K.S.INSTITUTE OF TECHNOLOGY, BANGALORE

(AFFLIATED TO VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM)

DEPARTMENT OF COMPUTER SCIENCE & ENGG.

<table>
<tr><td colspan="5" align="center">WEB TECHNOLOGY AND ITS APPLICATIONS
SEMESTER – VII</td></tr>
<tr><td>Subject Code</td><td>15CS71</td><td>IA Marks</td><td colspan="2">20</td></tr>
<tr><td>Number of Lecture Hours/Week</td><td>04</td><td>Exam Marks</td><td colspan="2">80</td></tr>
<tr><td>Total Number of Lecture Hours</td><td>50</td><td>Exam Hours</td><td colspan="2">03</td></tr>
<tr><td colspan="5" align="center">CREDITS – 04</td></tr>
<tr><td colspan="4">Module – 1</td><td>Teaching Hours</td></tr>
<tr><td colspan="4">Introduction to HTML, What is HTML and Where did it come from?, HTML Syntax, Semantic Markup, Structure of HTML Documents, Quick Tour of HTML Elements, HTML5 Semantic Structure Elements, Introduction to CSS, What is CSS, CSS Syntax, Location of Styles, Selectors, The Cascade: How Styles Interact, The Box Model, CSS Text Styling.</td><td>10 Hours</td></tr>
<tr><td colspan="4">Module – 2</td><td></td></tr>
<tr><td colspan="4">HTML Tables and Forms, Introducing Tables, Styling Tables, Introducing Forms, Form Control Elements, Table and Form Accessibility, Microformats, Advanced CSS: Layout, Normal Flow, Positioning Elements, Floating Elements, Constructing Multicolumn Layouts, Approaches to CSS Layout, Responsive Design, CSS Frameworks.</td><td>10 Hours</td></tr>
<tr><td colspan="4">Module – 3</td><td></td></tr>
<tr><td colspan="4">JavaScript: Client-Side Scripting, What is JavaScript and What can it do?, JavaScript Design Principles, Where does JavaScript Go?, Syntax, JavaScript Objects, The Document Object Model (DOM), JavaScript Events, Forms, Introduction to Server-Side Development with PHP, What is Server-Side Development, A Web Server's Responsibilities, Quick Tour of PHP, Program Control, Functions</td><td>10 Hours</td></tr>
<tr><td colspan="4">Module – 4</td><td></td></tr>
<tr><td colspan="4">PHP Arrays and Superglobals, Arrays, $_GET and $_POST Superglobal Arrays, $_SERVER Array, $_Files Array, Reading/Writing Files, PHP Classes and Objects, Object-Oriented Overview, Classes and Objects in PHP, Object Oriented Design, Error Handling and Validation, What are Errors and Exceptions?, PHP Error Reporting, PHP Error and Exception Handling</td><td>10 Hours</td></tr>
<tr><td colspan="4">Module – 5</td><td></td></tr>
<tr><td colspan="4">Managing State, The Problem of State in Web Applications, Passing Information via Query Strings, Passing Information via the URL Path, Cookies, Serialization, Session State, HTML5 Web Storage, Caching, Advanced JavaScript and jQuery, JavaScript Pseudo-Classes, jQuery Foundations, AJAX, Asynchronous File Transmission, Animation, Backbone MVC Frameworks, XML Processing and Web Services, XML Processing, JSON, Overview of Web Services.</td><td>10 Hours</td></tr>
<tr><td colspan="5">Course Outcomes:After studying this course, students will be able to</td></tr>
<tr><td colspan="5">•   Adapt HTML and CSS syntax and semantics to build web pages.</td></tr>
</table>

- Construct and visually format tables and forms using HTML and CSS

- Develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically.

