

**SCHOOL OF ENGINEERING**  
**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES**  
**Syllabus of Examination - AICTE Pattern**  
**Undergraduate Degree Courses in Engineering & Technology**  
**Department of Computer Science & Engineering**

---

**CSA-801**  
**Web Engineering**

SUBJECT CODE	SUBJECT NAME	L	T	P	TOTAL CRADIT
CSA-801	WEB ENGINEERING	3	0	2	4

**OBJECTIVE:-**

The goals of the course are as follows: To be able to analyze and design comprehensive systems for the creation, dissemination, storage, retrieval, and use of electronic records and documents

**OUTCOME:-**

- Employ techniques to analyze and evaluate software architectures on a real-world large-scale web-based software systems.
- Create and document reference architecture for a non-trivial Web based technological product.
- Present findings of case study analysis of software architectures of a family of large-scale web-based software systems.
- Envision an innovative product for a wicked problem and develop an architecture for the product that utilizes service-oriented computing technologies.
- Write a research-in-progress paper on a Web engineering topic that utilizes Design Science Research methodology and adheres to appropriate academic standards.

**UNIT-I (8 Hr.)**

Web Engineering: Introduction, History, Evolution and Need, Time line, Motivation, Categories & Characteristics of Web Applications, Web Engineering Models, Software Engineering v/s Web Engineering. World Wide Web: Introduction to TCP/IP and WAP, DNS, Email, TelNet, HTTP and FTP. Browser and search engines: Introduction, Search fundamentals, Search strategies, Directories search engines and Meta search engines, Working of the search engines. Web Servers: Introduction, Features, caching, case study-IIS, Apache.

**UNIT II (9 Hr.)**

Information Architecture: Role, Collaboration and Communication, Organizing Information, Organizational Challenges, Organizing Web sites parameters and Intranets Website Design: Development, Development phases, Design issues, Conceptual Design, High-Level Design, Indexing the Right Stuff, Grouping Content. Architectural Page Mockups, Design Sketches, Navigation Systems. Searching Systems, Good & bad web design, Process of Web Publishing. Web-site enhancement, submission of website to search engines. Web security: issues,

**SCHOOL OF ENGINEERING**  
**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES**  
**Syllabus of Examination - AICTE Pattern**  
**Undergraduate Degree Courses in Engineering & Technology**  
**Department of Computer Science & Engineering**

---

security audit. Web effort estimation, Productivity Measurement, Quality usability and reliability. Requirements Engineering for Web Applications: Introduction, Fundamentals, Requirement Source, Type, ,Notations Tools. Principles Requirements Engineering Activities, Adapting RE Methods to Web Application.

### **UNIT III (8 Hr.)**

Technologies for Web Applications I: HTML and DHTML: Introduction, Structure of documents, Elements, Linking, Anchor Attributes, Image Maps, Meta Information, Image Preliminaries, Layouts, Backgrounds, Colors and Text, Fonts, Tables, Frames and layers, Audio and Video Support with HTML Database integration, CSS, Positioning with Style sheets, Forms Control, Form Elements. Introduction to CGI, PERL, JAVA SCRIPT, JSP,PHP, ASP & AJAX. Cookies: Creating and Reading

### **UNIT IV (7 Hr.)**

Technologies for Web Applications II: XML: Introduction, HTML Vs XML, Validation of documents, DTD, Ways to use, XML for data files, Embedding XML into HTML documents, Converting XML to HTML for Display, Displaying XML using CSS and XSL, Rewriting HTML as XML, Relationship between HTML, SGML and XML, web personalization , Semantic web, Semantic Web Services, Ontology

### **UNIT V (8 Hr.)**

E-Commerce: Business Models, Infrastructure, Creating an E-commerce WebSite, Environment and Opportunities. Modes & Approaches, Marketing & Advertising Concepts. Electronic Publishing issues, approaches, legalities and technologies, Secure Web document, Digital Signatures and Firewalls, Cyber crime and laws, IT Act. Electronic Cash, Electronic Payment Systems: RTGS, NEFT, Internet Banking, Credit/Debit Card. Security: Digital Certificates & Signatures, SSL, SET, 3D Secure Protocol.

