MOBILE COMPUTING

1 ST semester 2018-2019

Lecturer

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Attendance: 75% in lectures is mandatory.

You are not allowed to miss lectures or labs for the exams of other courses. Get those exams rescheduled.

Free activities

Oral discussions in the lecture
Homework
Answer to the questions through lectures
implement mini-projects

- Will cover all lectures delivered before the exam date

- Will consist of MCQ's, questions with short answers, and drawing of proofs

- If you miss this mid- exam for any reason, you will have to appear for a makeup exam on the last week of teaching. This exam will cover all lectures delivered in the semester.

A- Basic Information

Title : Mobile Computing **Code :** IT411P

Credit Hours : 3 **Lecture :** 2 **Tutorial :** --- **Practical :** 2

B- Professional Information

1- Overall Aims of the Course

Upon completing this course, the student should understand the best practices and standards of mobile networking paradigms and respective mobile applications. The student should be able to identify and analyze the problems and organization/user needs related to mobility, define the mobile networking requirements appropriate to provide mobile applications, then design and evaluate application solutions that meet organization/user mobility needs within computing and energy constraints. The student should be able to use critical thinking and problem solving techniques as well as apply current technical concepts, practices, and techniques of mobile networking paradigms to develop mobile computing solutions that can be effectively integrated into the user's environment.

3- Contents

No	Course Content	Lecture	Practical	Total
1	Introduction to mobile computing • Dimensions of mobility • Condition of the mobile user • Architecture of mobile applications	**2**	---	**2**
2	Cellular concepts • Cell area, cell splitting • Forming cell clusters • Typical call setup • Cell planning and cell capacity • Frequency reuse • Mobility models • Location management • Registration • Handoff parameters • Channel allocation • Handoff prioritization	**6**	---	**6**
3	Satellite systems • Characteristics • Global Positioning Systems (GPS) Wireless LANs • Overview of WiFi – IEEE 802.11 • Wireless mesh networks	**2**	---	**2**
4	Wireless sensor networks (WSNs) • Network characteristics • Sensor deployment • Design issues Radio Frequency Identification networks (RFIDs) • Characteristics • Design issues	**2**	---	**2**
5	Mobile Ad hoc Networks (MANETs) • Characteristics • Applications • MANET routing Vehicular Ad hoc Networks (VANETs) • Architecture • Technologies – WAVE • Vehicular communication paradigms • Characteristics • Applications	**2**	---	**2**

6	Multiple Radio Access – Data channels • FDMA • TDMA • CDMA – Control channels • Pure ALOHA • Slotted ALOHA • CSMA, CSMA/CD, CSMA/CA • Hidden Terminal problem • RTS/CTS	**4**	**---**	**4**
7	Wireless routing • Multi-hop communication • Routing process • Routing metrics • Proactive versus reactive routing • DSDV protocol • DSR protocol • GSR protocol	**2**	**---**	**2**
8	Student Activity – Analyzing the features of 10 mobile applications	**2**	**---**	**2**
9	Mobile Application Development using Android (Lab sessions)	**---**	**20**	**20**
	Total Hours	**22**	**20**	**42**

4- Assessment Schedule

Assessment Method	No.	Description	Week No.	Weight (%)
Assignment	1	Report	4	5
Written Exams	2	Midterm Exam	7	5
Lab exam	3	mobile app evaluation	11	20
Oral Exam	4	Oral questions	11	10
Written Exams	5	Final Exam	14	60
Total				100

5.6 Essential Books (Text Books)

- Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML, R. B'Far, ISBN10: 0521817331, ISBN13: 978-0521817332, Cambridge University Press, 2005.
- Introduction to Wireless and Mobile Systems, 3rd Edition, D.P. Agrawal and Q-An Zeng, ISBN10: 1439062056, ISBN13: 978-1439062050, CL Engineering, 2011.
- Handbook of wireless networks and mobile computing, J. Zhang, ISBN13: 978-0471419020, John Wiley & Sons, Inc., 2002.
- Android Tutorial book.

Office hours:

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GOOD LUCK