COMPUTER ENGINEERING (07) AND INFORMATION TECHNOLOGY (16) DOT NET TECHNOLOGY SUBJECT CODE:2160711 B.E. 6thSEMESTER

Type of course: Elective

Prerequisite: Concepts of Object oriented programming approach

Rationale: Object oriented programming has gain momentum because of the object reuse. .NET provides object oriented development framework. .NET provides a base class library that supports innovative web development. It enables to fulfill varied functions like graphic rendering and file reading. It has all the resources to provide websites with different functionality and manage it smoothly at the same time. .NET provides Consistent programming model, Direct Support for Security, Simplified Development efforts and Easy application deployment and Maintenance.

Teaching and Examination Scheme:

Tea	ching Scl	heme	Credits	Examination Marks						Total
L	Т	Р	С	Theory Marks				Practical N	Marks	Marks
				ESE	PA	A (M)	ES	E (V)	PA	
				(E)	PA	ALA	ESE	OEP	(I)	
4	0	2	6	70	20	10	20	10	20	150

Sr. No.	Content	Total	% Weightage
		Hrs	
1	Introduction to .NET Framework: NET framework, MSIL, CLR,	2	7%
	CLS, CTS, Namespaces, Assemblies The Common Language		
	Implementation, Assemblies, Garbage Collection, The End to DLL Hell		
	- Managed Execution		
2	C# - The Basics and Console Applications in C#: Name Spaces -	4	14
	Constructor and Destructors, Function Overloading & Inheritance,		
	Operator Overloading, Modifiers - Property and Indexers, Attributes &		
	Reflection API, When to use Console Applications - Generating Console		
	Output, Processing Console Input		
3	C#.NET: Language Features and Creating .NET Projects, Namespaces	2	7
	Classes and Inheritance -, Namespaces Classes and Inheritance -, C,		
	Exploring the Base Class Library -, Debugging and Error Handling -,		
	Data Types -, Exploring Assemblies and Namespaces, String		
	Manipulation, Files and I/O, Collections		
4	ADO.NET: Benefits of ADO.NET, ADO.NET compared to classic	3	12
	ADO -, Datasets, Managed Providers -, Data Binding: Introducing Data		
	Source Controls -, Reading and Write Data Using the SqlDataSource		
	Control		
5	Windows Forms and Controls in details: The Windows Forms Model,	2	7
	Creating Windows Forms Windows Forms Properties and Events,		
	Windows Form Controls, Menus - Dialogs – ToolTips		

6	Visual Inheritance in C#.NET: Apply Inheritance techniques to Forms,	2	7
	Creating Base Forms, Programming Derived Forms		
7	Mastering Windows Forms: Printing - Handling Multiple Events,	3	12
	GDI+, Creating Windows Forms Controls		
8	ASP.NET: Introduction to ASP.NET, Working with Web and HTML	3	12
	Controls, Using Rich Server Controls, Login controls, Overview of		
	ASP.NETValidation Controls, Using the Simple Validations, Using the		
	Complex Validators Accessing Data using ADO.NET, Using the		
	Complex Validators Accessing Data using ADO.NET, Configuration		
	Overview		
9	Themes and Master Pages: Creating a Consistent Web Site, ASP.NET	2	7
	2.0 Themes - Master Pages, Displaying Data with the GridView Control		
	Introducing the GridView Control, Filter Data in the GridView Control,		
	Allow Users to Select from a DropDownList in the Grid, Add a		
	Hyperlink to the Grid, Deleting a Row and Handling Errors		
10	Managing State: Preserving State in Web Applications and Page-Level	3	12
	State, Using Cookies to Preserve State, ASP.NET Session State ,Storing		
	Objects in Session State, Configuring Session State, Setting Up an Out-		
	of-Process State Server, Storing Session State in SQL Server, Using		
	Cookieless Session IDs, Application State Using the DataList and		
	Repeater Controls, Overview of List-Bound Controls, Creating a		
	Repeater Control and DataList Control		
11	Creating and Consuming Web Services: The Motivation for XML	2	2
	Web Services, Creating an XML Web Service with Visual Studio,		
	Designing XML Web Services, Creating Web Service Consumers,		
	Discovering Web Services Using UDDI		
12	Advanced in .NET: Introduction to Windows Presentation Foundation	2	1
	(WPF), Window Communication Foundation and its Application		

	Distribution of Theory Marks										
R Level	R Level U Level A Level N Level E Level C Level										
15	20	35	00	00	00						

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

- 1. Christian Nagel, Professional C# .Net, Wrox Publication
- 2. Matthew Macdonald and Robert Standefer, ASP.NET Complete Reference, TMH
- 3. Vijay Mukhi, C# The Basics, BPB Publications

Course Outcome:

After learning the course the students should be able to:

- 1. Use .net framework architecture, various tools, and Validation techniques, use of different templates available in Visual Studio, Implementation and testing strategies in real time applications.
- 2. Use advanced concepts related to Web Services, WCF, and WPF in project development

List of Experiments:

- 1) Write a program to check whether empty query string is entered in Asp .net
- 2) Write a program to change color of Label text control programmatically in Asp .Net
- 3) Write a program to Enable-Disable Textbox and change width of TextBox programmatically in Asp .Net
- 4) Write a program to increase and decrease font size programmatically.
- 5) Write C# code to display the asterisk pattern as shown below:
 - ***** ***** ***** *****
- 6) Write C# code to prompt a user to input his/her name and country name and then the output will be shown as an example below:

Hello Ram from country India!

- 7) Write C# code to do the following
 - Convert binary to decimal
 - Convert decimal to hexadecimal
 - Convert decimal to binary
 - Convert decimal to octal
- 8) Write C# code to convert infix notation to postfix notation.
- 9) Write a C# code to convert digits to words
- 10) Write a C# code to Convert following currency conversion.

Rupees to dollar, frank, euro.

- **11**) Write a C# code to Perform Celsius to Fahrenheit Conversion and Fahrenheit to Celsius conversion.
- 12) Write ASP.Net program to Store Objects in Session State and Storing Session State in SQL Server.

Design based Problems (DP)/Open Ended Problem:

- 1) Design and develop a tool that inspects every web request.
- 2) Develop a powerful cross platform game.

Major Equipment:

Desktop, Laptop

List of Open Source Software/learning website:

www.c-sharpcorner.com/Tutorial.aspx

COMPUTER ENGINEERING (07) ADVANCED JAVA SUBJECT CODE: 2160707 B.E. 6thSEMESTER

Type of course: Core

Prerequisite: NA

Rationale: NA

Teaching and Examination Scheme:

Tea	ching Scl	neme	Credits	Examination Marks						Total
L	Т	Р	С	Theory Marks Practica			Practical N	Aarks	Marks	
				ESE	PA (M)		ESE (V)		PA	
				(E)	PA	ALA	ESE	OEP	(I)	
4	0	2	6	70	20	10	20	10	20	150

Sr. No.	Content	Total	% Weightage
		Hrs	
1	Java Networking Network Basics and Socket overview, TCP/IP client sockets, URL, TCP/IP server sockets, Datagrams, java.net package Socket,	06 Hrs	5
2	ServerSocket, InetAddress, URL, URLConnection JDBC Programming The JDBC Connectivity Model, Database Programming: Connecting to the Database, Creating a SQL Query, Getting the Results, Updating Database Data, Error Checking and the SQLException Class, The SQLWarning Class, The Statement Interface, PreparedStatement, CallableStatement The ResultSet Interface, Updatable Result Sets, JDBC Types, Executing SQL Queries, ResultSetMetaData, Executing SQL Updates, Transaction Management.	08Hrs	10
3	Servlet API and Overview Servlet Model: Overview of Servlet, Servlet Life Cycle, HTTP Methods Structure and Deployment descriptor ServletContext and ServletConfig interface, Attributes in Servelt, Request Dispacher interface The Filter API: Filter, FilterChain, Filter Config Cookies and Session Management: Understanding state and session, Understanding Session Timeout and Session Tracking, URL Rewriting	10 Hrs	25
4	Java Server Pages JSP Overview: The Problem with Servlets, Life Cycle of JSP Page, JSP Processing, JSP Application Design with MVC, Setting Up the JSP Environment	10 hrs	25

	JSP Directives, JSP Action, JSP Implicit Objects JSP Form Processing, JSP Session and Cookies Handling, JSP Session Tracking JSP Database Access, JSP Standard Tag Libraries, JSP Custom Tag, JSP Expression Language, JSP Exception Handling, JSP XML Processing.		
5	Java Server Faces2.0 Introduction to JSF, JSF request processing Life cycle, JSF Expression Language, JSF Standard Component, JSF Facelets Tag, JSF Convertor Tag, JSF Validation Tag, JSF Event Handling and Database Access, JSF Libraries: PrimeFaces	04 Hours	10
6	Hibernate 4.0 Overview of Hibernate, Hibernate Architecture, Hibernate Mapping Types, Hibernate O/R Mapping, Hibernate Annotation, Hibernate Query Language	8 Hrs	15
7	Java Web Frameworks: Spring MVC Overview of Spring, Spring Architecture, bean life cycle, XML Configuration on Spring, Aspect – oriented Spring, Managing Database, Managing Transaction	08 Hrs	10