### **Recommended Books:**

1. Roger S. Pressman, David Lowe, "Web Engineering", Tata Mc Graw Hill Publication, 2007
2. Achyut S Godbole and Atul Kahate, "Web Technologies", Tata McGraw Hill
3. Gopalan N P , Akilandeswari, "Web Technology: A Developer s Perspective" , PHI
4. Neil Gray, "Web server Programming" Wiley
5. Chris Bates, "Web Programming: Building Internet applications" Wiley
6. Moller, "An Introduction to XML and Web Technologies", Pearson Education New Delhi, 2009
7. "Web Technologies: Black Book", Kogent, Dreamtech

**SCHOOL OF ENGINEERING**  
**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES**  
**Syllabus of Examination - AICTE Pattern**  
**Undergraduate Degree Courses in Engineering & Technology**  
**Department of Computer Science & Engineering**

---

8. Internet & World Wide Web How to Program, Pearson education, 3rd edition, by: H.M. Deitel, P.J. Deitel, A.B. Goldberg.
9. C. Xavier, "Web Technology & Design ", Tata McGraw Hill.
10. Ivan Bay Ross, "HTML, DHTML, Java Script, Perl CGI" , BPB

**LIST OF EXPERIMENTS:**

1. Program to show HTML Page Structure.
2. Program to show the Impact of HTML Headings.
3. Program to show the id attribute in HTML page.
4. Program to show The HTML <style> Element
5. Create The IT Department website home page for various tags.
6. Program to Make a hyperlink of an image in HTML.
7. Program to implement table in HTML.
8. Program for HTML Document, which provides a form that collects names and phone numbers.
9. JavaScript program to show factorial of a number.
10. Design a Home Page for IT Department OIST using various HTML Tags.

**SCHOOL OF ENGINEERING**  
**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES**  
**Syllabus of Examination - AICTE Pattern**  
**Undergraduate Degree Courses in Engineering & Technology**  
**Department of Computer Science & Engineering**

---

**CSA-802(A)**  
**Distributed Computing**

SUBJECT CODE	SUBJECT NAME	L	T	P	TOTAL CRADIT
CSA-802(A)	DISTRIBUTED COMPUTING	3	0	0	3

**OBJECTIVE:**

1. To learn the principles, architectures, algorithms and programming models used in distributed systems.
2. To examine state-of-the-art distributed systems, such as Google File System.
3. To design and implement sample distributed systems.

**OUTCOME:**

- Students will identify the core concepts of distributed systems: the way in which several machines orchestrate to correctly solve problems in an efficient, reliable and scalable way.
- Students will examine how existing systems have applied the concepts of distributed systems in designing large systems, and will additionally apply these concepts to develop sample systems.

**UNIT-I (7 Hr.)**

Introduction to distributed systems Architecture: for Distributed System, Goals of Distributed system, Hardware and Software concepts, Distributed Computing Model, Advantages & Disadvantage distributed system, Issues in designing Distributed System.

**UNIT-II (9 Hr.)**

Distributed Share Memory And Distributed File System :Basic Concept of Distributed Share Memory (DSM), DSM Architecture & its Types, Design & Implementations issues In DSM System, Structure of Share Memory Space, Consistency Model, and Thrashing, Desirable features of good Distributed File System, File Model ,File Service Architecture ,File Accessing Model ,File Sharing Semantics, File Catching Scheme ,File Application & Fault tolerance, Naming: Features, System Oriented Names, Object Locating Mechanism, Human Oriented Name.

**SCHOOL OF ENGINEERING**  
**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES**  
**Syllabus of Examination - AICTE Pattern**  
**Undergraduate Degree Courses in Engineering & Technology**  
**Department of Computer Science & Engineering**

---

**UNIT-III (8 Hr.)**

Inter Process Communication And Synchronization API for Internet Protocol :Data Representation & Marshaling, Group Communication, Client Server Communication, RPC-Implementing RPC Mechanism, Stub Generation, RPC Messages ,Synchronization :Clock Synchronization, Mutual Exclusion, Election Algorithms: Bully & Ring Algorithms

**UNIT-IV (8 Hr.)**

Distributed Scheduling And Dead lock Distributed Scheduling: Issues in Load Distributing, Components for Load Distributing Algorithms, Different Types of Load Distributing Algorithms, Task Migration and its issues, Deadlock-Issues indead lock detection & Resolutions ,Deadlock Handling Strategy, Distributed Deadlock Algorithms.

