TEACHING & EXAMINATION SCHEME FOR B TECH PROGRAMME IN COMPUTER ENGINEERING SEM V

Sem.	Subject Code	Subject Name	Teaching Scheme				Credit			Examination Scheme(Marks)				
										Theory			Prac / TW	Total
										Int. Asse.	Sem.End			
			Lect Hrs	Tu Hrs	Prac Hrs	Total	Theory	Pra/ TW	Total		Marks	Hrs.		
TY Sem-5	2CE501	Object Oriented Analysis & Design	3	0	2	5	3	1	4	30	70	3	50	150
	2CE502	Microprocessor & Interfacing	3	0	2	5	3	1	4	30	70	3	50	150
	2CE503	Computer Architecture	3	0	2	5	3	1	4	30	70	3	50	150
	2CE504	Computer Networks	3	0	2	5	3	1	4	30	70	3	50	150
	2CE505	Elective I	3	0	2	5	3	1	4	30	70	3	50	150
	2CE506	Mobile Application Development	2	0	2	4	2	1	3	30	70	3	50	150
	Total		**17**	**0**	**12**	**29**	**17**	**6**	**23**	**180**	**420**	**18**	**300**	**900**

Elective I

1) Web Technology
2) Advanced Java
3) Computer Graphics

2CE501: Object Oriented Analysis & Design

Teaching Scheme			Credit			Examination Scheme(Marks)				
						Theory			Prac / Tw	Total
						Int. Ass.	Sem.End			
Lect Hrs	Prac Hrs	Total	Theory	Pra/ Tw	Total		Marks	Hrs.		
3	2	5	3	1	4	30	70	3	50	150

Introduction: Overview of OOL; Object Classes; Meta Types. Object Oriented Methodologies; The Unified Approach Modeling; Why Modeling? Static and Dynamic Models, Functional Models

Complexity:
The inherent complexity of software, the structure of complex system, on designing complex systems

The Object Model:
The evolution of object model, Elements of the object model, applying the object model

Basic Object Modeling: Multiplicity. Constraints. Aggregation. Component

Object Modeling: Object. Links. Association. Inheritance. Grouping Constructs; Problems on Object Modeling; Advantages of Object Modeling

Analysis: Problem Analysis. Problem Domain Classes. Identify Classes And Objects Of Real World Problems. Using Use Case Analysis; Recording Analysis

Classes and Objects:
The nature of object, Relationship among objects, The nature of classes, Relationship among classes, The interplay among classes and objects, On building quality classes and objects.

Classification:
The importance of proper classification, Identifying classes and objects, Key abstraction and mechanisms

The Notation:
Elements of the notations, Class diagrams, and State transition diagrams, Object diagrams, Interaction diagrams, Module diagram, Process diagram

The Process:
First principles, the micro development process, the macro development process

Reference Books:

1. The UML Users guide:By Grady Booch, J. Rambaugh, Ivar Jacobson, Pearson Education
2. Object Oriented Modeling and Design with UML:By J. Rambaugh, et al., Second Edition Pearson Education
3. Object Oriented System Development:By Ali Bahrami, McGraw Hill

2CE502: Microprocessor & Interfacing

Teaching Scheme			Credit			Examination Scheme(Marks)				
						Theory			Prac / Tw	Total
						Int. Ass.	Sem.End			
Lect Hrs	Prac Hrs	Total	Theory	Pra/ Tw	Total		Marks	Hrs.		
3	2	5	3	1	4	30	70	3	50	150

Introduction:
Introduction to 16- bit microprocessor, internal architecture and pin diagram of 8086/8088 microprocessor, Minimum and maximum mode, Support chips as 8282, 8284, 8286,8288, Timing Diagrams, Read and write machine cycles, Address decoding, Even and Odd memory banks, accessing Memory and I/O ports.

Programming:
Programmers model of 8086/88 - Addressing Modes, accessing data in the memory, instruction set, Instruction encoding format, Introduction to assembly language programming, Assembler, linker, Locator, debugger, emulator concepts. Assembler directives, 8086 programming examples to implement while - do, Repeat - Until, if-then-else constructs etc, String operations, file I/O processing, Far and Near procedures, macros. Timing and delay loops.

