuples
- Sets
- Dictionaries
- Sorting Dictionaries
- Copying Collections
- Summary

5. Functions
- Introduction
- Defining Your Own Functions
- Parameters
- Function Documentation
- Keyword and Optional Parameters
- Passing Collections to a Function
- Variable Number of Arguments
- Scope
- Functions - "First Class Citizens"
- Passing Functions to a Function
- map
- filter
- Mapping Functions in a Dictionary
- Lambda
- Inner Functions
- Closures

6. Modules
- Modules
- Standard Modules - sys
- Standard Modules - math
- Standard Modules - time
- The dir Function

7. Exceptions
    - Errors
    - Runtime Errors
    - The Exception Model
    - Exception Hierarchy
    - Handling Multiple Exceptions
    - Raise
    - assert

8. Input and Output
    - Introduction
    - Data Streams
    - Creating Your Own Data Streams
    - Access Modes
    - Writing Data to a File
    - Reading Data From a File
    - Additional File Methods
    - Using Pipes as Data Streams
    - Handling IO Exceptions

9. Classes in Python
    - Classes in Python
    - Principles of Object Orientation
    - Creating Classes
    - Instance Methods
    - File Organization
    - Special Methods
    - Class Variables
    - Inheritance
    - Polymorphism

10. Regular Expressions
    - Introduction
    - Simple Character Matches
    - Special Characters
    - Character Classes
    - Quantifiers
    - The Dot Character
    - Greedy Matches
    - Grouping
    - Matching at Beginning or End
    - Match Objects
    - Substituting
    - Splitting a String
    - Compiling Regular Expressions
    - Flags

LIST OF PRACTICALS
1. Write instructions to perform each of the steps below
    - (a)   Create a string containing at least five words and store it in a variable.
    - (b)   Print out the string.
    - (c)   Convert the string to a list of words using the string split method.

(d) Sort the list into reverse alphabetical order using some of the list methods (you might need to use dir(list) or help(list) to find appropriate methods).

(e) Print out the sorted, reversed list of words.

2. Write a program that determines whether the number is prime.
3. Find all numbers which are multiple of 17, but not the multiple of 5, between 2000 and 2500?
4. Swap two integer numbers using a temporary variable. Repeat the exercise using the code format: a, b = b, a. Verify your results in both the cases.
5. Find the largest of n numbers, using a user defined function largest().
6. Write a function my Reverse() which receives a string as an input and returns the reverse of the string.
7. Check if a given string is palindrome or not.
8. WAP to convert Celsius to Fahrenheit
9. Find the ASCII value of charades
10. WAP for simple calculator

Methodology

The Students shall be taught about the Syntax of Python Language which is similar to other High level languages in the initial 8 to 10 classes. Then after learning the syntax the students shall Write the codes for the Practical Exercise and Test its results in the Lab.

RECOMMENDED BOOKS

Sl.No	Name of Authors	Title of the Book	Name of the publisher
1	C Satyanarayan M, Radhika Mani, B N Jagdesh	Python Programming	University Press
2	Mark Lutz;	Learning Python by Mark Lutz;	Pratham Books, Bangalore
3	Robert Richards	Python Programming For Beginners: A Must Read Introduction to Python Programming	Pratham Books, Bangalore

Pr 4. PROJECT WORK (Phase-I)

Name of the Course: Diploma in IT			
Course code:		Semester	5th
Total Period:	60	Examination :	-
Theory periods:	4P / week	Sessional Marks	25
EXAMS	-	TOTAL Marks	25

RATIONALE

Students' Project Work aims at developing innovative skills in the students whereby they apply the knowledge and skills gained through the course covered in many subjects and Labs, by undertaking a project. The prime emphasis of the project work is to understand and apply the basic knowledge of the principles of software engineering/ Hardware design and practices in real life situations, so as to participate and manage a large software engineering projects and /or appropriate Hardware with embedded software, in future.
Entire Project shall spread over 5th and 6th Semester. Part of the Project covered in 5th Semester shall be named as _Project Phase-I_ and balance portion to be covered in 6th Semester shall be named as _Project Phase-II_.

OBJECTIVES

After undergoing the Project Work, 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.
- 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.
- To achieve real life experience in software/hardware design.
- To develop the skill of writing Project Report

General Guidelines

> The individual students have different aptitudes and strengths and also areas of interest. Project work, therefore, should match the strengths and interest of the 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 (right from beginning of 5th semester). Students should be allotted a problem of interest to him/her as a 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. Preferably there should not be more than 5 students, if the project work is given to a group. The project work identified in collaboration with industry should be preferred.

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 / equipment.
- ✓ Any other related area found worth.

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

Sl. No.	Performance Criteria
1.	Selection of project assignment
2.	Planning and execution of considerations
3.	Quality of performance
4.	Providing solution of the problems or production of final product
5.	Sense of responsibility
6.	Self expression/ communication/ Presentation skills
7.	Interpersonal skills/human relations
8.	Report writing skills
9	Viva voce

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 to such an exhibition.

Project Phase-I and Phase-II

The Project work duration shall cover 2 semesters(5th and 6th sem). The Grouping of students, selection of Project, assignment of Project Guide to the Group shall be done in the beginning of 5th sem under Project Phase-I. The students may be allowed to study literature, any existing system and then define the Problem/objective of the Project. Requirements specification, DFD and Design of the system have to be complete in Phase-I. Coding may also begin in this phase. Project Milestones are to be set so that progress can be tracked . In Phase-II Coding, Testing, Documentation have to be complete. *Project Report have to be prepared and complete in Phase-II.* All Project reports should be organized uniformly in proper order, irrespective of group. Teacher Guides can make suitable alteration in the components of Task and schedule.

At the end of Project Phase-I in 5th semester there shall be one presentation by each group to mark to progress and also to judge whether the Project is moving in right direction as per the objective of the Project.

Equipment List

(For a Batch of 30 students)

1. Desktop PC with UPS – 30 numbers
2. Software such as
   HTML, PHP, My SQL, Python, C/C++, Photoshop, Flash