**UNIT-V (8 Hr.)**

Distributed Multimedia &Database system: Distributed Data Base Management System(DDBMS), Types of Distributed Database, Distributed Multimedia: Characteristics of multimedia Data, Quality of Service Managements.

**REFERENCES:**

- 1.Sinha,Distributed Operating System Concept & Design, PHI.
2. Coulouris & Dollimore, Distributed System Concepts and Design, Pearson Pub
3. Singhal & Shivratri, Advance Concept in Operating System, McGraw Hill.
4. Attiya & Welch, Distributed Computing, Wiley Pub

**SCHOOL OF ENGINEERING**  
**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES**  
**Syllabus of Examination - AICTE Pattern**  
**Undergraduate Degree Courses in Engineering & Technology**  
**Department of Computer Science & Engineering**

---

**CSA-802(B)**  
**Network Management**

SUBJECT CODE	SUBJECT NAME	L	T	P	TOTAL CRADIT
CSA-802(B)	NETWORK MANAGEMENT	3	0	0	3

**OBJECTIVE:-**

Network management and security are essential factors in the reliable, efficient, and secure operation of networks. As businesses become increasingly dependent on networking services, keeping these services running and secure becomes synonymous with keeping the business running. This course provides a thorough introduction to network management technologies and standards as well as to a wide variety of techniques for evaluating, monitoring, and defending the security of computer networks and systems.

**OUTCOME:-**

On the successful completion of the course, students will be able to

- Examine the need of security for the given network scenario.
- Criticize the preventive measures to secure routing and switching.
- Design of firewall, VPN and IDS / IPS for the given network.
- 

**UNIT-I (8 Hr.)**

Network Management Framework, Network Based Managements, Evolution of Network Management: SGMP, CMIP, SNMP. Network Implementation and Management Strategies, Network Management Categories: Performance Management, Fault Management, Configuration Management, Security Managements, Accounting Managements. Network Management Configuration: Centralized Configuration, Distributed Configuration, Selected Management Strategy

**UNIT:-II (8 Hr.)**

Management Information Base (MIB), Structure of Management Information, NMS Presentation of the SMI, NMS Meter-ware Network View, Remote Monitoring (RMON), RMON Group. Desktop Management: Desktop Management Interface (DMI), DMI Architecture, DMI Browser, DMI/SNMP Mapping, Desktop SNMP Extension Agents, Setting up LAN Access, SNMP Configuration.

**SCHOOL OF ENGINEERING**  
**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES**  
**Syllabus of Examination - AICTE Pattern**  
**Undergraduate Degree Courses in Engineering & Technology**  
**Department of Computer Science & Engineering**

---

**UNIT-III (9 Hr.)**

Introduction, layering, OSI Layering, TCP/IP Layering, Protocols & Standards, Internet standards, Internet administration, Internet Addresses, Internet protocol: introduction, IP header, IP routing, subnet addressing, subnet mask, special case of IP addresses, Comparative Study of IPV4 & IPV6, port numbers Address Resolution Protocol, ARP packet format, Proxy ARP, ARP command, ARP Example, Reverse Address Resolution Protocol (RARP): Introduction, RARP Packet format, RARP Examples, RARP server design

**UNIT-IV (8 Hr.)**

Delivery and Routing of IP Packets, Routing Methods, Static versus Dynamic Routing, Routing table and Routing Module, Classless Addressing: CIDR. Internet Protocol (IP), Datagram, Fragmentation, Options, IP Package. Interior and Exterior Routing, Routing information protocol (RIP), Open shortest path first protocol (OSPF), BGP, GGP. Private Networks. Virtual Private Network (VPN), Network Address Translation (NAT).