Interrupt Handling:
8086 interrupt structure, Interrupt Service Routine, Interrupt Vector Table (IVT) - location of IVT in the memory, contents of IVT, Hardware interrupts and Software interrupts - INTR, NMI and INT n. Interrupt response, Execution of an ISR, priority of 8086 interrupts. 8259A priority interrupt controller, block diagram, interfacing and programming, 8254 Timer: Block diagram, control and status registers, interfacing and programming.

Digital Interfacing:
Programmable parallel ports, Intel 8255, block diagram and interfacing, modes and initialization, Keyboard and display Interfacing using 8255, Keyboard/ Display Controller 8279: block diagram, system connections and programming, Centronix Parallel Printer Interface. Serial communication: Asynchronous and synchronous communication, RS-232C protocol, Intel 8250 UART and 8251 USART, Direct memory Access (DMA)

Analog Interfacing:
DAC and ADC interfacing and applications, Sensors and transducers: Light sensors, temperature sensors, force and pressure transducers, LVDT, flow sensors, Interfacing with high-power devices, 1C buffers, transistor buffers, interfacing to AC power devices, interfacing to a stepper motor, Concept and design of a simple data-acquisition system and industrial process control system

DOS:
Internals of DOS, DOS loading, DOS memory map, internal commands, External commands, command interpreter, POST details. POST sequence, PSP (structure details), '.EXE' and '.COM' file structures, conversion of .EXE to .COM file. BIOS: what and why, BIOS calls: INT 10H calls, DOS calls: INT 2JH' calls. Difference between DOS and BIOS, TSRs: types, Structure, details of TSR loading, examples, writing TSRs in assembly

Reference Books:

1. D. Hall, "Microprocessors and Interfacing", 2nd edition, 1992, McGraw-Hill, ISBN - 0 - 07 - 100462 - 9.
2. Y. Liu, G. Gibson. “Microcomputer Systems: The 80867 8088 Family, Architecture, Programming and Design", 2nd Edition, Prentice-Hall of India, 1986, ISBN 0 -87692 - 409 - 7.
3. M. Rafiquzzaman, "Microprocessors - Theory and applications: Intel and Motorola", Revised edition, 2002, Prentice Hall, (Chapters 5. 7, 8) ISBN 81 - 203 - 0848 - 4
4. P. Abel, "Assembly Language Programming", 5th edition, Pearson Education, 2002, ISBN 81 - 203 - 1037 - 3.
5. R. Denkon, "Advanced MS-DOS Programming", 2nd edition, BPB Publications, 2002, ISBN 81 - 7029 - 485 - 1 (Chapters 2, 3, 4, 14).
6. R. Lai, "Writing MS-DOS Device Driver", 2nd Edition, Pearson Education
7. A. Ray, K. Bhurchandi, "Advanced Microprocessors and Peripherals: Architecture, Programming and Interfacing", Tata McGraw-Hill, 2004, ISBN 0 - 07 -463841 - 6
8. Intel - Microprocessor and peripheral Handbook Volume I.

2CE503: Computer Architecture

Teaching Scheme			Credit			Examination Scheme(Marks)				
						Theory			Prac / Tw	Total
						Int. Ass.	Sem.End			
Lect Hrs	Prac Hrs	Total	Theory	Pra/ Tw	Total		Marks	Hrs.		
3	2	5	3	1	4	30	70	3	50	150

Overview of register transfer and micro operations:
Register Transfer Language, Register transfer, Bus and Memory transfer, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro operations, Arithmetic Logic Shift Unit.

Basic computer organization and design:
Instruction codes, Computer registers, computer instructions, Timing and Control, Instruction cycle, Memory-Reference Instructions, Input-output and interrupt, Complete computer description, Design of Basic computer, design of Accumulator Unit.

Programming the basic computer:
Introduction, Machine Language, Assembly Language, Assembler, Program loops, Programming Arithmetic and logic operations, subroutines, I-O Programming.

Micro programmed control:
Control Memory, Address sequencing, Microprogram Example, design of control Unit

Central processing unit:
Introduction, General Register Organization, Stack Organization, Instruction format, Addressing Modes, data transfer and manipulation, Program Control, Reduced Instruction Set Computer (RISC),

Memory Organization:
Memory Sub System, Memory hierarchy, Main memory, Auxiliary memory, Flash memory, Associative memory, Cache memory, Virtual memory, Memory management hardware.