	Distribution of Theory Marks									
R Level	R Level U Level A Level N Level E Level C Level									
10	30	30	-	-	-					

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

- 1. Black Book "Java server programming" J2EE, 1st ed., Dream Tech Publishers, 2008. 3. Kathy walrath "
- 2. Complete Reference J2EE by James Keogh mcgraw publication
- 3. Professional Java Server Programming by Subrahmanyam Allamaraju, Cedric Buest Wiley Publication
- 4. SCWCD, Matthew Scarpino, Hanumant Deshmukh, Jignesh Malavie, Manning publication
- 5. Core Java, Volume II: Advanced Features by Cay Horstmann and Gary Cornell Pearson Publication
- 6. Java Persistence with Hibernate by Christian Bauer, Gavin King
- 7. Spring in Action 3rd edition, Craig walls, Manning Publication
- 8. Hibernate 2nd edition, Jeff Linwood and Dave Minter, Beginning Après publication
- 9. Java Server Faces in Action, Kito D. Mann, Manning Publication
- 10. JDBC[™] API Tutorial and Reference, Third Edition, Maydene Fisher, Jon Ellis, Jonathan Bruce, Addison Wesley
- 11. Beginning JSP, JSF and Tomcat, Giulio Zambon, Apress
- 12. JSF2.0 CookBook, Anghel Leonard, PACKT publication

Course Outcome:

Upon completion of this course, students will be able to do the following:

- 1. Use various tools, and Validation techniques, use of different templates available in IntelliJ IDEA, Implementation and testing strategies in real time applications.
- 2. Use advanced concepts related to Web Services, spring and Hibernate.

List of Experiments:

Socket Programming(TCP/UPD)

- 1) Create chat application using either TCP or UDP protocol.
- 2) Implement TCP Server for transferring files using Socket and ServerSocket
- 3) Implement any one sorting algorithm using TCP/UDP on Server application and Give Input On Client side and client should sorted output from server and display sorted on input side.
- 4) Implement Concurrent TCP Server programming in which more than one client can connect and communicate with Server for sending the string and server returns the reverse of string to each of client
- 5) Write RMI application where client supplies two numbers and server response by summing it. Provide your custom security policy for this application.
- 6) Implement Student information system using JDBC and RMI.

JDBC/Servlet

- 7) Create Servlet file which contains following functions:
 - 1. Connect 2. Create Database 3. Create Table 4. Insert Records into respective table 5. Update records of particular table of database 6. Delete Records from table. 7. Delete table and also database.
- 8) User can create a new database and also create new table under that database. Once database has been created then user can perform database operation by calling above functions. Use following Java Statement interface to implement program:
 - 1. Statement 2. Prepared statement 3. Callable statement
- 9) Create Servlet file and study web descriptor file.
- 10) Create login form and perform state management using Cookies, HttpSession and URL Rewriting.
- 11) Implement Authentication filter using filter API.
- 12) Create database of student subject-wise data and retrieve all data using JSP and generate xml structure along with DTD and XML Schema definition
- 13) Refer Practical 11 and apply XSLT (Style) to generated xml document and print your result.
- 14) Create web service which provides student information.
- 15) Create Web Service client which consume above service and display student data by entering student id.
- 16) Study and implement Hibernate
- 17) Study and Implement MVC using Spring Framework

Design based Problems (DP)/Open Ended Problem:

 Using J2EE JSP/Servlet API develop student's management system required to manage student's academic activity such as student's profile, student's day to day assignment submission as per instructions and assignment given by teacher. Provide MVC based interface using spring framework and do the database design using Hibernet framework and also provide two login roles one for teachers providing assignment and notification for class and other for students to submit their assignments and can view notices published by teachers

2) Develop the students blog and online forum where various group of students can do discussion on various academic and non-academic but technical topics discussions group where all of college teachers can provide comments and likes and dislikes. Use Spring base and Hibernet technology for MVC framework and database design respectively

COMPUTER ENGINEERING (07) COMPUTER GRAPHICS SUBJECT CODE: 2160703 B.E. 5th SEMESTER

Type of course: Under Graduate

Prerequisite: C, C++, Linear algebra, Matrices

Rationale: To understand the basics of various inputs and output computer graphics hardware devices as well as the course will offers an in-depth exploration of fundamental concepts in 2D and 3D computer graphics. After introducing 2D raster graphics techniques, the course focuses on 3D modeling, geometric transformations, 3D viewing and rendering. This course presents an introduction to computer graphics designed to give the student an overview of fundamental principles.

Teaching and Examination Scheme:

Tea	ching Sch	neme	Credits	Examination Marks					Total	
L	Т	Р	С	Theory Marks Practi			Practical	Marks	Marks	
				ESE	E PA (M)		ESE (V)		PA	
				(E)	PA	ALA	ESE	OEP	(I)	
4	0	2	6	70	20	10	20	10	20	150

Sr.	Content	Tota	%
No.		I Hrs	Weightag
1	Basic of Computer Graphics:	06	15
	Basic of Computer Graphics, Applications of computer graphics, Display devices,		
	Random and Raster scan systems, Graphics input devices, Graphics software and		
	standards		
2	Graphics Primitives:	08	20
	Points, lines, circles and ellipses as primitives, scan conversion algorithms for		
	primitives, Fill area primitives including scan-line polygon filling, inside-outside		
	test, boundary and flood-fill, character generation, line attributes, area-fill		
	attributes, character attributers.		
3	2D transformation and viewing:	08	20
	Transformations (translation, rotation, scaling), matrix representation,		
	homogeneous coordinates, composite transformations, reflection and shearing,		
	viewing pipeline and coordinates system, window-to-viewport transformation,		
	clipping including point clipping, line clipping (cohen-sutherland, liang- bersky,		
	NLN), polygon clipping	0.5	1.7
4	3D concepts and object representation:	06	15
	3D display methods, polygon surfaces, tables, equations, meshes, curved lies and		
	surfaces, quadric surfaces, spline representation, cubic spline interpolation		
	methods, Bazier curves and surfaces, B-spline curves and surfaces	0.0	20
5	3D transformation and viewing:	08	20
	3D scaling, rotation and translation, composite transformation, viewing pipeline		
	and coordinates, parallel and perspective transformation, view volume and general		
	(parallel and perspective) projection transformations		1.0
6	Advance topics:	06	10

visible surface detection concepts, back-face detection, depth buffer method,	
illumination, light sources, illumination methods (ambient, diffuse reflection,	
specular reflection), Color models: properties of light, XYZ, RGB, YIQ and CMY	
color models	

	Distribution of Theory Marks									
R Level	U Level	A Level	N Level	E Level	C Level					
15	20	15	10	5	5					

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

- 1. Computer Graphics, D.Hearn And P.Baker Pearson Eduction C Version
- 2. Computer Graphics, with OpenGL Hearn and Baker, Pearson
- 3. Computer Graphics, Sinha & Udai, TMH
- 4. Computer Graphics, Foley and van Dam Person Education

Course Outcome:

After learning the course the students should be able to:

- 1. To understand the various computer graphics hardware and display technologies.
- 2. 2D and 3D viewing technologies
- 3. Various 2D and 3D objects transformation techniques.

List of Experiments:

- 1. To study the various graphics commands in C language.
- 2. Develop the DDA Line drawing algorithm using C language
- 3. Develop the Bresenham's Line drawing algorithm using C language
- 4. Develop the Bresenham's Circle drawing algorithm using C language
- 5. Develop the C program for to display different types of lines
- 6. Perform the following 2D Transformation operation Translation, Rotation and Scaling
- 7. Perform the Line Clipping Algorithm
- 8. Perform the Polygone clipping algorithm
- 9. Perform the following tasks using MATLAB commands.
 - Read the grayscale and color image.
 - Display images on the computer monitor
 - Write images in your destination folder.
- 10. Generate the complement image using MATLAB.

Design based Problems (DP)/Open Ended Problem:

1. By using the various geometrics transformation techniques, students can develop the various gaming software and also able to perform the animation concept.