**UNIT-V (7 Hr.)**

Internet Control Message Protocols (ICMP):-Types of message, message format, error reporting, query, checksum, ICMP Package. IGMP, IGMP Message and its Operation, IGMP Package. Transmission control protocol, Process-to-Process Communication, TCP Services Flow Control, TCP Timers. TCP Operation, TCP Package, Application layers protocol, Telnet Protocol, File Transfer Protocol (FTP), Simple Mail Transfer Protocol (SMTP), X-Window system protocol, Remote procedure call, and Network file system.

**REFERENCES:**

1. Forouzan, TCP/IP Protocol Suite 4th edition, TMH
2. Stevens, TCP/IP Illustrated Volume-I, Pearson
3. J.Richard Burkey, Network Management Concept and Practice, PHI

**SCHOOL OF ENGINEERING**  
**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES**  
**Syllabus of Examination - AICTE Pattern**  
**Undergraduate Degree Courses in Engineering & Technology**  
**Department of Computer Science & Engineering**

---

**CSA-803(A)**  
**Internet Of Things**

SUBJECT CODE	SUBJECT NAME	L	T	P	TOTAL CRADIT
CSA-803(A)	INTERNET OF THINGS	3	0	0	3

**OBJECTIVE:**

Students will be explored to the interconnection and integration of the physical world and the cyber space. They are also able to design & develop IOT Devices.

**OUTCOME:**

- Able to understand the application areas of IOT ·
- Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
- Able to understand building blocks of Internet of Things and characteristics.

**UNIT -I (7 Hr.)**

Introduction: Definition, Characteristics of IOT, IOT Conceptual framework, IOT Architectural view, Physical design of IOT, Logical design of IOT, Application of IOT.

**UNIT-II (8 Hr.)**

Machine-to-machine (M2M), SDN (software defined networking) and NFV(network function virtualization) for IOT, data storage in IOT, IOT Cloud Based Services.

**UNIT-III (9 Hr.)**

Design Principles for Web Connectivity: Web Communication Protocols for connected devices, Message Communication Protocols for connected devices, SOAP, REST, HTTP Restful and Web Sockets. Internet Connectivity Principles, Internet Connectivity, Internet based communication, IP addressing in IOT, Media Access control.

**UNIT-IV (8 Hr.)**

Sensor Technology, Participatory Sensing, Industrial IOT and Automotive IOT, Actuator, Sensor data Communication Protocols, Radio Frequency Identification Technology, Wireless Sensor Network Technology.



**SCHOOL OF ENGINEERING**  
**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES**  
**Syllabus of Examination - AICTE Pattern**  
**Undergraduate Degree Courses in Engineering & Technology**  
**Department of Computer Science & Engineering**

---

**UNIT-V (8 Hr.)**

IOT Design methodology: Specification requirement, process, model, service, functional & operational view, IOT Privacy and security solutions, Raspberry Pi & Arduino Devices. IOT Case studies, smart city streetlights control & monitoring.

**REFERENCES:**

1. Rajkamal, "Internet of Things", Tata McGraw Hill publication.
  2. Vijay Madisetti and Arshdeep Bahga, "Internet of things(A-Hand-on-Approach)" 1st Edition , Universal Press.
  3. Hakima Chaouchi "The Internet of Things: Connecting Objects", Wiley publication.
  4. Charless Bell "MySQL for the Internet of things", A press publications
- .

**SCHOOL OF ENGINEERING**  
**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES**  
**Syllabus of Examination - AICTE Pattern**  
**Undergraduate Degree Courses in Engineering & Technology**  
**Department of Computer Science & Engineering**

---

**CSA-803(B)**  
**Mobile Computing**

SUBJECT CODE	SUBJECT NAME	L	T	P	TOTAL CRADIT
CSA-803(B)	MOBILE COMPUTING	3	0	0	3

**OBJECTIVE:-**

The objective of this course is to learn about the concepts and principles of mobile computing; to explore both theoretical and practical issues of mobile computing; to develop skills of finding solutions and building software for mobile computing applications