Pipeline and vector processing:
Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction, Pipeline, RISC Pipeline, Vector Processing, Array Processors

Computer arithmetic:
Introduction, Addition and subtraction, Multiplication and Division Algorithms, Floating Point Arithmetic, Decimal Arithmetic Unit and Operations

Reference Books:

1. Computer System Architecture: By M. MorrisMano.
2. Structured Computer Organization: By Tanenbaum.
3. Computer Organization: By Stallings.
4. Computer Architecture and Organization: By Hayes.
5. Computer Organization and Design by P. Pal Chaudhury.

2CE504: Computer Networks

Teaching Scheme			Credit			Examination Scheme(Marks)				
						Theory			Prac / Tw	Total
						Int. Ass.	Sem.End			
Lect Hrs	Prac Hrs	Total	Theory	Pra/ Tw	Total		Marks	Hrs.		
3	2	5	3	1	4	30	70	3	50	150

Overview
Basics of Computer Networks, Diff between networks & Distributed Systems, Uses of Computer Networks, Network Categories, Network Models.

Data Link Layer Design Issues: Services Provided to Network Layer, Framing, Error Control, Flow Control.

Error Detection & Correction: Error Detecting Codes, Error-Correcting Codes

Elementary Protocols: Stop and Wait Protocol.

Sliding Window Protocols: Go Back n, Selective Repeat.

Example Data Link Layer Protocol: HDLC

Medium Access: Multiple Access Protocols, ALOHA, CSMA/CD, Collision Free Protocols

Wide Area Networks: Circuit Switching & Packet Switching, Switching Networks, Packet Switching Principles, X.25, Frame Relay.

Network Layer:

Design Issues, Introduction to Routing, Virtual Circuits, Connectionless Internetworking, Tunneling, Fragmentation, IP Addressing Scheme, IP, Sub networking, IPv6. ARP, RARP

Routing Algorithms: Shortest Path, Flooding, Distance vector, Link State

Congestion Control Mechanisms

Transport Layer:
Process to Process Delivery, Client-server Paradigm, Addressing, Multiplexing and De multiplexing, establishing a Connection, Releasing a Connection, User Datagram Protocol, TCP: Service Model, Connection Management, Silly Window Syndrome.

Application Layer:
Introduction to Application layer protocols

Reference Books:
1. Computer Networks By Andrew S. Tanenbaum. Prentice Hall India.
2. Data & Computer Communications : By William Stallings. Prentice Hall India.
3. Data Communication & Networking : By Behrouz A. Forouzan. Tata McGraw Hill.
4. Computer Networks: A Top Down Approach, By Behrouz A. Forouzan. Tata McGraw Hill.

2CE505: Advanced Java (Elective - I)

Teaching Scheme			Credit			Examination Scheme(Marks)				
						Theory			Prac / Tw	Total
						Int. Ass.	Sem.End			
Lect Hrs	Prac Hrs	Total	Theory	Pra/ Tw	Total		Marks	Hrs.		
3	2	5	3	1	4	30	70	3	50	150

Introduction to J2EE Platform and Architecture:
The Enterprise Today, The J2EE Platform, and The J2EE Architecture – Containers J2EE Technologies, Developing J2EE Applications

Java Database Connectivity (JDBC):
Introduction, JDBC Architecture: API and Drivers, JDBC Exception Types, Metadata, Types of SQL Statements, Types of Resultsets, Batch Update, Transaction support. Introduction of javax.sql package

Swing Programming:
Introduction of Swing, Swing Components, Look and Feel for Swing Components

Servlets:
Introduction, Generic Servlets, HTTP Servlets, Benefits of Servlets, Servlets Lifecycle, Servlets Container, Servlets API, Servlets Context, Session Management, Servlet Collaboration.

JSP:
Introduction to JSP, Advantages of JSP, Working of JSPs, Directives, Scripting elements, Standard Actions, Conditional and Looping Execution, Implicit Objects in JSP, JSPs and Java Beans, Various scope in JSP, JSP tag extensions.

XML (Extensible Markup Language):
Introduction to XML, Advantages of XML, XML Syntax, Writing Document Type Definitions (DTDs), Rules for Valid and Well formed XML Documents, Validating XML, XML Schemas, Introduction to JAXP.