Major Equipment:

1. Computer systems with high RAM.

List of Open Source Software/learning website:

- 1. GIMP GNU Image Manipulation Program
- 2. Inkscape Open Source vector graphics editor
- 3. C Compiler

Com orton V	Nomester VI												
Subject	Subject name	Teaching Scheme (Hours)			Credits	Theory Marks		Tutorial/ Practical Marks		Total	Branch		
code		Theory	Tutorial	Practical	creans	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code		
<u>2160101</u>	Aerodynamics II	4	0	2	6	70	30	30	20	150	1		
<u>2160102</u>	Fundamentals of Jet Propulsion	3	1	0	4	70	30	30	20	150	1		
<u>2160109</u>	Theory of Vibration	3	0	2	5	70	30	30	20	150	1		
<u>2160104</u>	Basic Control Theory	3	0	2	5	70	30	30	20	150	1		
<u>2160106</u>	Avionics	3	0	2	5	70	30	30	20	150	1		
<u>2160110</u>	Aviation Meterology, Navigation and Communication	0	0	2	2	0	0	80	20	100	1		
	Department Elective I	2	0	0	2	70	30	0	0	100	1		
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	1		
	Total	18	1	13	32								

	Departmental Elective I:										
2160107	Airport and Operations Management										
2160108	Aviation Management										

	Automobile Engineering (02)												
Semester V	Semester VI												
Subject	Subject name	Teaching Scheme (Hours)			Crodite	Theory Marks		Tutorial/ Practical		Total	Branch		
code	Subject name	Theory	Tutorial	Practical	Creatis	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code		
<u>2160207</u>	Alternative fuel and power systems	3	0	2	5	70	30	30	20	150	2		
<u>2161903</u>	Computer Aided Design	3	0	2	5	70	30	30	20	150	2		
<u>2161908</u>	Refrigeration and Air Conditioning	3	0	2	5	70	30	30	20	150	2		
<u>2160205</u>	Automobile Chassis and Body Engineering	3	0	0	3	70	30	0	0	100	2		
<u>2160208</u>	Automotive computer controlled Systems	3	0	2	5	70	30	30	20	150	2		
<u>2161901</u>	Dynamics of Machinery	3	0	2	5	70	30	30	20	150	2		
2160001	Design Engineering - II B	0	0	3	3	0	0	80	20	100	2		
	Total	18	0	13	31								

Aeronautical Engineering (01)

Bio-Medical(03)

Semester VI

Subject	Subject name	Teaching Scheme (Hours)			Credits	Theory Marks		Tutorial/ Practical Marks		Total	Branch
code		Theory	Tutorial	Practical		ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
<u>2160301</u>	Diagnostic Instrumentation	4	0	2	6	70	30	30	20	150	3
<u>2160307</u>	Embedded system Design	4	0	2	6	70	30	30	20	150	3
2160303	Therapeutic Techniques & Instrumentation	4	0	2	6	70	30	30	20	150	3
<u>2160308</u>	Biomechanics	3	2	0	5	70	30	30	20	150	3
	Department Elective - I	3	0	2	5	70	30	30	20	150	3
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	3
	Total	18	2	11	31						

	Departmental Elective I:
<u>2160309</u>	Introduction to Issue Engineering
<u>2160310</u>	Rehabiliation Engineering

	Bio-Technology(04)												
Semester V	/I												
Subject	Subject name	Teaching Scheme (Hours)			Credits	Theory	Marks	Tutorial/ Practical Marks		Total	Branch		
code		Theory	Tutorial	Practical		ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code		
<u>2160409</u>	Nano-Biotechnology - Department Elective I	3	2	0	5	70	30	30	20	150	4		
<u>2160410</u>	Bioinformatics - Department Elective I	3	0	2	5	70	30	30	20	150	4		
<u>2160401</u>	Advanced Molecular Biology-II	3	0	0	3	70	30	0	0	100	4		
<u>2160407</u>	Instrumentation and Control for Bioengineering	4	0	3	7	70	30	30	20	150	4		
<u>2160405</u>	Principles of Process Engineering-III	3	0	3	6	70	30	30	20	150	4		
<u>2160408</u>	Agriculture and Food Biotechnology	3	0	3	6	70	30	30	20	150	4		
2160001	Design Engineering-II B	0	0	3	3	0	0	80	20	100	4		
	Total	19	2	14	35								

Semester VI

Theory Marks Teaching Scheme (Hours) Marks Subject Total Branch Subject name Credits Practical code Tutorial ESE(E) PA (M) Viva (V) PA(I) Theory Marks Code Mass Transfer Operation - II 2160503 Process Equipment Design -I Pollution Control, Safety & Health Management Chemical Reaction Engineering - I Department Elective - I Design Engineering - II B Total

Chemical Engineering (05)

	Departmental Elective I										
<u>2160507</u>	Advance Separation Techniques										
<u>2160508</u>	Biochemical Engineering										
<u>2160509</u>	Biotechnology										

	Civil Engineering (06)											
Semester VI												
Subject	Subject name	Teachi	ng Scheme (Hours)	Credits	Theory	Marks	Ma	rks	Total	Branch	
code	Subject name	Theory	Tutorial	Practical	Creuits	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code	
<u>2160601</u>	Advanced Construction and Equipments	3	1	0	4	70	30	30	20	150	6	
<u>2160602</u>	Applied Fluid Mechanics	3	0	2	5	70	30	30	20	150	6	
2160603	Railway, Bridge & Tunnel Engineering	3	1	0	4	70	30	30	20	150	6	
<u>2160604</u>	Water & Waste Water Engineering	3	0	2	5	70	30	30	20	150	6	
<u>2160607</u>	Elementary Structural Design	4	1	0	5	70	30	30	20	150	6	
	Departmental Elective - I	3	1	0	4	70	30	30	20	150	6	
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	6	
	Total	19	4	7	30							

	Departmental Elective I:										
<u>2160608</u>	Urban Transportation system										
2160609	Computational Mechanics										

Computer Engineering (07), Computer Science & Engineering (31)

Semester VI	
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Subject	Subject name	Teachi	ng Scheme ((Hours)	Credits	Theory Marks		Tutorial/ Practical Marks		Total	Branch
code		Theory	Tutorial	Practical		ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
<u>2160701</u>	Software Engineering	4	0	2	6	70	30	30	20	150	7
<u>2160707</u>	Advanced Java	4	0	2	6	70	30	30	20	150	7
<u>2160704</u>	Theory of Computation	3	0	0	3	70	30	0	0	100	7
2160708	Web Technology	3	0	2	5	70	30	30	20	150	7
	Departmental Elective I	4	0	2	6	70	30	30	20	150	7
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	7
	Total	18	0	11	29						
	Departmental Elective I										
<u>2160703</u>	Computer Graphics										
2160709	Embedded & VLSI Design										
2160710	Distributed operating system										
2160711	.Net Technology]									

	Electrical & Electronics Engineering (08)											
Semester V	/I											
Subject	Subject name	Teaching Scheme (Hours)			Credits	Theory Marks		Tutorial/ Practical Marks		Total	Branch	
coue		Theory	Tutorial	Practical		ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code	
	Departmental Elective - I	3	0	2	5	70	30	30	20	150	8	
<u>2160912</u>	Design of DC Machines and Transformer	3	0	2	5	70	30	30	20	150	8	
<u>2160908</u>	Electrical Power system – II	3	0	2	5	70	30	30	20	150	8	
<u>2160902</u>	Power Electronics – II	3	0	2	5	70	30	30	20	150	8	
<u>2160807</u>	Digital Control System	4	0	2	6	70	30	30	20	150	8	
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	8	
	Total	17	0	13	30							
	Departmental Elective I:		-				-					
<u>2160909</u>	Advance Microcontrollers											
2160913	Control of Electrical Drives]										
2160808	Robotics Programming and Applications]										

Electrical Engineering (09)											
Semester V	/I										
Subject	Subject name	Teachi	ng Scheme (Hours)	Credits	Theory	Marks	Tutorial/ Ma	Practical rks	Total	Branch
code		Theory	Tutorial	Practical		ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
<u>2160902</u>	Power Electronics – II	3	0	2	5	70	30	30	20	150	9
<u>2160912</u>	Design of DC Machines and Transformer	3	0	2	5	70	30	30	20	150	9
<u>2160904</u>	High Voltage Engineering	3	0	2	5	70	30	30	20	150	9
<u>2160907</u>	Utilization of Electrical Energy and Traction	3	0	0	3	70	30	0	0	100	9
<u>2160908</u>	Electrical Power system – II	3	0	2	5	70	30	30	20	150	9
	Departmental Elective - I	3	0	2	5	70	30	30	20	150	9
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	9
	Total	18	0	13	31						
	Departmental Elective I:										
<u>2160909</u>	Advance Microcontrollers										
2160913	Control of Electrical Drives										
2160911	Computer Aided Analysis and Design for Electrical E	ingg.									
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Semester V	VI										
Subject	Subject name	Teachi	ng Scheme ((Hours)	Credits	Theory	Marks	/Tutorial Ma	Practical rks	Total	Branch
code		Theory	Tutorial	Practical		ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
2161001	Digital Communication	4	0	2	6	70	30	30	20	150	10
2161003	Antenna & Wave Propagation	4	0	2	6	70	30	30	20	150	10
2161006	Power Electronics Devices and Circuits	3	0	2	5	70	30	30	20	150	10
2161007	Digital Control	4	0	2	6	70	30	30	20	150	10
	Departmental Elective - I	4	0	2	6	70	30	30	20	150	10
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	10
	Total	19	0	13	32						
	Departmental Elective I:										
2161005	Optical Communication										
2161004	VLSI Design										
2161008	Optoelectronics										
2161009	Telecommunication Switching and Applications										

Electronics & Communication Engineering (11), Electronics & Telecommunication Engineering (12)