**OUTCOME:-**

- Describe the basic concepts and principles in mobile computing
- Understand the concept of Wireless LANs, PAN, Mobile Networks, and Sensor Networks
- Explain the structure and components for Mobile IP and Mobility Management
- Understand positioning techniques and location-based services and applications
- Describe the important issues and concerns on security and privacy Professional Skill
- Design and implement mobile applications to realize location-aware computing
- Design algorithms for location estimations based on different positioning techniques and platforms
- Acquire the knowledge to administrate and to maintain a Wireless LAN Attitude
- Recognize the important issues and concerns on security and privacy

**UNIT-I (7 Hr.)**

INTRODUCTION: Introduction to Mobile Computing –Applications of Mobile Computing-Generations of Mobile Communication Technologies-Multiplexing –Spread spectrum -MAC Protocols –SDMA-TDMA-FDMA-CDMA

**UNIT-II (9 Hr.)**

MOBILE TELECOMMUNICATION SYSTEM: Introduction to Cellular Systems –GSM –Services & Architecture –Protocols –Connection Establishment –Frequency Allocation –Routing –Mobility Management –Security –GPRS-UMTS –Architecture –Handover –Security

**SCHOOL OF ENGINEERING**  
**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES**  
**Syllabus of Examination - AICTE Pattern**  
**Undergraduate Degree Courses in Engineering & Technology**  
**Department of Computer Science & Engineering**

---

**UNIT-III (8 Hr.)**

MOBILE NETWORK LAYER: Mobile IP –DHCP –AdHoc–Proactive protocol-DSDV, Reactive Routing Protocols –DSR, AODV , Hybrid routing –ZRP, Multicast Routing-ODMRP, Vehicular Ad Hoc networks ( VANET) –MANET Vs VANET –Security.

**UNIT-IV (8 Hr.)**

MOBILE TRANSPORT AND APPLICATION LAYER: Mobile TCP–WAP –Architecture –WDP –WTLS –WTP –WSP –WAE –WTA Architecture –WML

**UNIT-V (8 Hr.)**

MOBILE TRANSPORT AND APPLICATION LAYER: Mobile Device Operating Systems –Special Constraints & Requirements –Commercial Mobile Operating Systems –Software Development Kit: iOS, Android, BlackBerry, Windows Phone –M Commerce –Structure –Pros & Cons –Mobile Payment System –Security Issues

**TEXT BOOKS:**

1. JochenSchiller, –Mobile Communications, PHI, Second Edition, 2003.
2. Prasant Kumar Pattnaik, Rajib Mall, –Fundamentals of Mobile Computing, PHI Learning Pvt.Ltd, New Delhi –2012

**REFERENCES:**

1. Dharma Prakash Agarwal, Qing and An Zeng, “Introduction to Wireless and Mobile systems”, Thomson Asia Pvt Ltd, 2005.
2. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, –Principles of Mobile Computing||, Springer, 2003.
3. William. C. Y. Lee,–Mobile Cellular Telecommunications-Analog and Digital Systems||, Second Edition, Tata McGraw Hill Edition ,2006.
4. C. K. Toh, –AdHoc Mobile Wireless Networks||, First Edition, Pearson Education, 2002.
5. Android Developers : <http://developer.android.com/index.html>
6. Apple Developer : <https://developer.apple.com/>
7. Windows Phone Dev. Center : <http://developer.windowsphone.com>
8. BlackBerry Developer : <http://developer.blackberry.com>

**SCHOOL OF ENGINEERING**  
**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES**  
**Syllabus of Examination - AICTE Pattern**  
**Undergraduate Degree Courses in Engineering & Technology**  
**Department of Computer Science & Engineering**

---

**CSA-804**  
**Project Stage -II**

<b>SUBJECT CODE</b>	<b>SUBJECT NAME</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>TOTAL CRADIT</b>
CSA-804	PROJECT STAGE -II	-	-	16	8

Project -II should be the outcome of the training done/performed during after 7<sup>th</sup> semester . It should be submitted in hardware form (prototype)or simulation form along with proper data and certificates issued during project training. It should cover the electrical engineering aspects learned during training. A Power point presentation should also be submitted at the time of submission. It can be in the form of major project.