<table>
<thead>
<tr>
<th>Course Code</th>
<th>Mobile Adhoc Networks</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>J</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

**Pre-requisite:** None

**Syllabus version:** V:1.1

**Course Objectives:**
- Provide an comprehensive overview of Mobile Adhoc Networks and understand the Design Challenges and Implementation Issues of Ad hoc Layered Protocol
- Understand the literature behind MAC Protocols, Routing Protocols, Multicast Routing, Security and Energy management mechanism.

**Expected Course Outcome:**
- Ability to Design Efficient protocols to provide better Quality of Service

**Student Learning Outcomes (SLO):** | 2, 5, 9, 11

**Module:1** | **Introduction** | 6 hours | **SLO:** 2, 9, 11
Introduction to Cellular and Ad hoc wireless networks, Applications of ad hoc networks, Issues in ad hoc wireless networks – Medium access scheme, Routing, Multicasting, Transport layer protocols, Pricing scheme , Quality of Service provisioning, Self organization, Security, Address and security discovery, Energy management, Scalability, Deployment considerations, Ad hoc wireless Internet

**Module:2** | **MAC Protocols** | 8 hours | **SLO:** 2, 5, 9, 11
Issues in Designing a MAC Protocol for ad hoc wireless networks, design goals of a MAC Protocol for Ad Hoc Wireless Networks, Classification of MAC Protocols, Contention based Protocols, Contention based Protocols with Reservation mechanism, Contention Based MAC Protocols with Scheduling Mechanisms, Other MAC protocols

**Module:3** | **Routing Protocols** | 8 hours | **SLO:** 2, 5, 9, 11
Design issues and classification, Table-driven, On-demand and Hybrid routing protocols, Routing protocols with efficient flooding mechanisms, Hierarchical and Power-aware routing protocol

**Module:4** | **Multicast Routing Protocols** | 8 hours | **SLO:** 2, 5, 9, 11
Design issues and operation, Architecture Reference Model, classification, Tree-based and Mesh-Based Protocols, Energy-Efficient Multicasting, Multicasting with Quality of Service Guarantee, Application Dependent Multicast Routing

**Module:5** | **Quality of Service and Security Issues** | 4 hours | **SLO:** 2, 9, 11
Issues and challenges in providing QoS, Classification of QoS solutions, MAC layer solutions, Network layer solutions, QoS frameworks, Network security issues

**Module:6** | **Energy Management** | 4 hours | **SLO:** 2, 9, 11
Need, classification of battery management schemes, Transmission power management schemes, System power management schemes.
<table>
<thead>
<tr>
<th>Module:7</th>
<th>Wireless Sensor Networks</th>
<th>5 hours</th>
<th>SLO: 2, 5, 9, 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless Sensor Networks: Architecture, Data dissemination, Date gathering, MAC Protocols, location discovery, Quality of a sensor network, Issues and Current Trends in MANETs, VANETs, WSN, 6LoWPAN</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Module:8</th>
<th>Contemporary Topics</th>
<th>2 hours</th>
<th>SLO: 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Lecture hours: 45 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Text Book(s)**


**Reference Books**

5. [http://www.ece.rochester.edu/courses/ECE586/index.htm](http://www.ece.rochester.edu/courses/ECE586/index.htm)

**Mode of Evaluation:** Continuous Assessment Test –I (CAT-I), Continuous Assessment Test –II (CAT-II), Seminar / Challenging Assignments / Completion of MOOC / Innovative ideas leading to solutions for industrial problems, Final Assessment Test (FAT).

**Recommended by Board of Studies** 16-08-2017

**Approved by Academic Council** No. 46 Date 24.08.2017