Semester V	Π										
Subject	Subject name	Teachi	Teaching Scheme (Hours)		Credits	Theory Marks		Tutorial/ Practical Marks		Total	Branch
code	5	Theory	Tutorial	Practical		ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
<u>2161001</u>	Digital Communication	4	0	2	6	70	30	30	20	150	11
<u>2161003</u>	Antenna & Wave Propagation	4	0	2	6	70	30	30	20	150	11
<u>2161005</u>	Optical Communication	4	0	2	6	70	30	30	20	150	11
<u>2161101</u>	VLSI Technology & Design	4	0	2	6	70	30	30	20	150	11
	Departmental Elective - I	3	0	2	5	70	30	30	20	150	11
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	11
	Total	19	0	13	32						
	Departmental Elective I:										
<u>2161102</u>	Advanced Microprocessor										
<u>2161006</u>	Power Electronics Devices and Circuits										
<u>2161103</u>	Telecommunication Switching systems and Networks										

	Environmental Engineering (13), Environmental Science & Engineering(37)										
Semester V	Ί										
Subject	Subject name	Teachi	ng Scheme ((Hours)	Credits	Theory	Marks	Tutorial/ Ma	Practical rks	Total	Branch
code	U	Theory	Tutorial	Practical		ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
2161302	Fundamentals of Air Pollution	3	0	2	5	70	30	30	20	150	13
<u>2161304</u>	Biological Processes for Wastewater Treatment	4	2	0	6	70	30	30	20	150	13
<u>2161305</u>	Occupational Health and Safety	3	2	0	5	70	30	30	20	150	13
<u>2161306</u>	Design of Water Treatment Units	4	2	0	6	70	30	30	20	150	13
	Departmental Elective - I	3	2	0	5	70	30	30	20	150	13
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	13
	Total	17	8	5	30						
	Departmental Elective I:										
2161303	Estimating, Specifications & Project Management										
2161307	Ground Water Contamination										

Food Processing & Technology (14)

Semester V	Semester VI										
Subject code	Subject name	Teachi	ng Scheme (Hours)	Credits	Theory	Marks	/Tutorial Ma	Practical rks	Total	Branch
code		Theory	Tutorial	Practical		ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
<u>2161401</u>	Food Process Equipment Design	4	2	0	6	70	30	30	20	150	14
<u>2161403</u>	Food Engineering Operations - II	4	0	2	6	70	30	30	20	150	14
<u>2161406</u>	Food Refrigeration & Air - Conditioning	4	0	2	6	70	30	30	20	150	14
<u>2161409</u>	Bakery and Confectionary Technology	4	0	2	6	70	30	30	20	150	14
	Department Elective-I	4	0	2	6	70	30	30	20	150	14
2160001	Design Engineering - II B	0	0	3	3	0	0	80	20	100	14
	Total	20	2	11	33						

	Departmental Elective I:											
<u>2161408</u>	Food Fermentation Technology											
2161407	Food Plant Utilities & Sanitation											

	Industrial Engineering (15)											
Semester VI												
Subject	Subject nome	Teachi	ng Scheme (Hours)	Credits	Theory Marks		Marks		Total	Branch	
code	Subject name	Theory	Tutorial	Practical	Creuits	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code	
<u>2161501</u>	Materials Management	4	0	2	6	70	30	30	20	150	15	
<u>2161502</u>	Product Development & Value Engineering	4	0	2	6	70	30	30	20	150	15	
<u>2161503</u>	Finance Management & Cost Control	4	2	0	6	70	30	30	20	150	15	
<u>2161504</u>	Metal Cutting & Advanced manufacturing processes	4	0	2	6	70	30	30	20	150	15	
	Departmental Elective - I	4	0	2	6	70	30	30	20	150	15	
2160001	Design Engineering - II B	0	0	3	3	0	0	80	20	100	15	
	Total	20	2	11	33							

	Departmental Elective I										
<u>2161505</u>	Maintenance & Safety Engg										
2161506	Total Productive Maintenance										

Information Technology (16)											
Semester V	Semester VI										
Subject	t Subject nome		Teaching Scheme (Hours)		Cuadita	Theory	Theory Marks		Tutorial/ Practical		Branch
code	Subject name	Theory	Tutorial	Practical	Creatis	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
<u>2160701</u>	Software Engineering	4	0	2	6	70	30	30	20	150	16
<u>2160707</u>	Advanced Java	4	0	2	6	70	30	30	20	150	16
<u>2160708</u>	Web Technology	3	0	2	5	70	30	30	20	150	16
<u>2161603</u>	Data Compression and data Retrival	3	0	2	5	70	30	30	20	150	16
	Departmental Elective - I	4	0	2	6	70	30	30	20	150	16
2160001	Design Engineering - II B	0	0	3	3	0	0	80	20	100	16
	Total	18	0	13	31						

Departmental Elective I									
<u>2161604</u>	Image processing								
<u>2160709</u>	Embedded & VLSI Design								
<u>2160710</u>	Distributed operating system								
<u>2160711</u>	.Net Technology								

	Instrumentation & Control Engineering (17)										
Semester V	/I										
Subject	Subject name	Teachi	ng Scheme (Hours)	Credits	Theory Marks		Tutorial/ Practical Marks		Total	Branch
code	,	Theory	Tutorial	Practical		ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
	Departmental Elective - I	4	0	2	6	70	30	30	20	150	17
<u>2161707</u>	Control System Design	4	0	2	6	70	30	30	20	150	17
<u>2161708</u>	Power Electronics	3	0	2	5	70	30	30	20	150	17
<u>2161704</u>	Analog and Digital communication	3	0	2	5	70	30	30	20	150	17
<u>2161709</u>	Programmable Logic Controller	4	0	2	6	70	30	30	20	150	17
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	17
	Total	18	0	13	31						
	Departmental Elective I:										
2161711	Environmental Instrumentation										
2161712	Bio-Potential Instrumentation										

		Μ	echanical	Engineeri	ing (19)						
Semester V	Л										
Subject	Subject name	Teaching Scheme (Hours)			Credits	Theory Marks		Tutorial/ Practical Marks		Total	Branch
code		Theory	Tutorial	Practical		ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
<u>2161901</u>	Dynamics of Machinery	3	0	2	5	70	30	30	20	150	19
<u>2161902</u>	Internal Combustion Engines	3	0	2	5	70	30	30	20	150	19
<u>2161903</u>	Computer Aided Design	3	0	2	5	70	30	30	20	150	19
<u>2161907</u>	Industrial Engineering	3	0	2	5	70	30	30	20	150	19
<u>2161908</u>	Refrigeration and Airconditioning	3	0	2	5	70	30	30	20	150	19
<u>2161909</u>	Production Technology	3	0	2	5	70	30	30	20	150	19
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	19
	Total	18	0	15	33						

Semester V	VI										
Subject	Subject nome	Teaching Scheme (Hours)			Cradite	Theory Marks		Marks		Total	Branch
code	Subject name	Theory	Tutorial	Futorial Practical Credits	Creans	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
<u>2162003</u>	Control of Electric Drives	4	0	2	6	70	30	30	20	150	20
<u>2162004</u>	Hydraulic & Pneumatic Systems	4	0	2	6	70	30	30	20	150	20
<u>2162005</u>	Electro Mechanical Measurements & Instruments	4	0	2	6	70	30	30	20	150	20
<u>2162001</u>	Design of Mechanisms - I	4	0	2	6	70	30	30	20	150	20
	Departmental Elective - I	3	0	2	5	70	30	30	20	150	20
2160001	Design Engineering - II B	0	0	3	3	0	0	80	20	100	20
	Total	19	0	13	32						

	Departmental Elective I											
2162006	Computer Aided Design for Mechatronics											
<u>2162007</u>	Metrology and Product Engineering											
<u>2161907</u>	Industrial Engineering											

	Metallurgy Engineering (21)												
Semester V	/I												
Subject	Cold to star source	Teaching Scheme (Hours)			G 1 ¹	Theory Marks		Marks		Total	Branch		
code	Subject name	Theory	Tutorial	Practical	Credits	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code		
<u>2162103</u>	Powder Metallurgy	4	0	2	6	70	30	30	20	150	21		
<u>2162106</u>	Foundry Technology	4	0	2	6	70	30	30	20	150	21		
<u>2162107</u>	Heat Treatment	4	0	2	6	70	30	30	20	150	21		
<u>2162108</u>	Material Degradation and Prevention	4	0	2	6	70	30	30	20	150	21		
<u>2162109</u>	Metal Joining Processes	4	0	2	6	70	30	30	20	150	21		
<u>2160001</u>	Design Engineering -II B	0	0	3	3	0	0	80	20	100	21		
	Total	20	0	13	33								

			Mining E	ngineerin	g (22)						
Semester V	Ί										
Subject	Subject name	Teaching Scheme (Hours)			Cradita	Theory Marks		Marks		Total	Branch
code	Subject name	Theory	Tutorial	Practical	Creatis	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
<u>2162202</u>	Underground Metal Mining	4	0	2	6	70	30	30	20	150	22
<u>2162204</u>	Mine Hazards	3	0	2	5	70	30	30	20	150	22
<u>2162205</u>	Mine Surface Environment	4	0	2	6	70	30	30	20	150	22
<u>2162206</u>	Computer Application Mining	2	0	0	2	70	30	0	0	100	22
<u>2162207</u>	Mine Ventilation	3	0	2	5	70	30	30	20	150	22
	Departmental Elective - I	4	0	2	6	70	30	30	20	150	22
2160001	Design Engineering - II B	0	0	3	3	0	0	80	20	100	22
	Total	20	0	13	33						