- Appraise the principles of object oriented development using PHP with CSS, html

- Inspect JavaScript frameworks like jQuery and Backbone which facilitates developer to focus on core features

Question paper pattern:

The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

Text Books:

1. Randy Connolly, Ricardo Hoar, **"Fundamentals of Web Development",** 1stEdition, Pearson Education India. (**ISBN:**978-9332575271)

Reference Books:

1) Robin Nixon, **"Learning PHP, MySQL &JavaScript with jQuery, CSS and HTML5",** 4thEdition, O'Reilly Publications, 2015. (**ISBN:**978-9352130153)
2) Luke Welling, Laura Thomson, **"PHP and MySQL Web Development",** 5th Edition, Pearson Education, 2016. (**ISBN:**978-9332582736)
3) Nicholas C Zakas, **"Professional JavaScript for Web Developers",** 3rd Edition, Wrox/Wiley India, 2012. (**ISBN:**978-8126535088)
4) David Sawyer Mcfarland, **"JavaScript & jQuery: The Missing Manual",** 1st Edition, O'Reilly/Shroff Publishers & Distributors Pvt Ltd, 2014 (**ISBN:**978-9351108078)
5) Zak Ruvalcaba Anne Boehm, **"Murach's HTML5 and CSS3"**, 3rdEdition, Murachs/Shroff Publishers & Distributors Pvt Ltd, 2016. (**ISBN:**978-9352133246)

ADVANCED COMPUTER ARCHITECTURES SEMESTER – VII			
Subject Code	15CS72	IA Marks	20
Number of Lecture Hours/Week	4	Exam Marks	80
Total Number of Lecture Hours	50	Exam Hours	03
CREDITS – 04			

Module – 1	Teaching Hours
Theory of Parallelism: Parallel Computer Models, The State of Computing, Multiprocessors and Multicomputer ,Multivector and SIMD Computers ,PRAM and VLSI Models, Program and Network Properties ,Conditions of Parallelism, Program Partitioning and Scheduling, Program Flow Mechanisms, System Interconnect Architectures, Principles of Scalable Performance, Performance Metrics and Measures, Parallel Processing Applications, Speedup Performance Laws, Scalability Analysis and Approaches.	**10 Hours**
Module – 2	
Hardware Technologies: Processors and Memory Hierarchy, Advanced Processor Technology, Superscalar and Vector Processors, Memory Hierarchy Technology, Virtual Memory Technology.	**10 Hours**
Module – 3	
Bus, Cache, and Shared Memory ,Bus Systems ,Cache Memory Organizations ,Shared Memory Organizations ,Sequential and Weak Consistency Models ,Pipelining and Superscalar Techniques ,Linear Pipeline Processors ,Nonlinear Pipeline Processors ,Instruction Pipeline Design ,Arithmetic Pipeline Design (Upto 6.4).	**10 Hours**
Module – 4	
Parallel and Scalable Architectures: Multiprocessors and Multicomputers ,Multiprocessor System Interconnects, Cache Coherence and Synchronization Mechanisms, Three Generations of Multicomputers ,Message-Passing Mechanisms ,Multivector and SIMD Computers ,Vector Processing Principles ,Multivector Multiprocessors ,Compound Vector Processing ,SIMD Computer Organizations (Upto 8.4),Scalable, Multithreaded, and Dataflow Architectures, Latency-Hiding Techniques, Principles of Multithreading, Fine-Grain Multicomputers, Scalable and Multithreaded Architectures, Dataflow and Hybrid Architectures.	**10 Hours**
Module – 5	
Software for parallel programming: Parallel Models, Languages, and Compilers ,Parallel Programming Models, Parallel Languages and Compilers ,Dependence Analysis of Data Arrays ,Parallel Program Development and Environments, Synchronization and Multiprocessing Modes. Instruction and System Level Parallelism, Instruction Level Parallelism ,Computer Architecture ,Contents, Basic Design Issues ,Problem Definition ,Model of a Typical Processor ,Compiler-detected Instruction Level Parallelism ,Operand Forwarding ,Reorder	**10 Hours**

Buffer, Register Renaming ,Tomasulo's Algorithm ,Branch Prediction, Limitations in Exploiting Instruction Level Parallelism ,Thread Level Parallelism.

Course outcomes: The students should be able to:

- Identify the different parallelism models, network topologies and performance of parallel architecture.

- Utilize various processor technologies and supporting memory hierarchy in context of parallelism

- Make use of the hardware components and Pipelining superscalar technique to improve performance.

- Choose the suitable synchronization mechanism, computer organization and parallel processing architectures.

- Build different parallel programming models and Instruction level Parallelism.

Question paper pattern

The question paper will have ten questions.

There will be 2 questions from each module.

Each question will have questions covering all the topics under a module.

The students will have to answer 5 full questions, selecting one full question from each module.

