



**DHANALAKSHMI SRINIVASAN**  
**INSTITUTE OF TECHNOLOGY**  
(Approved by AICTE, New Delhi & Affiliated to Anna University)  
NH - 45, Trichy - Chennai Trunk Road,  
SAMAYAPURAM, TRICHY - 621 112.  
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## COURSE PLAN

**Subject code: CS6003** **Branch/Year/Sem/Section: B.E CSE/IV/**

**Subject Name: ADHOC AND SENSOR NETWORKS Batch:2016-2020**

**Staff Name: R.KEERTHIGA Academic year:**

### COURSE OBJECTIVE

The student should be made to:

- Understand the design issues in ad hoc and sensor networks.
- Learn the different types of MAC protocols.
- Be familiar with different types of ad hoc routing protocols.
- Be exposed to the TCP issues in ad hoc networks.
- Learn the architecture and protocols of wireless sensor networks.

### TEXT BOOK:

**T1.** Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, —Operating System Concepts, 9th Edition, John Wiley and Sons Inc., 2012.

### REFERENCES:

**R1.** Ramaz Elmasri, A. Gil Carrick, David Levine, —Operating Systems – A Spiral Approach, Tata McGraw Hill Edition, 2010  
**R2.** Achyut S. Godbole, Atul Kahate, —Operating Systems, McGraw Hill Education, 2016  
**R3.** Andrew S. Tanenbaum, —Modern Operating Systems, Second Edition, Pearson Education, 2004  
**R4.** Gary Nutt, —Operating Systems, Third Edition, Pearson Education, 2004  
**R5.** Harvey M. Deitel, —Operating Systems, Third Edition, Pearson Education, 2004  
**R6.** Daniel P. Bovet and Marco Cesati, —Understanding the Linux kernel, 3rd edition, O'Reilly, 2005  
**R7.** Neil Smyth, —iPhone iOS 4 Development Essentials – Xcode, Fourth Edition, Payload Media, 2011

### WEB RESOURCES

W1: [https://www.webopedia.com/DidYouKnow/Hardware\\_Software/mobile-operating-systems-mobile-os-explained.html](https://www.webopedia.com/DidYouKnow/Hardware_Software/mobile-operating-systems-mobile-os-explained.html) (TOPIC NO: 43)

W2: [https://www.techotopia.com/index.php/IOS\\_6\\_Architecture\\_and\\_SDK\\_Frameworks](https://www.techotopia.com/index.php/IOS_6_Architecture_and_SDK_Frameworks)

(TOPIC NO: 44)

W3: [https://developer.apple.com/library/archive/documentation/MacOSX/Conceptual/OSX\\_Technology\\_Overview/CoreOSLayer/CoreOSLayer.html](https://developer.apple.com/library/archive/documentation/MacOSX/Conceptual/OSX_Technology_Overview/CoreOSLayer/CoreOSLayer.html) (TOPIC NO: 45)



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### TEACHING METHODOLOGIES:

- BB - BLACK BOARD
- VIDEO - VIDEO TUTORIAL
- PPT - POWER POINT PRESENTATION

### **DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**CS6003**

**AD HOC AND SENSOR NETWORKS**

**L TPC**

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#### **UNIT I INTRODUCTION 9**

Fundamentals of Wireless Communication Technology – The Electromagnetic Spectrum – Radio propagation Mechanisms – Characteristics of the Wireless Channel -mobile ad hoc networks (MANETs) and wireless sensor networks (WSNs) :concepts and architectures. Applications of Ad Hoc and Sensor Networks. Design Challenges in Ad hoc and Sensor Networks.

#### **UNIT II MAC PROTOCOLS FOR AD HOC WIRELESS NETWORKS**

**9**

Issues in designing a MAC Protocol- Classification of MAC Protocols- Contention based protocols- Contention based protocols with Reservation Mechanisms- Contention based protocols with Scheduling Mechanisms – Multi channel MAC-IEEE 802.

**UNIT III ROUTING PROTOCOLS AND TRANSPORT LAYER IN AD HOC WIRELESS NETWORKS**

**9**

Issues in designing a routing and Transport Layer protocol for Ad hoc networks- proactive routing, reactive routing (on-demand), hybrid routing- Classification of Transport Layer solutions-TCP over

Ad hoc wireless Networks.

**UNIT IV WIRELESS SENSOR NETWORKS (WSNS) AND MAC PROTOCOLS**

**9**

Single node architecture: hardware and software components of a sensor node - WSN Network architecture: typical network architectures-data relaying and aggregation strategies -MAC layer protocols: self-organizing, Hybrid TDMA/FDMA and CSMA based MAC- IEEE 802.15.4.

**UNIT V WSN ROUTING, LOCALIZATION & QOS**

**9**

Issues in WSN routing – OLSR- Localization – Indoor and Sensor Network Localization-absolute and relative localization, triangulation-QOS in WSN-Energy Efficient Design-Synchronization-Transport Layer issues.

**TOTAL: 45 PERIODS**

Topic No	Topic Name	Books For reference	Page No	Teaching Methodology	No of periods required	Cumulative periods
<b>UNIT I OPERATING SYSTEM OVERVIEW (9)</b>						
1.		T1	4	BB	1	1
2.		T1	8	BB	1	2
3.		T1	11	BB	1	3
4.		T1	14	BB	1	4
5.		T1	5	BB	1	5
6.		T1	7	BB	1	6
7.		T1	78-86	BB	1	7
8.		T1	66-74	BB	1	8
9.		T1	91-92	BB	1	9

**LEARNING OUTCOME:**

**At the end of unit , the students will be able to**

- Know the fundamentals of OPERATING SYSTEMS.
- Understand the concept of System Calls.

- Define the types of Memory Hierarchy.