Departmental Elective I									
<u>2162201</u>	Ecology Geology-I								
<u>2162208</u>	Minine Electrical Engineering								

			Plastic Te	echnology	(23)						
Semester V	/I										
Subject	Subject name	Teaching Scheme (Hours)			Credits	Theory Marks		Tutorial/ Practical Marks		Total	Branch
code		Theory Tutorial Practical	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code			
<u>2162303</u>	Plastic Process Instrumentation and Process Control	3	0	2	5	70	30	30	20	150	23
2162306	Seminar-2	0	0	4	4	0	0	80	20	100	23
<u>2162307</u>	Testing and Identification of Plastic Materials	3	0	2	5	70	30	30	20	150	23
<u>2162308</u>	Advance Plastics Processing	3	0	2	5	70	30	30	20	150	23
<u>2162304</u>	Polymer reaction engineering and Rheology	3	0	2	5	70	30	30	20	150	23
	Departmental Elective - I	3	0	3	6	70	30	30	20	150	23
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	23
	Total	15	0	18	33						
	Departmental Elective I:										
<u>2162310</u>	Plastic Packaging Technology										
2162311	Biopolymers										

			Power E	lectronics	(24)						
Semester V	VI										
Subject	Subject nome	Teaching Scheme (Hours)			Credita	Theory Marks		Marks		Total	Branch
code	Subject name	Theory	Tutorial	Practical	Creans	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
2162408	Simulation Tools	0	0	2	2	0	0	80	20	100	24
2162404	Industrial Drives & Control-I	4	0	2	6	70	30	30	20	150	24
2162406	Power Electronics Practice-II	0	0	4	4	0	0	80	20	100	24
2162407	Electrical Power Utilization & Traction	4	0	0	4	70	30	0	0	100	24
<u>2162409</u>	Power Electronic Circuits – II	4	0	2	6	70	30	30	20	150	24
	Dept. Elective – I	4	0	2	6	70	30	30	20	150	24
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	24
	Total	16	0	15	31						
	Departmental Elective I:										
<u>2162410</u>	Industrial Communication System										
2162411	High Voltage Engineering (Power Electronics)										
2162412	Programmable Logic Devices & Applications										

			Produ	uction (25))						
Semester V	/I										
Subject	Subject nome	Teachi	Teaching Scheme (Hours)			Theory Marks		Marks		Total	Branch
code	Subject name	Theory	Tutorial	Practical	Credits	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
<u>2162506</u>	Metal Joining Technology	4	0	2	6	70	30	30	20	150	25
<u>2161903</u>	Computer Aided Design	3	0	2	5	70	30	30	20	150	25
<u>2162507</u>	Allied Manufacturing Technique	4	0	2	6	70	30	30	20	150	25
<u>2162508</u>	Metal Forming Technology	4	0	2	6	70	30	30	20	150	25
	Departmental Elective - I	3	1	0	4	70	30	30	20	150	25
<u>2160001</u>	Design Engineering II B	0	0	3	3	0	0	80	20	100	25
	Total	18	1	11	30						

	Departmental Elective I:											
<u>2162509</u>	Plant Maintenance and Safety Engg.											
<u>2162505</u>	Estimating and Costing											

			Rubber to	echnology	(26)						
Semester V	/I										
Subject	Subject name	Teaching Scheme (Hours)			Credits	Theory Marks		Marks		Total	Branch
code		Theory	Tutorial	Practical		ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
<u>2162601</u>	Rubber Compound & Product Testing	3	0	3	6	70	30	30	20	150	26
<u>2162602</u>	Synthetic Rubbers	3	0	3	6	70	30	30	20	150	26
<u>2162603</u>	Rubber Equipment Design-I	3	0	3	6	70	30	30	20	150	26
<u>2162604</u>	Characterisation of Rubber	3	0	3	6	70	30	30	20	150	26
	Departmental Elective - I	3	0	3	6	70	30	30	20	150	26
2160001	Design Engineering-II B	0	0	3	3	0	0	80	20	100	26
	Total	15	0	18	33						

Departmental Elective I:										
<u>2162605</u>	Thermoplastics Elastomers & Polymer Blends									
<u>2162606</u>	Corrosion of Polymers & Elastomers									

	Textile Processing (28)											
Semester V	Ί											
Subject		Teachi	ng Scheme ((Hours)	C 1!4-	Theory Marks		Marks		Total	Branch	
code	Subject name	Theory	Tutorial	Practical	Credits	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code	
<u>2162801</u>	Technology of Dyeing - II	3	0	2	5	70	30	30	20	150	28	
<u>2162802</u>	Analytical Textile Chemistry -II	3	0	2	5	70	30	30	20	150	28	
<u>2162804</u>	Technology of Printing - I	3	0	3	6	70	30	30	20	150	28	
<u>2162805</u>	Technology of Finishing - I	3	0	2	5	70	30	30	20	150	28	
<u>2162806</u>	Physical Characteristics of textile fibre	3	0	0	3	70	30	0	0	100	28	
	Department Elective I	3	0	2	5	70	30	30	20	150	28	
2160001	Design Engineering - II B	0	0	3	3	0	0	80	20	100	28	
	Total	18	0	14	32							

Departmental Elective I:											
2162807	Chemical & Physical Analysis of Textiles										
2162808	Manufacturing & Applications of Polymeric Materials										

	Textile Technology (29)												
Semester V	Semester VI												
Subject	Subject nome	Teachi	ng Scheme (Hours)	Cradita	Theory Marks		Marks		Total	Branch		
code	Subject name	Theory	Tutorial	Practical	Creuits	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code		
<u>2162903</u>	Physical Testing-II	3	0	2	5	70	30	30	20	150	29		
<u>2162904</u>	Technical Textile-I	3	2	0	5	70	30	30	20	150	29		
<u>2162906</u>	Fabric Structure-II	4	0	2	6	70	30	30	20	150	29		
<u>2162907</u>	Weaving Technology-III	3	0	2	5	70	30	30	20	150	29		
<u>2162908</u>	Modern Yarn Production Technologies	3	0	0	3	70	30	0	0	100	29		
	Departmental Elective - I -	3	0	2	5	70	30	30	20	150	29		
2160001	Design Engineering - II B	0	0	3	3	0	0	80	20	100	29		
	Total	19	2	11	32								

	Departmental Elective I:									
<u>2162909</u>	Knitting Technology									
<u>2162910</u>	Woolen and Worsted Spinning									

	Information & Communication Technology (32)											
Semester V	emester VI											
Subject	Subject nome	Teachi	ng Scheme (Hours)	Credita	Theory Marks		Marks		Total	Branch	
code	e Subject name		Tutorial	Practical	Creans	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code	
<u>2163206</u>	Analog and Digital Communication (ICT)	4	0	2	6	70	30	30	20	150	32	
<u>2163201</u>	Operation Research	4	0	2	6	70	30	30	20	150	32	
<u>2160708</u>	Web Technology	3	0	2	5	70	30	30	20	150	32	
<u>2163203</u>	Engineering Electromagnetics & wave Progogation	4	0	2	6	70	30	30	20	150	32	
	Departmental Elective - I	4	0	2	6	70	30	30	20	150	32	
<u>2160001</u>	Design Engineering - II B	0	0	3	3	0	0	80	20	100	32	
	Total	19	0	13	32							

	Departmental Elective I									
<u>2161005</u>	Optical Communication									
<u>2163204</u>	Telecommunication Engineering									
<u>2163205</u>	Advance N/w Protocols									

	Manufacturing Engineering(34)											
Semester V	emester VI											
Subject	Subject nome	Teachi	ng Scheme (Hours)	Credite	Theory Marks		Marks		Total	Branch	
code	Subject name	Theory	Tutorial	Practical	Creatis	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code	
<u>2162506</u>	Metal Joining Technology	4	0	2	6	70	30	30	20	150	34	
<u>2161903</u>	Computer Aided Design	3	0	2	5	70	30	30	20	150	34	
<u>2161907</u>	Industrial Engineering	3	0	2	5	70	30	30	20	150	34	
<u>2162508</u>	Metal Forming Technology	4	0	2	6	70	30	30	20	150	34	
	Departmental Elective - I	3	1	0	4	70	30	30	20	150	34	
<u>2160001</u>	Design Engineering II B	0	0	3	3	0	0	80	20	100	34	
	Total	17	1	11	29							

	Departmental Elective I											
<u>2162509</u>	Plant Maintenance and Safety Engg.											
2163407	Plastic Manufacturing Technology											