Text Books:

1. Kai Hwang and Naresh Jotwani, Advanced Computer Architecture (SIE): Parallelism, Scalability, Programmability, McGraw Hill Education 3/e. 2015

Reference Books:

1. John L. Hennessy and David A. Patterson, Computer Architecture: A quantitative approach, 5th edition, Morgan Kaufmann Elseveir, 2013

MACHINE LEARNING SEMESTER – VII			
Subject Code	15CS73	IA Marks	20
Number of Lecture Hours/Week	03	Exam Marks	80
Total Number of Lecture Hours	50	Exam Hours	03
CREDITS – 04			

Module – 1	Teaching Hours
Introduction: Well posed learning problems, Designing a Learning system, Perspective and Issues in Machine Learning. **Concept Learning:** Concept learning task, Concept learning as search, Find-S algorithm, Version space, Candidate Elimination algorithm, Inductive Bias. **Text Book1, Sections: 1.1 – 1.3, 2.1-2.5, 2.7**	**10 Hours**
Module – 2	
Decision Tree Learning: Decision tree representation, Appropriate problems for decision tree learning, Basic decision tree learning algorithm, hypothesis space search in decision tree learning, Inductive bias in decision tree learning, Issues in decision tree learning. **Text Book1, Sections: 3.1-3.7**	**10 Hours**
Module – 3	
Artificial Neural Networks: Introduction, Neural Network representation, Appropriate problems, Perceptrons, Backpropagation algorithm. **Text book 1, Sections: 4.1 – 4.6**	**08 Hours**
Module – 4	
Bayesian Learning: Introduction, Bayes theorem, Bayes theorem and concept learning, ML and LS error hypothesis, ML for predicting probabilities, MDL principle, Naive Bayes classifier, Bayesian belief networks, EM algorithm **Text book 1, Sections: 6.1 – 6.6, 6.9, 6.11, 6.12**	**10 Hours**
Module – 5	
Evaluating Hypothesis: Motivation, Estimating hypothesis accuracy, Basics of sampling theorem, General approach for deriving confidence intervals, Difference in error of two hypothesis, Comparing learning algorithms. **Instance Based Learning:** Introduction, k-nearest neighbor learning, locally weighted regression, radial basis function, cased-based reasoning, **Reinforcement Learning:** Introduction, Learning Task, Q Learning **Text book 1, Sections: 5.1-5.6, 8.1-8.5, 13.1-13.3**	**12 Hours**

Course Outcomes: After studying this course, students will be able to

- Identify the fundamental concepts of Machine learning and implement Find-S algorithm

- Make use of the fundamental concepts of Machine learning to learn decision tree representation for ID3 algorithm and Perceptrons

- Utilize the neural network, Bayes Classifier and EM algorithm to solve the problems in Machine Learning.

- Examine Candidate elimination algorithm, EM & K- Means algorithm and Instance based Learning for problems appear in Machine Learning

- Inspect Back propagation algorithm, Estimating Hypotheses, and Reinforcement learning

Question paper pattern:
The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.
Text Books:
1. Tom M. Mitchell, Machine Learning**,** India Edition 2013, McGraw Hill Education.
Reference Books:
1. Trevor Hastie, Robert Tibshirani, Jerome Friedman, h The Elements of Statistical Learning, 2nd edition, springer series in statistics.   2. Ethem Alpaydın, Introduction to machine learning, second edition, MIT press.

INFORMATION AND NETWORK SECURITY SEMESTER – VII			
Subject Code	15CS743	IA Marks	20
Number of Lecture Hours/Week	3	Exam Marks	80
Total Number of Lecture Hours	40	Exam Hours	03
CREDITS – 03			

