

Course Title	Wireless and Mobile Networks				
Course Code	ECE405				
Course Type	Elective				
Level	Bachelor (1 st Cycle)				
Year / Semester	4 th Year / 8 th Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	<p>The aim of the course is to examine the structure and architecture of wireless and mobile networks, systems and applications. The mobility of nodes and end-users has behavioral implications on all layers of the OSI protocol stack from the Data Link up to the Application Layer. Handling and adapting to mobility necessitates the introduction changes in the protocol stack. Emerging applications enabled due to mobility will be investigated too.</p>				
Learning Outcomes	<p>Upon successful completion of this course students should be able to:</p> <ul style="list-style-type: none"> • Recall, classify and describe wireless technologies. • Analyse cellular wireless network topologies. • Analyse and compute physical property of wireless networks. • Recall and evaluate radio resource management techniques. • Compare and evaluate different wireless communication protocols. 				
Prerequisites	CSE300	Co-requisites	None		
Course Content	<p>Introduction:</p> <p>Wireless technology, transmission fundamentals, antennas and propagation, signal encoding techniques, coding and error control.</p> <p>Satellite Communications:</p> <p>Classification of satellite orbits, GEO orbit, LEO orbit, MEO orbit, link performance factors, capacity allocation strategies</p> <p>Cellular wireless networks:</p> <p>Cellular network organization, frequency reuse, hand-off strategies and metrics, power control, traffic engineering, traffic intensity, cellular wireless networks systems and services, GSM, GPRS, SMS, UMTS.</p> <p>Mobile IP:</p> <p>Mobile IP uses and operation, registration, authentication, tunneling.</p>				

	<p>The IEEE 802.XX standards: IEEE 802.11 Wireless LANs, Wireless LANs technologies, WLANs applications. Wireless Sensor Networks, architecture and network protocols. BlueTooth techniques BlueTooth Application Areas, BlueTooth Protocol Architecture.</p> <p>Internet of Things: Standards and Applications supporting long range / short range / low power communications. Performance evaluation based on cost, cost power, throughput and connectivity. Embedded systems implementing IoT. Hardware options for adding wireless connectivity to an embedded system. Design considerations for IoT embedded systems to support long range communications. IoT connectivity architectures and current security options.</p>										
Teaching Methodology	Face- to- face										
Bibliography	<p>William Stallings, Wireless Communications and Networks, Prentice Hall</p> <p>Yi-Bing Lin, Imrich Chlamtac, Wireless and Mobile Network Architectures, John Wiley & Sons</p> <p>Ellen Kayata Wesel, Wireless Multimedia Communication Networking Video, Voice and Data , Addison-Wesley</p> <p>Theodore S. Rappaport, Wireless Communications Principles & Practices, Prentice Hall</p> <p>K. Pahlavan and P. Krishnamurthy, Principles of Wireless Networks, Prentice Hall</p> <p>C. Siva Ram Murthy, B.S. Manoj: Ad-hoc Wireless Netorks: Architectures and Protocols, Pearson Education</p>										
Assessment	<table border="1"> <tr> <td>Mid – Term Examination</td> <td>30%</td> </tr> <tr> <td>Final Examination</td> <td>40%</td> </tr> <tr> <td>Assignments/Lab</td> <td>20%</td> </tr> <tr> <td>Class Participation</td> <td>10%</td> </tr> <tr> <td></td> <td>100%</td> </tr> </table>	Mid – Term Examination	30%	Final Examination	40%	Assignments/Lab	20%	Class Participation	10%		100%
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Language	English										