	Environmental Science and Technology (35)											
Semester V	VI IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII											
Subject	Subject name	Teachi	ng Scheme (Hours)	Credits	Theory Marks		Tutorial/ Practical		Total	Branch	
code	Subject name	Theory	Tutorial	Practical	cituits	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code	
<u>2163506</u>	Unit Operations-II	4	0	2	6	70	30	30	20	150	35	
<u>2163507</u>	Environmental Management-II	3	1	0	4	70	30	30	20	150	35	
<u>2163508</u>	Basics of Thermodynamics & Kinetics	3	1	2	6	70	30	30	20	150	35	
<u>2163509</u>	Liquid Effluent Treatment – II	4	0	3	7	70	30	30	20	150	35	
<u>2163505</u>	Solid & Hazardous Wastes - Characterization & Treatment	4	0	3	7	70	30	30	20	150	35	
<u>2160001</u>	Design Engineering II B	0	0	3	3	0	0	80	20	100	35	
	Total	18	2	13	33							
Chemical Technology (36)												
Semester VI												
Subject	Subject nome	Teaching Scheme (Hours)			Cradita	Theory Marks		Marks		Total	Branch	
code	Subject name	Theory	Tutorial	Practical	cituits	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code	
<u>2163609</u>	Basics of Mass Transfer	3	0	2	5	70	30	30	20	150	36	
<u>2163610</u>	Analytical techniques	3	0	2	5	70	30	30	20	150	36	
<u>2163611</u>	Chemical Engineering Thermodynamics & Kinetics	3	1	2	6	70	30	30	20	150	36	
	Department Elective-V	4	0	3	7	70	30	30	20	150	36	
	Department Elective-VI	4	0	3	7	70	30	30	20	150	36	
<u>2160001</u>	Design Engineering-II B	0	0	3	3	0	0	80	20	150	36	
	Total	17	1	15	33							
	Departmental Elective V											
<u>2163601</u>	Medicinal Chemistry-I											
2163602	Compounding & Processing of Plastics & Rubbers											
2163603	Refractories-I											
2163604	Technology of Pigments											

	Departmental Elective VI										
2162605	Technology of Solid Dosage forms & Medicinal										
2105005	Natural Products										
2162606	Compounding & Processing of Plastics & Rubbers-										
2103000	П										
<u>2163607</u>	Ceramic Coatings										
2163608	Technology of Dyeing										

Nano Technology (39)

Semester V	/I										
Subject	Subject nome	Teaching Scheme (Hours)			Credita	Theory Marks		Marks		Total	Branch
code	Subject name	Theory	Tutorial	Practical	Creans	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
2163901	Coating technology	3	0	2	5	70	30	30	20	150	39
2163902	Nanopolymers and Nano-composites	3	0	2	5	70	30	30	20	150	39
<u>2163903</u>	Nanotechnology and Medicine	3	0	0	3	70	30	0	0	100	39
2163904	Non-conventional energy sources	4	0	0	4	70	30	0	0	100	39
2163905	Microelectronics and VLSI	3	0	2	5	70	30	30	20	150	39
	Departmental Elective I	3	0	2	5	70	30	30	20	150	39
2160001	Design Engineering - II B	0	0	3	3	0	0	80	20	100	39
	Total	19	0	11	30						
Departmental Elective I											
<u>2163906</u>	Nanomagnetism and NanoFluids]									

Civil and Infrastructure (40)

Semester V	/I										
Subject	Subject name	Teaching Scheme (Hours)		Creadita	Theory Marks		Marks		Total	Branch	
code	Subject name	Theory	Tutorial	Practical	Creuits	ESE(E)	PA (M)	Viva (V)	PA(I)	Marks	Code
2164001	Design of Concrete Structures	3	2	0	5	70	30	30	20	150	40
2164002	Utilities for Civil Infrastructure	3	2	0	5	70	30	30	20	150	40
2164003	Geotechnical Engineering - II	3	0	2	5	70	30	0	0	100	40
2164004	Infrastructure Planning and Appraisal	3	1	0	4	70	30	30	20	150	40
	Departmental Elective - I	3	2	0	5	70	30	30	20	150	40
2164005	Industry Internship-2	0	0	2	2	0	0	80	20	100	40
2160001	Design Engg. II-B	0	0	3	3	0	0	80	20	100	40
	Total	15	7	7	29						

	Departmental Elective I	Theory	Tutorial	Practical	Credits
<u>2164006</u>	Advanced Construction Methods & Equipments	3	2	0	5
<u>2164007</u>	Construction Safety and Material Management	3	2	0	5
2164008	Highway Planning & Construction	3	2	0	5
<u>2164009</u>	GIS & Remote Sensing for Infrastructure	3	2	0	5
2164010	Water & Wastewater Treatment Technologies	3	0	2	5

COMPUTER ENGINEERING (07) AND INFORMATION TECHNOLOGY (16) SOFTWARE ENGINEERING SUBJECT CODE: 2160701 B.E. 6th SEMESTER

Type of course: NA

Prerequisite: Object Oriented Programming fundamental, UML

Rationale:

- To study pioneer of Software Development Life Cycle, Development models and Agile Software development.
- To study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, and methods.
- To discuss various software testing issues and solutions in software unit test; integration, regression, and system testing.
- To learn the process of improve the quality of software work products.
- To gain the techniques and skills on how to use modern software testing tools to support software testing projects.
- To expose Software Process Improvement and Reengineering

Teaching and Examination Scheme:

Tea	ching Scl	heme	Credits		Examination Marks					Total
L	Т	Р	С	Theory Marks		Practical		Marks	Marks	
				ESE	PA	A (M)	ES	E (V)	PA	
				(E)	PA	ALA	ESE	OEP	(I)	
4	0	2	6	70	20	10	20	10	20	150

Sr. No.	Content	Total Hrs	% Weightage
1.00			
1	Introduction to Software and Software Engineering	06 hours	15%
	The Evolving Role of Software, Software: A Crisis on the Horizon and Software Myths, Software Engineering: A Layered Technology, Software Process Models, The Linear Sequential Model, The Prototyping Model, The RAD Model, Evolutionary Process Models, Agile Process Model, Component-Based Development, Process, Product and Process.		
2.	Agile Development	02 hours	5%
	Agility and Agile Process model, Extreme Programming, Other process models of Agile Development and Tools.		

3	Managing Software Project	04 hours	10%
	Software Metrics (Process, Product and Project Metrics), Software Project Estimations, Software Project Planning (MS Project Tool), Project Scheduling & Tracking, Risk Analysis &Management (Risk Identification, Risk Projection, Risk Refinement, Risk Mitigation).		
4	Requirement Analysis and Specification	03 hours	10%
	Understanding the Requirement, Requirement Modeling, Requirement Specification (SRS), Requirement Analysis and Requirement Elicitation, Requirement Engineering.		
5	Software Design	04 hours	10%
	Design Concepts and Design Principal, Architectural Design, Component Level Design (Function Oriented Design, Object Oriented Design) (MS Visio Tool),User Interface Design, Web Application Design.		
6.	Software Coding & Testing	05 hours	15%
	Coding Standard and coding Guidelines, Code Review, Software Documentation, Testing Strategies, Testing Techniques and Test Case, Test Suites Design, Testing Conventional Applications, Testing Object Oriented Applications, Testing Web and Mobile Applications, Testing Tools (Win runner, Load runner).		
7	Quality Assurance and Management	04 hours	10%
	Quality Concepts and Software Quality Assurance, Software Reviews (Formal Technical Reviews), Software Reliability, The Quality Standards: ISO 9000, CMM, Six Sigma for SE, SQA Plan.		
8	Software Maintenance and Configuration Management Types of Software Maintenance, Re-Engineering, Reverse Engineering, Forward Engineering, The SCM Process, Identification of Objects in the Software Configuration, Version Control and Change Control	03 hours	10%
9.	Software Engineering and Software as a Service Product Lifetime: Independent Product Vs. Continues, Improvement, Software as a Service, SaaS Architecture.	02 hours	5%
10	Advanced Topics in Software Engineering Component-Based Software Engineering, Client/Server Software Engineering, Web Engineering, Reengineering, Computer-Aided Software Engineering, Software Process Improvement, Emerging Trends in software Engineering.	03 hours	10%

Distribution of Theory Marks									
R Level	U Level	A Level	N Level	E Level	C Level				
20	20	10	10	5	5				

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

- 1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Editions
- 2. Ian Sommerville, Software engineering, Pearson education Asia
- 3. Pankaj Jalote, Software Engineering A Precise Approach Wiley
- 4. Software Engineering Fundamentals by Ali Behhforoz & Frederick Hudson OXFORD
- 5. Rajib Mall, Fundamentals of software Engineering, Prentice Hall of India.
- 6. Engineering Software as a Service An Agile Software Approach, Armando Fox and David Patterson
- 7. John M Nicolas, Project Management for Business, Engineering and Technology, Elsevier

Course Outcome:

After learning the course the students should be able to:

- 1. Prepare SRS (Software Requirement Specification) document and SPMP (Software Project Management Plan) document.
- 2. Apply the concept of Functional Oriented and Object Oriented Approach for Software Design.
- 3. Recognize how to ensure the quality of software product, different quality standards and software review techniques.
- 4. Apply various testing techniques and test plan in.
- 5. Able to understand modern Agile Development and Service Oriented Architecture Concept of Industry.

List of Experiments:

(Pl. Note: List of Experiments and Tutorials should be as per theory covered in the class, below mentioned practical are just for the reference purpose)

Tutorial-1

Study the complete Software Development Life Cycle (SDLC) and analyze various activities conducted as a part of various phases. For each SDLC phase, **identify** the objectives and **summaries** outcomes.