Module – 1	Teaching Hours
Introduction. How to Speak Crypto. Classic Crypto. Simple Substitution Cipher. Cryptanalysis of a Simple Substitution. Definition of Secure. Double Transposition Cipher. One-time Pad. Project VENONA. Codebook Cipher. Ciphers of the Election of 1876. Modern Crypto History. Taxonomy of Cryptography. Taxonomy of Cryptanalysis.	**8 Hours**
Module – 2.	
What is a Hash Function? The Birthday Problem.Non-cryptographic Hashes. Tiger Hash. HMAC. Uses of Hash Functions. Online Bids. Spam Reduction. Other Crypto-Related Topics. Secret Sharing. Key Escrow. Random Numbers. Texas Hold 'em Poker. Generating Random Bits. Information Hiding.	**8 Hours**
Module – 3	
Random number generation Providing freshness Fundamentals of entity authentication Passwords Dynamic password schemes Zero-knowledge mechanisms Further reading Cryptographic Protocols Protocol basics From objectives to a protocol Analysing a simple protocol Authentication and key establishment protocols	**8 Hours**
Module – 4	
Key management fundamentals Key lengths and lifetimes Key generation Key establishment Key storage Key usage Governing key management Public-Key Management Certification of public keys The certificate lifecycle Public-key management models Alternative approaches	**8 Hours**
Module – 5	
Cryptographic Applications Cryptography on the Internet Cryptography for wireless local area networks Cryptography for mobile telecommunications Cryptography for secure payment card transactions Cryptography for video broadcasting Cryptography for identity cards Cryptography for home users	**8 Hours**

Course outcomes: The students should be able to:

- Identify the various classic symmetric primitives of cryptography.

- Design cryptographic hash functions for digital signatures.

- Construct cryptographic protocols for authentication.

- Determine the need for key management.

- Utilize cryptographic primitives for various applications

Question paper pattern:
The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

Text Books:
1. Information Security: Principles and Practice, 2nd Edition by Mark Stamp Wiley
2. Everyday Cryptography: Fundamental Principles and Applications Keith M. Martin Oxford Scholarship Online: December 2013
Reference Books:
1. Applied Cryptography Protocols, Algorithms, and Source Code in C by Bruce Schneier

STORAGE AREA NETWORKS SEMESTER – VII			
Subject Code	15CS754	IA Marks	20
Number of Lecture Hours/Week	3	Exam Marks	80
Total Number of Lecture Hours	40	Exam Hours	03
CREDITS – 03			

Module – 1	Teaching Hours
Storage System Introduction to Information Storage: Evolution of Storage Architecture, Data Center Infrastructure, Virtualization and Cloud Computing. Data Center Environment: Application, Host (Compute), Connectivity, Storage. Data Protection: RAID: RAID Implementation Methods, RAID Techniques, RAID Levels, RAID Impact on Disk Performance. Intelligent Storage Systems: Components of Intelligent Storage System, Storage Provisioning. **Text Book-1 Ch1: 1.2 to 1.4, Ch2: 2.1, 2.3 to 2.5, Ch3: 3.1, 3.3 to 3.5, Ch4: 4.1 and 4.2**	**8 Hours**
Module – 2	
Storage Networking Technologies Fibre Channel Storage Area Networks: Components of FC SAN, FC connectivity, Fibre Channel Architecture, Zoning, FC SAN Topologies, Virtualization in SAN. IP SAN and FCoE: iSCSI, FCIP, FCoE. Network Attached Storage: Components of NAS, NAS I/O Operation, NAS File-Sharing Protocols, File-Level Virtualization, Object-Based Storage and Unified Storage: Object-Based Storage Devices, Content-Addressed Storage, Unified Storage. **Text Book-1 Ch5: 5.3, 5.4, 5.6, 5.9 to 5.11, Ch6: 6.1 to 6.3, Ch7: 7.4, 7.5, 7.7 and 7.9 Ch8: 8.1, 8.2 and 8.4**	**8 Hours**
Module – 3	
Backup, Archive and Replication Introduction to Business Continuity: Information Availability, BC Terminology, BC Planning Lifecycle, Failure Analysis, BC Technology Solutions. Backup and Archive: Backup Methods, Backup Topologies, Backup Targets, Data Deduplication for Backup, Backup in Virtualized Environments, Data Archive. Local Replication: Replication Terminology, Uses of Local Replicas, Local Replication Technologies, Local Replication in a Virtualized Environment. Remote Replication: Remote Replication Technologies, Three-Site Replication, Remote Replication and	**8 Hours**

