

<b>COURSE TITLE</b>	<b>TE142447: Mobile and Ad-Hoc Networks</b> Credits: 2 ELECTIVE COURSE
<b>LEARNING OBJECTIVES</b>	To study various architecture and characteristics of mobile and ad hoc networks, as well as related access, routing techniques and security aspects.
<b>COMPETENCY</b>	The students will understand: <ul style="list-style-type: none"> <li>• Architectures and characteristics of ad hoc network</li> <li>• MAC and its performances in relation to various traffic models</li> <li>• Localization techniques</li> <li>• Security concepts and protocols</li> <li>• Ad hoc network simulation</li> </ul>
<b>SUBJECTS</b>	<ul style="list-style-type: none"> <li>• Review of wireless data communication</li> <li>• Medium access control: traffic modeling, delay model, queueing models, multiple access, demand assigned MA, CSMA, MAC in adhoc network</li> <li>• Ad hoc wireless access: Bluetooth networks, node discovery, Bluetooth formation algorithms, mesh mode of WiMAX/802.16</li> <li>• Wireless network programming: structure of information, socket, parameters and control, receiving frames, sending frames</li> <li>• Ad hoc network protocols: normal IP routing, reactive approach, proactive approach, hybrid approach, clustering, QoS, sensor network protocols</li> <li>• Network simulation: ns2</li> <li>• Location awareness: geographic proximity, constructing spanner, information dissemination, geographic location determination, random unit disc graphs, coverage and connectivity</li> <li>• Ad hoc network security: authentication techniques, physical layer attacks, security application protocols, routing security, broadcast security, secure location verification</li> </ul>
<b>MAIN REFERENCES</b>	<ul style="list-style-type: none"> <li>• Michel Barbeau &amp; Evangelos Kranakis, <u>Principles of Ad Hoc Networking</u>, Wiley, 2007.</li> </ul>
<b>OPTIONAL REFERENCES</b>	<ul style="list-style-type: none"> <li>• Ian F. Akyildiz and Xudong Wang, <u>Wireless Mesh Networks</u>, Wiley, 2009.</li> <li>• IEEE Transaction on Communications</li> <li>• IEEE Transaction on Wireless Communication</li> </ul>