Tutorial-2

Consider any project to be developed in any technology as a Software Architect or Project Manager. **Construct** Software Requirement Specification (SRS) document for the project.

Tutorial-3

Considering your immense expertise in software development, The Absolute Beginners Inc. has recently allotted you a mega project. The goal of the project is to create a database of all Hindi films released since 2000. The software would allow one to generate a list of top ten hit films, top ten flop films, best comedy films, and so on. Using your prior experience you have decided the approximate sizes of each module of the software as follow:

- Data entry (0.9 KDSI)
- Data update (0.7 KDSI)
- Query (0.9 KDSI)
- Report generation and display (2 KDSI)

Also take into consideration the following cost drivers with their ratings:

- Storage constraints (Low)
- Experience in developing similar software (High)
- Programming capabilities of the developers (High)
- Application of software engineering methods (High)
- Use of software tools (High)

(All other cost drivers have nominal rating).

Now answer the following:

- Solve the problem by Applying Basic and intermediate COCOMO
 - Find Project Type?
 - Find Project Size?
 - Find Initial Effort Estimation?
 - Find Adjusted Effort Estimation?
 - Find schedule?
 - Find minimum size of the team you would require to develop this system?
- Assuming that your client would pay Rs. 50,000 per month of development, how much would be the likely billing?

Tutorial-4:

Function Point: http://conferences.embarcadero.com/article/32094#Bonus .

Analyze the case study and **identify** the error and **solve** it. At the end, need to **assess** calculation part of effort using FP oriented estimation model.

Tutorial-5

Consider the following Java code segment:

```
public Hashtable countAlphabet(String aString){
    Hashtable table = new Hashtable();
    If (aString.length > 4000) return table;
    StringBuffer buffer = new StringBuffer(aString);
    While (buffer.length() > 0){
        String firstChar = buffer.substring(0, 1);
        Integer count = (Integer)table.get(firstChar);
        if (count == null){
            count = new Integer(1);
        } else{
            count = new Integer(count.intValue() + 1);
        }
        table.put(firstChar, count);
        buffer.delete(0, 1);
    }
    return table;
}
```

- 1. Guarantees that all independent execution path is exercised at least once;
- 2. Guarantees that both the true and false side of all logical decisions are exercised;
- 3. Executes the loop at the boundary values and within the boundaries.

Sketch out Design control flow diagram and **Apply** Cyclomatic complexity for given Code. **Identify** numbers of Independence path require for testing.

Tutorial 6:-

Subject Project: For below mentioned Systems and other systems assign a mini-project two a group of students to prepare Software documents mentioned as A to E

- 1. Library Information System
- 2. Villager Telephone System
- 3. Waste Management Inspection Tracking System (WMITS)
- 4. Flight Control System
- 5. Ambulance Dispatching System
- A. Development of Software Requirements Specification (SRS)
- B. Function oriented design using SA/SD
- C. Object-oriented design using UML
- D. Test case design
- E. Implementation using Java and testing

Design based Problems (DP)/Open Ended Problem:

- Assume that you are Software Architect or Project Manager in organization. You have been assigned the task of constructing a website for a specific company with your team. Design and priorities the test cases using test case templates for this project.
- For Natural Language Processing (NLP) applications, estimate project failure rate.

• Design and develop an open source method of detecting the DIFFERENCESS between two engineering designs for the same problem.

List of Open Source Software/learning website:

- www.en.wikipedia.org/wiki/Software_engineering
- www.win.tue.nl
- www.rspa.com/spi
- www.onesmartclick.com/engsineering/software-engineering.html
- www.sei.cmu.edus
- https://www.edx.org/school/uc-berkeleyx

Various Web Based SE Tools

- Software:-Rational Rose, Microsoft Visio, Enterprise resource planning
- Project Management Tools
- SCM Tools
- SQA Tools
- Analysis and Design Tools
- User Interface Development Tools
- Object-Oriented Software Engineering Tools
- Testing Tools

COMPUTER ENGINEERING (07) THEORY OF COMPUTATION SUBJECT CODE:2160704 B.E. 6thSEMESTER

Type of course: Core

Prerequisite: Calculus, Data Structures and Algorithms

Rationale: Theory of computation teaches how efficiently problems can be solved on a model of computation, using an algorithm. It is also necessary to learn the ways in which computer can be made to think. Finite state machines can help in natural language processing which is an emerging area.

Teaching and Examination Scheme:

Tea	ching Scl	neme	Credits	Examination Marks					Total	
L	Т	Р	С	Theory Marks		Practical N		Marks	Marks	
				ESE	PA	A (M)	ES	E (V)	PA	
				(E)	PA	ALA	ESE	OEP	(I)	
3	0	0	3	70	20	10	0	0	0	100

Sr. No.	Content	Total	% Weightage
		Hrs	
1	Review of Mathematical Theory: Sets, Functions, Logical statements,	10	16
_	Proofs, relations, languages, Mathematical induction, strong principle, Recursive definitions		
2	Regular Languages and Finite Automata: Regular expressions, regular languages, applications, Automata with output-Moore machine, Mealy machine, Finite automata, memory requirement in a recognizer, definition, union, intersection and complement of regular languages.Non Determinism Finite Automata, Conversion from NFA to FA, \wedge - Non Determinism Finite Automata Conversion of NFA- \wedge to NFA and equivalence of three Kleene's Theorem, Minimization of Finite automata Regular And Non Regular Languages – pumping lemma.	12	20
3	Context free grammar (CFG): Definition, Unions Concatenations And Kleen's of Context free language Regular grammar, Derivations and Languages, Relationship between derivation and derivation trees, Ambiguity Unambiguous CFG and Algebraic Expressions BacosNaur Form (BNF), Normal Form – CNF	12	20
4	Pushdown Automata, CFL And NCFL: Definition, deterministic PDA, Equivalence of CFG and PDA, Pumping lemma for CFL, Intersections and Complements of CFL, Non-CFL	12	20
5	Turing Machine (TM): TM Definition, Model Of Computation And Church Turning Thesis, computing functions with TM, Combining TM, Variations Of TM, Non Deterministic TM, Universal TM, Recursively and Enumerable Languages, Context sensitive languages and Chomsky hierarchy	12	20

6	Computable Functions: Partial, total, constant functions, Primitive	2	4
	Recursive Functions, Bounded Mineralization, Regular function,		
	Recursive Functions		

Distribution of Theory Marks										
R Level	U Level	A Level	N Level	E Level	C Level					
15	25	25	5	00	00					

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

- 1. An introduction to automata theory and formal languages By Adesh K. Pandey, Publisher: S.K. Kataria& Sons
- 2. Introduction to computer theory By Deniel I. Cohen , Joh Wiley & Sons, Inc
- 3. Computation: Finite and Infinite By Marvin L. Minsky Prentice-Hall
- 4. Compiler Design By Alfred V Aho, Addison Weslley
- 5. Introduction to the Theory of Computation By Michael Sipser
- 6. Automata Theory, Languages, and Computation By John Hopcroft, Rajeev Motowani, and Jeffrey Ullman

Course Outcome:

After learning the course the students should be able to:

- 1. At the end of the course the students will be able to understand the basic concepts and application of Theory of Computation.
- 2. Students will apply this basic knowledge of Theory of Computation in the computer field to solve computational problems and in the field of compiler also.

List of Open Source Software/learning website:

- 1. <u>http://en.wikipedia.org/wiki/Theory_of_computation</u>
- 2. http://meru.cecs.missouri.edu/courses/cecs341/tc.html

COMPUTER ENGINEERING (07) AND INFORMATION TECHNOLOGY (16) EMBEDDED & VLSI DESIGN SUBJECT CODE: 2160709 B.E. 6thSEMESTER

Type of course: Elective

Prerequisite: NA

Rationale: NA

Teaching and Examination Scheme:

Tea	ching Scl	neme	Credits	Examination Marks					Total	
L	Т	Р	С	Theory Marks		Practical Marks			Marks	
				ESE	PA	A (M)	ES	E (V)	PA	
				(E)	PA	ALA	ESE	OEP	(I)	
4	0	2	6	70	20	10	20	10	20	150

Sr. No.	Content	Total	% Weightage
		Hrs	
1	Introduction to Embedded Systems	06	15
	History of embedded systems, Classification of embedded systems,		
	Major application area of embedded systems, Purpose of embedded		
	systems, Fundamental issues in hardware software co-design,		
	Introduction to unified modeling language (UML)	10	
2	Typical Embedded Systems	10	15
	Core of the Embedded Systems, Memory, Sensors and actuators, Communication interface. Embedded firmware		
3	Embedded product development life cycle	8	10
_	Product enclosure design tool, Product enclosure development		_
	techniques, Objective of EDLC, Different phases of EDLC and		
	approaches		
4	Introduction and fabrication of MOSFET	4	10
	VLSI Design Flow, Design hierarchy, Design Methodology,		
	nMOS,pMOS,CMOS fabrication process		
5	MOS Transistor	12	20
	Metal Oxide Semiconductor (MOS) structure, The MOS System under		
	external Structure & Operation of MOS transistor, MOSFET Current-		
	Voltage characteristics Introduction, Resistive load Inverter		
	Inverter with n-type MOSFEI load (Enhancement & Depletion type		
6	MOSFET Ioad) CMOS Inventer MOS combinational sequential and dynamic logic circuits	0	15
U	Introduction MOS logic circuits with Depletion nMOS Loads CMOS	0	15
	logic circuits Complex logic circuits CMOS Transmission Gates (Tos)		
	Introduction, Behaviour of Bistable elements, The SR latch circuit		
	Clocked latch & Flip-flop circuit, CMOS D-latch & Edge-triggered flip-		

	flop		
7	Chip input and output	4	5
	On chip Clock Generation and Distribution		
	Latch –Up and its Prevention		
8	Design for testability	4	10
	Introduction, Fault types and models, Controllability and observability,		
	Ad Hoc Testable design techniques, Scan –based techniques		