Migration in a Virtualized Environment. **Text Book-1 Ch10: 10.5, 10.8, 10.10 to 10.13, Ch11: 11.1, 11.2, 11.4 and 11.8, Ch12: 12.2, 12.3 and 12.5**	
Module – 4	
Cloud Computing and Virtualization Cloud Enabling Technologies, Characteristics of Cloud Computing, Benefits of Cloud Computing, Cloud Service Models, Cloud Deployment Models, Cloud Computing Infrastructure, Cloud Challenges and Cloud Adoption Considerations. Virtualization Appliances: Black Box Virtualization, In-Band Virtualization Appliances, Out-of-Band Virtualization Appliances, High Availability for Virtualization Appliances, Appliances for Mass Consumption. Storage Automation and Virtualization**:** Policy-Based Storage Management, Application-Aware Storage Virtualization, Virtualization-Aware Applications. **Text Book-1 Ch13: 13.1 to 13.8. Text Book-2 Ch9: 9.1 to 9.5 Ch13: 13.1 to 13.3**	**8 Hours**
Module – 5	
Securing and Managing Storage Infrastructure Securing and Storage Infrastructure: Information Security Framework, Risk Triad, Storage Security Domains, Security Implementations in Storage Networking, Securing Storage Infrastructure in Virtualized and Cloud Environments. **Managing the Storage Infrastructure** Monitoring the Storage Infrastructure, Storage Infrastructure Management activities, Storage Infrastructure Management Challenges, Information Lifecycle management, Storage Tiering. **Text Book-1 Ch14: 14.1 to 14.5, Ch15: 15.1 to 15.3, 15.5 and 15.6**	**8 Hours**
Course outcomes: The students should be able to:	

- Illustrate the concept of data center and data protection

- Interpret storage networking technologies IP SAN and FC SAN

- Develop BC technologies and Back up recovery and replication

- Analyze cloud computing characteristics and technologies

- Determine secure storage infrastructure and ILM

Question paper pattern:
The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

Text Books:

1. Information Storage and Management,Author :EMC Education Services, Publisher: Wiley ISBN: 9781118094839
2. Storage Virtualization, Author: Clark Tom, Publisher: Addison Wesley Publishing Company ISBN : 9780321262516

Reference Books:

NIL

MACHINE LEARNING LABORATORY SEMESTER – VII			
Subject Code	15CSL76	IA Marks	20
Number of Lecture Hours/Week	01I + 02P	Exam Marks	80
Total Number of Lecture Hours	40	Exam Hours	03
CREDITS – 02			

Description (If any):

1. The programs can be implemented in either JAVA or Python.
2. For Problems 1 to 6 and 10, programs are to be developed without using the built-in classes or APIs of Java/Python.
3. Data sets can be taken from standard repositories (https://archive.ics.uci.edu/ml/datasets.html) or constructed by the students.

Lab Experiments:

1. Implement and demonstratethe **FIND-Salgorithm** for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a .CSV file.

2. For a given set of training data examples stored in a .CSV file, implement and demonstrate the **Candidate-Elimination algorithm**to output a description of the set of all hypotheses consistent with the training examples.

3. Write a program to demonstrate the working of the decision tree based **ID3 algorithm**. Use an appropriate data set for building the decision tree and apply this knowledge toclassify a new sample.

4. Build an Artificial Neural Network by implementing the **Backpropagation algorithm** and test the same using appropriate data sets.

5. Write a program to implement the **naïve Bayesian classifier** for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.

6. Assuming a set of documents that need to be classified, use the **naïve Bayesian Classifier** model to perform this task. Built-in Java classes/API can be used to write the program. Calculate the accuracy, precision, and recall for your data set.

7. Write a program to construct a**Bayesian network** considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Java/Python ML library classes/API.

8. Apply **EM algorithm** to cluster a set of data stored in a .CSV file. Use the same data set for clustering using *k*-**Means algorithm**. Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.

9. Write a program to implement *k*-**Nearest Neighbour algorithm** to classify the iris data set. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.

10. Implement the non-parametric **Locally Weighted Regressionalgorithm** in order to fit data points. Select appropriate data set for your experiment and draw graphs.