RMI:
The RMI Architecture, RMI exceptions, Developing Applications with RMI

JavaMail:
Overview, Mail protocols, JavaMail API, JavaMail Exception, Sending and Receiving Messages

JMS:
Messaging Basics, Importance of JMS, JMS Components, Producing and Consuming Messages

Enterprise Java Beans (EJB):
Introduction to EJB, Entity Beans, Session Beans, and Message driven Beans (Theory only)

Reference Books:

1. Professional Java Server Programming: J2EE 1.4 edition by Allamaraju Shroff Publication
2. Programming with Java Servlets by James Goodwill- Techmedia – SAMS
3. Professional Java Server Programming Volume I and II, Wrox Publication .
4. J2EE Unleashed by Joseph J. Bambara, BPB publications.

2CE505: Web Technology (Elective - I)

Teaching Scheme			Credit			Examination Scheme(Marks)				
						Theory			Prac / Tw	Total
						Int. Ass.	Sem.End			
Lect Hrs	Prac Hrs	Total	Theory	Pra/ Tw	Total		Marks	Hrs.		
3	2	5	3	1	4	30	70	3	50	150

Web Fundamentals:
Introduction to World Wide Web, Web Application, Web Architecture, Web Server, Web Browser, and Internet Protocols: HTTP, Message Format - request message & response message, HTTP Example, Case Study.

Markup Languages: XHTML, DHTML, XML

Extensible HTML:
Introduction to HTML History, Basic of XHTML, Versions of XHTML Syntax and Semantics, Difference between HTML & XHTML

Dynamic HTML:
Introduction, Object refers, Dynamic style, Dynamic position, frames, navigator, Event Handling, Filters and Transitions, Adding shadows, Creating Gradients, Creating Motion with Blur, Data Binding, Simple Data Binding, Moving with a record set, Sorting table data, Binding of an Image and Table.

Extensible Markup Language (XML):
Introduction, HTML Vs XML, Syntax of the XML document, XML Attributes, XML Validation, XML DTD, Building Blocks of XML Documents, DTD Elements, DTD Attributes, DTD Entities, DTD Validation, XSL, XSL Transformation, XML Name spaces, XML Schema.

Asynchronous JavaScript and XML (AJAX):
AJAX Introduction, AJAX Benefits, Asynchronous Communication, Process: XMLHttpObject, Handler, ready state, Sequence Execution Action, AJAX Advanced, AJAX ASP/PHP, AJAX Database, AJAX XML File, AJAX Examples.

PHP:
PHP Introduction, Installation, PHP Syntax, PHP Variables, String, Operators, If...Else, Switch, Arrays, Looping, Functions, Forms, $_GET, $_POST, Date, Include, File, File Upload, Cookies, Sessions, E-mail, Secure E-mail, Error, Exception, Filter, MySQL Connect, MySQL Create, MySQL Insert, MySQL Select, MySQL Where, MySQL Order By, MySQL Update, MySQL Delete, PHP ODBC, case study.

Reference Book:

1. HTML4 BIBLE by Brayn Omdex
2. Pure JavaScript by Gilliam Johnson Techmedia
3. Introduction to web Technology by Uttam K. Roy
4. Programming PHP by Rasmus Lerdorf, Kevin Tatroe & Peter MacIntyre

2CE506: Mobile Application Development

Teaching Scheme			Credit			Examination Scheme(Marks)				
						Theory			Prac / Tw	Total
						Int. Ass.	Sem.End			
Lect Hrs	Prac Hrs	Total	Theory	Prac/ Tw	Total		Marks	Hrs.		
2	2	2	2	1	3	30	70	3	50	150

Introduction to Android:
History of Mobile Software Development, Open Handset Alliance, The Android Platform, Exploring Android SDK, Building First Android application, Android terminologies, Application Context, Application Tasks with Activities, Using Intents

Android Manifest File and Application Resources:
Configuring Android Manifest File, Managing Application's Identity, Enforcing Application System Requirements, Registering Activities and other Application Components, Working with Permissions, Working with Resources