Distribution of Theory Marks						
R Level	U Level	A Level	N Level	E Level	C Level	
20	15	15	10	10	05	

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

- 1. Introduction to Embedded Systems by shibu K V mcgraw hill
- 2. System Design: A Unified Hardware/Software Introduction by Frank Vahid and Tony D. Givargis, Addison Wesley, 2002.
- 3. Sung-Mo-Kang, UsufLeblebici ,CMOS digital integrated circuits: Analysis and Design, Tata McGrawhill,2003
- 4. Douglas Pucknell, Basic VLSI Design, PHI, 1999
- 5. The AVR microcontroller and Embedded Systems by muhammad Ali Mazidi, Sarmad Naimi, Sepehr Naimi
- 6. Computers as Components by Wayne Wolf, Morgan Kaufmann, 2001
- 7. Embedded C programming and the ATMEL AVR by Barnett, cox and o'cull, Thomson
- 8. Wayne Wolf , Modern VLSI Design., Person Education, 2001
- 9. John Uyemura ,Introduction to VLSI circuits and systems, Wiley, 2002

Course Outcome:

After completion of the course students will be able to

- 1. Will learn various peripheral components.
- 2. Use AVR Programming to interface various peripherals.
- 3. Able to visualize the design of an embedded system to unified modeling language.
- 4. Able to analyze and document various development cycle for the embedded system

List of Experiments:

- 1. Flash/toggle/on-off single LED.
- 2. Alternate ON-OFF eight LEDs.
- 3. Display 0 to 9 on segment
- 4. Multiplexed 4 7-segment & do following: IfSW1 press, display 0 to 9

If SW2 press, display 00 to 99 If SW3 press, display 000 to 999 If SW4 press, display 0000 to 9999

- 5. Transmit "Hello World!" serially and display on monitor and Transmit and receive the data in serially
- 6. Display the string on LCDEx.; "Hello World" and Display the string on LCD using 4 pin Ex.; "Hello World"
- Press any key from 4*4 keypad and display on LCD. And Assume one password is stored in system. Enter password using keypad and Check whether is correct or wrong and display status on LCD
- 8. To implement all logic gates using VHDL.
- 9. To implement all logic gates using behavioral method
- 10. To implement eight different logic gates with the help of 3-bit selection line.
- 11. To implement all flip-flops (s-r, j-k, t, d) using.
- 12. To implement half adder with data flow, structural and behavioral method.
- 13. To implement full-adder with data flow, structural and behavioral method.
- 14. To implement 8:1 multiplexer.
- 15. To implement 2:4 line decoder.
- 16. To implement 4-bit adder.
- 17. To implement 4-bit comparator.
- 18. To implement BCD to 7-segment decoder using VHDL
- 19. To design sequence detector (a) Mealy model (b) Moore model

Design based Problems (DP)/Open Ended Problem:

VHDL/Verilog based mini project with emphasis on design and implementation is Compulsory:

Design small processing element using VHDL/Verilog Hardware description having adders, subtractions, and multiplying operations with counting facility

COMPUTER ENGINEERING (07) ,INFORMATION TECHNOLOGY (16) and INFORMATION & COMMUNICATION TECHNOLOGY (32) WEB TECHNOLOGY SUBJECT CODE: 2160708 B.E. 6thSEMESTER

Type of course: Core course

Prerequisite: Fundamentals of Programming and Networking

Rationale: The wide spread use of the Internet and WWW by common people has made it compulsion to provide web based interface for the applications to access the application from anywhere, anytime, anyone. The subject covers the wide range of web technologies both client side and server side to provide the exposure to the students to develop Rich Internet Applications using them. It covers the basics WWW, client side technologies like HTML, CSS and DHTML including JavaScript, server side scripting with PHP and database connectivity using PHP and related technologies.

Teaching and Examination Scheme:

Tea	ching Scl	heme	Credits	Examination Marks					Total	
L	Т	Р	С	Theory Marks		Practical		Marks	Marks	
				ESE	PA	A (M)	ES	E (V)	PA	
				(E)	PA	ALA	ESE	OEP	(I)	
3	0	2	5	70	20	10	20	10	20	150

Sr. No.	Content	Total	% Weightage
		Hrs	
1	Introduction : Concept of WWW, Internet and WWW, HTTP Protocol :	04	7%
	Request and Response, Web browser and Web servers, Features of Web		
		0.4	0.0/
2	web Design: Concepts of effective web design, web design issues	04	8%
	Including Browser, Bandwidth and Cache, Display resolution, Look and		
	Sitemon Dianning and publiching website Designing offective		
	navigation		
3	HTMI : Basics of HTMI formatting and fonts commenting code	10	20%
5	color hyperlink lists tables images forms XHTMI Meta tags	10	2070
	Character entities frames and frame sets Browser architecture and Web		
	site structure. Overview and features of HTML5		
4	Style sheets : Need for CSS, introduction to CSS, basic syntax and	04	10%
	structure, using CSS, background images, colors and properties,		
	manipulating texts, using fonts, borders and boxes, margins, padding		
	lists, positioning using CSS, CSS2, Overview and features of CSS3		
5	JavaScript : Client side scripting with JavaScript, variables, functions,	10	20%
	conditions, loops and repetition, Pop up boxes, Advance JavaScript:		
	Javascript and objects, JavaScript own objects, the DOM and web		

	browser environments, Manipulation using DOM, forms and validations, DHTML : Combining HTML, CSS and Javascript, Events and buttons		
6	XML : Introduction to XML, uses of XML, simple XML, XML key components, DTD and Schemas, Using XML with application. Transforming XML using XSL and XSLT	04	10%
7	PHP : Introduction and basic syntax of PHP, decision and looping with examples, PHP and HTML, Arrays, Functions, Browser control and detection, string, Form processing, Files, Advance Features: Cookies and Sessions, Object Oriented Programming with PHP	08	15%
8	PHP and MySQL : Basic commands with PHP examples, Connection to server, creating database, selecting a database, listing database, listing table names, creating a table, inserting data, altering tables, queries, deleting database, deleting data and tables, PHP myadmin and database bugs	04	10%

Distribution of Theory Marks						
R Level	U Level	A Level	N Level	E Level	C Level	
12	20	24	6	4	4	

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

- 1. Developing Web Applications, Ralph Moseley and M. T. Savaliya, Wiley-India
- 2. Web Technologies, Black Book, dreamtech Press
- 3. HTML 5, Black Book, dreamtech Press
- 4. Web Design, Joel Sklar, Cengage Learning
- 5. Developing Web Applications in PHP and AJAX, Harwani, McGrawHill
- 6. Internet and World Wide Web How to program, P.J. Deitel & H.M. Deitel, Pearson

Course Outcome:

After completion of the course students will be able to

- 1. Describe the concepts of WWW including browser and HTTP protocol.
- 2. List the various HTML tags and use them to develop the user friendly web pages.
- 3. Define the CSS with its types and use them to provide the styles to the web pages at various levels.
- 4. Develop the modern web pages using the HTML and CSS features with different layouts as per need of applications.
- 5. Use the JavaScript to develop the dynamic web pages.
- 6. Use server side scripting with PHP to generate the web pages dynamically using the database connectivity.
- 7. Develop the modern Web applications using the client and server side technologies and the web design fundamentals.

List of Experiments:

Practical list should be prepared based on the content of the subject with following guidelines in mind.

- 1. Entire syllabus should be covered.
- 2. Practical list should be designed with real life examples.
- 3. List should be prepared to cover individual concepts and integration of different concepts on real life problems.

Design based Problems (DP)/Open Ended Problem:

- 1. Develop an attractive Web site for an event to be organized in your institute.
- 2. Develop a Web based application to manage the Visiting Cards which allows user to add new cards, delete the cards, update the cards etc.
- 3. Develop a web based application for online purchasing of products with payment facility

Major Equipment:

- Modern PC with Web server software installed or accessible through LAN

List of Open Source Software/learning website:

- Browsers like IE, Mozila, FireFox etc
- Server software XAMPP/WAMP/LAMP
- <u>www.apachefriends.org</u>
- <u>www.w3.org</u>
- www.w3schools.com
- <u>www.php.net</u>
- <u>www.mysql.com</u>
- <u>www.phpmyadmin.net</u>