Subject Description Form

Subject Code	EIE4104
Subject Title	Mobile Networking
Credit Value	3
Level	4
Pre-requisite	EIE3333 Data and Computer Communications
Co-requisite/ Exclusion	Nil
Objectives	1. Introduce the basic knowledge of mobile networks. 2. Introduce the variety of facilities, technologies, and communication systems to meet future needs of mobile network services. 3. Evaluate critically the performance of existing and emerging global mobile networking technologies.
Intended Subject Learning Outcomes	**Upon completion of the subject, students will be able to:** Category A: Professional/academic knowledge and skills 1. Describe the operational and functional attributes of different components of mobile networks. 2. Evaluate critically the design, implementation, and performance of mobile networks with regard to different criteria. Category B: Attributes for all-roundedness 3. Think and evaluate critically. 4. Take up new technology for life-long learning.
Subject Synopsis/ Indicative Syllabus	1. Mobile Communication Systems Handoff schemes, allocation of resources, routing, security 2. Existing Wireless Systems AMPS, GSM, PCS, 3G, GPS, TCP over Wireless 3. Ad Hoc and Sensor Networks Characteristics of Ad Hoc networks, Ad Hoc routing, characteristics of sensor networks, MAC protocol for wireless sensor networks 4. Wireless MANs, LANs, and PANs WMANs, WLANs, WPANs 5. Recent Advances Ultra-wideband technology, multicast in wireless networks, mobility (location) management, Bluetooth networks, threads and security issues Laboratory Experiments: 1. Computing efficiency and throughput of MAC protocols for wireless networks 2. Location determination of a mobile station
Teaching/Learning Methodology	Lectures: The subject matters will be delivered through lectures. Students will be engaged in the lectures through Q&A, discussions and specially designed classroom activities. Tutorials: During tutorials, students will work on/discuss some chosen problems. This will help strengthen the knowledge taught in lectures. Laboratory/Mini-project and assignments: During laboratory exercises/mini-project, students will perform hands-on tasks to practice what they have

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<tr><td></td><td>learned. They will evaluate the performance of various systems and design solutions to problems. The assignments will help students to review the knowledge taught in class.

While lectures and tutorials will help to achieve the professional outcomes, the open-ended questions in laboratory exercises/mini-project and assignments will provide the chance to students to exercise their creativity in problem solving.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Subject Learning Outcomes</td><td>
<table>
<tr><th rowspan="2">Specific Assessment Methods/Tasks</th><th rowspan="2">% Weighting</th><th colspan="5">Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)</th></tr>
<tr><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr>
<tr><td>1. Continuous Assessment (total: 50%)</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>• Assignments</td><td>8%</td><td>✓</td><td>✓</td><td>✓</td><td></td><td></td></tr>
<tr><td>• Laboratories/Mini-Project</td><td>14%</td><td></td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>• Mid-Term Test</td><td>14%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td></td></tr>
<tr><td>• End-of-Term Test</td><td>14%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td></td></tr>
<tr><td>2. Examination</td><td>50%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td></td></tr>
<tr><td>Total</td><td>100%</td><td colspan="5"></td></tr>
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</td></tr>
<tr><td rowspan="8">Student Study Effort Expected</td><td>Class contact (time-tabled):</td><td></td></tr>
<tr><td>• Lecture</td><td>24 Hours</td></tr>
<tr><td>• Tutorial/Laboratory/Mini-Project</td><td>15 Hours</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination</td><td>36 Hours</td></tr>
<tr><td>• Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing</td><td>30 Hours</td></tr>
<tr><td>Total student study effort:</td><td>105 Hours</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Reading List and References</td><td>1. D.P. Agrawal and Q. Zeng, Introduction to Wireless and Mobile Systems, 4th ed., Cengage Learning, 2016.</td></tr>
<tr><td>Last Updated</td><td>July 2020</td></tr>
<tr><td>Prepared by</td><td>Dr K.T. Lo</td></tr>
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