### UNIT II OPERATING SYSTEMS (9)

10.		T1	105-110	BB	1	10
11.		T1	115-122	BB	1	11
12.		T1	261-283	BB	1	12
13.		T1	163-183	BB	1	13
14.		T1	203-212	BB	1	14
15.		T1	213-223	BB	1	15
16.		T1	315-317	BB & VIDEO	1	16
17.		T1	322-327	BB	1	17
18.		T1	333-337	BB	1	18

#### LEARNING OUTCOME:

At the end of unit , the students will be able to

- Understand the concept of Processes, CPU Scheduling.
- Define Semaphores, Threads.
- Gain the knowledge about Deadlock

### UNIT - III STORAGE MANAGEMENT(9)

19.		T1	351-357	BB	1	19
20.		T1	358-363	BB & VIDEO	1	20
21.		T1	366-377	BB	1	21
22.		T1	364-365	BB	1	22
23.		T1	383-387	BB	1	23
24.		T1	397-400	BB	1	24
25.		T1	401-420	BB	1	25
26.		T1	425-430	BB	1	26
27.		T1	436-445	BB	1	27

**LEARNING OUTCOME:****At the end of unit , the students will be able to**

- Understand the concept of Storage Management.
- Gain knowledge about Paging, Segmentation.
- Define Thrashing.

**UNIT IV FILE SYSTEMS AND I/O SYSTEMS(9)**

28.		T1	467-469	BB	1	28
29.		T1	470-478	BB &VIDEO	1	29
30.		T1	482-483	BB	1	30
31.		T1	503-515	BB	1	31
32.		T1	526-533	BB	1	32
33.		T1	543-552	BB	1	33
34.		T1	553-568	BB	1	34
35.		T1	587-600	BB	1	35
36.		T1	604-617	BB	1	36

**LEARNING OUTCOME:****At the end of unit , the students will be able to**

- Understand the concept of File Systems.
- Known about Disk Scheduling and Management.
- Get the knowledge about Mass Storage system and I/O Systems.

**UNIT V CASE STUDY(9)**

37.		T1	781-	BB	1	37
38.		T1	789-	BB	1	38
39.		T1	792-	BB	1	39
40.		T1	800-	BB	1	40
41.		T1	815-	BB	1	41
42.		T1	809- 818	BB	1	42
43.		W1	-	PPT	1	43
44.		W2	-	PPT	1	44
45.		W3	-	PPT	1	45

**LEARNING OUTCOME:****At the end of unit , the students will be able to**

**OUTCOMES:**

Upon completion of the course, the student should be able to:

- Explain the concepts, network architectures and applications of ad hoc and wireless sensor networks
- Analyze the protocol design issues of ad hoc and sensor networks
- Design routing protocols for ad hoc and wireless sensor networks with respect to some protocol design issues
- Evaluate the QoS related performance measurements of ad hoc and sensor networks

**CONTENT BEYOND THE SYLLABUS**

Windows 8 Process

**CONTINUES INTERNAL ASSESSMENT DETAILS**

ASSESSMENT NUMBER	I	II	MODEL
TOPIC NO.(UNIT)	1-18 (1 <sup>st</sup> & 2 <sup>nd</sup> units)	19-36 (3 <sup>rd</sup> & 4 <sup>th</sup> units)	1-45 (units 1-5)

**ASSIGNMENT DETAILS**

ASSIGNMENT NUMBER	I	II	III
TOPIC NUMBER FOR REFERENCE	1-18 (1 <sup>st</sup> & 2 <sup>nd</sup> units)	19-36 (3 <sup>rd</sup> & 4 <sup>th</sup> units)	1-45 (units 1-5)
DEAD LINE			

ASSIGNMENT NUMBER	BATCH	DESCRIPTIVE QUESTIONS/TOPIC (Minimum of 8 Pages)
<b>I</b>	B1 (R.Nos 1-18)	<ol style="list-style-type: none"> <li>1. Explain system call, system program and os generation</li> <li>2. Describe evaluation of operating System</li> <li>3. Explain IPC and Operations on Processes</li> </ol>
	B1 (R.Nos 19-36)	<ol style="list-style-type: none"> <li>1. Multiprocessor and multicore organization</li> <li>2. Direct Memory Access</li> <li>3. Computer System Organization</li> </ol>
	B3 (R.Nos 37-301)	<ol style="list-style-type: none"> <li>1. Structure of an OS</li> <li>2. Client-server and peer to peer models of distributed systems</li> <li>3. Process Scheduling</li> </ol>
<b>II</b>	B1 (R.Nos 1-18)	<ol style="list-style-type: none"> <li>1. Memory mapped files</li> <li>2. Buddy system allocation</li> <li>3. Methods for handling deadlocks</li> </ol>
	B1 (R.Nos 19-36)	<ol style="list-style-type: none"> <li>1. Explain the difference between internal and external fragmentation</li> <li>2. Discuss the given memory management techniques with neat diagram</li> <li>3. Explain Semaphores and Critical regions</li> </ol>
	B3 (R.Nos 37-301)	<ol style="list-style-type: none"> <li>1. Logical address is translated into physical address using passing mechanism</li> <li>2. Recovery from deadlock</li> </ol>

		3. Free space management on I/O buffering and blocking
<b>III</b>	B1 (R.Nos 1-18)	1. RAID structure in disk management 2. Directory Structure 3. Disk Scheduling and Management
	B1 (R.Nos 19-36)	1. File Implementation 2. Space Management 3. IOS and AndroidArchitecture
	B3 (R.Nos 37-301)	1. Write about Linux architecture and Linux kernel with neat sketch 2. Explain in detail about LINUX multifunction server, DNS VMware on Linux host 3. Explain File system mounting, File Sharing and Protection

**PREPARED BY**  
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