Study Experiment / Project:
NIL
Course outcomes: The students should be able to:
- Make use of relevant data sets in implementing concept learning algorithms   - Utilize Baye's theorem to classify real world data   - Make use of decision tree and K-nearest neighbour concept to predict the input data   - Examine artificial neural network using back propagation algorithm   - Evaluate regression algorithms for solving problems using machine learning.
Conduction of Practical Examination:
- All laboratory experiments are to be included for practical examination.   - Students are allowed to pick one experiment from the lot.   - Strictly follow the instructions as printed on the cover page of answer script   - Marks distribution: Procedure + Conduction + Viva:**20 + 50 +10 (80)**   **Change of experiment is allowed only once and marks allotted to the procedure part to be made zero.**

WEB TECHNOLOGY LABORATORY WITH MINI PROJECT SEMESTER – VII				
Subject Code	15CSL77	IA Marks	20	
Number of Lecture Hours/Week	01I + 02P	Exam Marks	80	
Total Number of Lecture Hours	40	Exam Hours	03	
CREDITS – 02				
Description (If any):				
NIL				
Lab Experiments:				
PART A				

1. Write a JavaScript to design a simple calculator to perform the following operations: sum, product, difference and quotient.
2. Write a JavaScript that calculates the squares and cubes of the numbers from 0 to 10 and outputs HTML text that displays the resulting values in an HTML table format.
3. Write a JavaScript code that displays text "TEXT-GROWING" with increasing font size in the interval of 100ms in RED COLOR, when the font size reaches 50pt it displays "TEXT-SHRINKING" in BLUE color. Then the font size decreases to 5pt.
4. Develop and demonstrate a HTML5 file that includes JavaScript script that uses functions for the following problems:
   a. Parameter: A string
   b. Output: The position in the string of the left-most vowel
   c. Parameter: A number
   d. Output: The number with its digits in the reverse order
5. Design an XML document to store information about a student in an engineering college affiliated to VTU. The information must include USN, Name, and Name of the College, Branch, Year of Joining, and email id. Make up sample data for 3 students. Create a CSS style sheet and use it to display the document.
6. Write a PHP program to keep track of the number of visitors visiting the web page and to display this count of visitors, with proper headings.
7. Write a PHP program to display a digital clock which displays the current time of the server.
8. Write the PHP programs to do the following:
   a. Implement simple calculator operations.
   b. Find the transpose of a matrix.
   c. Multiplication of two matrices.
   d. Addition of two matrices.

9. Write a PHP program named states.py that declares a variable states with value "Mississippi Alabama Texas Massachusetts Kansas". write a PHP program that does the following:
   a. Search for a word in variable states that ends in xas. Store this word in element 0 of a list named statesList.
   b. Search for a word in states that begins with k and ends in s. Perform a case-insensitive comparison. [Note: Passing re.Ias a second parameter to method compile performs a case-insensitive comparison.] Store this word in element1 of statesList.
   c. Search for a word in states that begins with M and ends in s. Store this word in element 2 of the list.
   d. Search for a word in states that ends in a. Store this word in element 3 of the list.
10. Write a PHP program to sort the student records which are stored in the database using selection sort.

Study Experiment / Project:

Develop a web application project using the languages and concepts learnt in the theory and exercises listed in part A with a good look and feel effects. You can use any web technologies and frameworks and databases.

Note:

1. In the examination each student picks one question from part A.

2. A team of two or three students must develop the mini project. However during the examination, each student must demonstrate the project individually.

3. The team must submit a brief project report (15-20 pages) that must include the following
   a. Introduction
   b. Requirement Analysis
   c. Software Requirement Specification
   d. Analysis and Design
   e. Implementation
   f. Testing

Course outcomes: The students should be able to:

- Apply the concepts of HTML and JavaScript to design and develop dynamic web pages with good aesthetic sense of designing and latest technical know-how's.

- Make use of the concepts of HTML5, JavaScript and CSS to design and develop dynamic web pages.

- Identify the use of Web Application Terminologies, Internet Tools other web services using the concept of XML and CSS style sheets.

- Develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically.

- Inspect how to link and publish web sites using PHP, HTML5, CSS and SQL.

Conduction of Practical Examination:
1. All laboratory experiments from part A are to be included for practical examination.

2. Mini project has to be evaluated for 30 Marks.
3. Report should be prepared in a standard format prescribed for project work.
4. Students are allowed to pick one experiment from the lot.
5. Strictly follow the instructions as printed on the cover page of answer script.
6. Marks distribution:
    a) Part A: Procedure + Conduction + Viva:10 + 35 +5 =50 Marks
    b) Part B: Demonstration + Report + Viva voce = 15+10+05 = 30 Marks
Change of experiment is allowed only once and marks allotted to the procedure part to be made zero.