Subject Description Form

Subject Code	EIE4104
Subject Title	Mobile Networking
Credit Value	3
Level	4
Pre-requisite	EIE3333 Data and Computer Communications or EIE3342 Computer Network
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. 5. Work in a team, and collaborate effectively with other members.
Subject Synopsis/ Indicative Syllabus	1. <u>Mobile Communication Systems</u> Handoff schemes, allocation of resources, routing, security 2. <u>Existing Wireless Systems</u> AMPS, GSM, PCS, 3G, GPS, TCP over Wireless 3. <u>Ad Hoc and Sensor Networks</u> Characteristics of Ad Hoc networks, Ad Hoc routing, characteristics of sensor networks, MAC protocol for wireless sensor networks 4. <u>Wireless MANs, LANs, and PANs</u> WMANs, WLANs, WPANs 5. <u>Recent Advances</u> 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 topics in small group. This will help strengthen the knowledge taught in lectures.
	Laboratory and assignments: During laboratory exercises, students will perform hands-on tasks to practice what they have learned. They will evaluate the vulnerability of 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 and assignments will provide the chance to students to exercise their creativity in problem solving.

Assessment Methods in Alignment with Intended Subject Learning Outcomes

Specific Assessment Methods/Tasks	% Weighting	Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)				
		1	2	3	4	5
1. Continuous Assessment (total: 40%)						
• Assignments	10%	✓	✓	✓		
• Laboratory Reports	20%		✓	✓	✓	✓
• Tests	10%	✓	✓	✓	✓	
2. Examination	60%	✓	✓	✓	✓	
Total	100%					

Student Study Effort Expected

Class contact (time-tabled):	
• Lecture	24 Hours
• Tutorial/Laboratory/Practice Classes	15 Hours
Other student study effort:	
• Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination	36 Hours
• Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing	30 Hours
Total student study effort:	**105 Hours**

Reading List and References	1. D.P. Agrawal and Q. Zeng, *Introduction to Wireless and Mobile Systems*, 4th ed., Cengage Learning, 2016.
Last Updated	August 2017
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