Exploring User Interface Screen Elements:
Introducing Android Views and Layouts, Displaying Text with TextView, Retrieving Data From Users, Using Buttons, Check Boxes and Radio Groups, Getting Dates and Times From Users, Using Indicators to Display Data to Users, Adjusting Progress with SeekBar, Providing Users with Options and Context Menus, Handling User Events, Working with Dialogs, Working with Styles, Working with Themes

Layouts and Animation:
Creating User Interfaces in Android, Organizing User Interface, Using Built-in Layout Classes, Using Built-in View Container Classes, Drawing on the Screen, Working with Text, Working with Bitmaps, Working with Shapes, Working with Animations

Using Android Data and Storage APIs:
Working with Application Preferences, Working with Files and Directories, Storing Structured Data using SQLite Databases

Sharing Data between Applications with Content Providers:
Exploring Android's Content Providers, Modifying Content Providers Data, Enhancing Applications using Content Providers, Acting as a Content Provider, Working with Live Folders

Using Android Networking APIs:
Understanding Mobile Networking Fundamentals, Accessing the Internet (HTTP),

Using Android Web APIs:
Browsing the Web with WebView, Building Web Extensions using WebKit, Working with Flash

Using Android Multimedia APIs:
Working with Multimedia, Working with Still Images, Working with Video, Working with Audio,

Using Android Telephony APIs:
Working with Telephony Utilities, Using SMS, Making and Receiving Phone Calls

Working with Notifications:
Notifying a User, Notifying with Status Bar, Vibrating the Phone, Blinking the Lights, Making Noise, Customizing the Notification, Designing Useful Notification

Lab

Exercise - 01

- Create "Hello World" application. That will display "Hello World" in the middle of the screen in the red color with white background.

Exercise - 02

- To understand Activity, Intent
  - Create sample application with login module.(Check username and password)
  - On successful login, go to next screen. And on failing login, alert user using Toast.
  - Also pass username to next screen.

Exercise - 03

- Create login application where you will have to validate EmailID (UserName). Till the username andpassword is not validated, login button should remain disabled.

Exercise - 04

- Create and Login application as above. On successful login , open browser with any URL.

Exercise - 05

- Create an application that will pass some number to the next screen , and on the next screen that number of items should be display in the list.

Exercise - 06

- Understand resource folders :
  - Create spinner with strings taken from resource folder(res >> value folder).
  - On changing spinner value, change image.

Exercise - 07

- Understand Menu option.
  - Create an application that will change color of the screen, based on selected options from the menu.

Exercise - 08

- Create an application that will display toast(Message) on specific interval of time.

Exercise - 09

- Create a background application that will open activity on specific time.

Exercise - 10

- Create an application that will have spinner with list of animation names. On selecting animation name, that animation should effect on the images displayed below.

Exercise - 11

- Understanding of UI :
  - Create an UI such that, one screen have list of all the types of cars.
  - On selecting of any car name, next screen should show Car details like: name , launched date ,company name, images(using gallery) if available, show different colors in which it is available.

Exercise - 12

- Understanding content providers and permissions:
  - Read phonebook contacts using content providers and display in list.

Exercise - 13

- Read messages from the mobile and display it on the screen.

Exercise - 14

- Create an application to call specific entered number by user in the EditText

Exercise - 15

- Create an application that will create database with table of User credential.

Exercise - 16

- Create an application to read file from asset folder and copy it in memory card.

Exercise - 17

- Create an application that will play a media file from the memory card.

Exercise - 18

- Create an application to make Insert , update , Delete and retrieve operation on the database.

Exercise - 19

- Create an application to read file from the sdcard and display that file content to the screen.

Exercise - 20

- Create an application to draw line on the screen as user drag his finger.

Exercise - 21

- Create an application to send message between two emulators.

Exercise - 22

- Create an application to take picture using native application.

Exercise - 23

- Create an application to pick up any image from the native application gallery and display it on the screen.

Exercise - 24

- Create an application to open any URL inside the application and clicking on any link from that URl should not open Native browser but that URL should open the same screen.

Reference Books:

1. Android Wireless Application Development By Lauren Darcey and Shane Conder, Pearson Education, 2nd ed. (2011)
2. Beginning Android Application Development By Wei-Meng Lee, Wrox Publication
3. Unlocking Android Developer's Guide by Frank Ableson and Charlie Collins and Robi Sen, Manning Publication Co.