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**Department of Electronics and Electrical Communications  
Engineering**

**Cairo University  
Faculty of Engineering**

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| **Course Specifications** | | | | | | | | | | | | | | | | |
| **Program(s) on which this course is given:** | | | | | | Electronics & Electrical Communications Engineering | | | | | | | | | | |
| **Major or Minor element of programs:** | | | | | | Major | | | | | | | | | | |
| **Department offering the program:** | | | | | | Electronics and Electrical Communications | | | | | | | | | | |
| **Department offering the course:** | | | | | | Electronics and Electrical Communications | | | | | | | | | | |
| **Academic year / Level:** | | | | | | **fourth** | | | | | | | | | | |
| **Date of original/modified specification approval:** | | | | | | **2009** | | | | | | | | | | |
| **Semester of course offering:** | | | | | | **first** | | | | | | | | | | |
| **A- Basic Information** | | | | | | | | | | | | | | | | |
| **1.a. Title:** | **Mobile Communications** | | | | | | | | **1.b. Code:** | | | **ELC 446** | | | | |
| **2. Units/Credit hours per week:** | | 2.a. Lectures | | | **2** | | 2.b. Tutorial | | | **2 (included in lectures)** | 2.c. Practical | |  | | 2.d. Total | **4** |
| **B- Professional Information** | | | | | | | | | | | | | | | | |
| **1. Overall Aims of the Course:** | | | | The course aim is to introduce the Student to mobile systems by studying the GSM system as an example. The course introduces the Lee propagation model. The student will be familiar with the wireless channel characteristics. Problems related to wireless channels as well as cellular systems are introduced: Fading, ISI, cochannel interference & adjacent channel interference. The student will study few ways to combat these problems. | | | | | | | | | | | | |
| **2. Intended Learning Outcomes of Course (ILOs):** | | | | **a) Knowledge and Understanding** | | | | | | | | | | | | |
| 1. **Identify** basic information and concepts related to GSM system (1-2) | | | | | | | | | | | | |
|  | | | | | | | | | | | | |
| **b) Intellectual Skills** | | | | | | | | | | | | |
| 1. **Analyze** the effect of the channel characteristics on the mobile system(3-1), (3-4). | | | | | | | | | | | | |
| 1. Prepare an oral presentation.(3.8) | | | | | | | | | | | | |
| **c) Professional and Practical Skills** | | | | | | | | | | | | |
| 1. **Choose** a proper way to decrease the co-channel and adjacent channel interference (2-1). | | | | | | | | | | | | |
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| **d) General and Transferable Skills** | | | | | | | | | | | | |
| 1. Write reports (4-9) 2. Simulate a wireless channel.(4.2) | | | | | | | | | | | | |
| **3. Contents** | | | | | | | | | | | | | | | | |
| **Topic** | | | | **Total hours** | | | | **Lectures** | | | | | | **Tutorial/ Practical** | | |
| GSM system | | | | 14 | | | | 14 | | | | | |  | | |
| Propagation model(lee) | | | | 8 | | | | 8 | | | | | |  | | |
| Wireless Channel characteristics | | | | 14 | | | | 14 | | | | | |  | | |
| Equalizers | | | | 16 | | | | 16 | | | | | |  | | |
| Co-channel and adjacent channel interferences | | | | 8 | | | | 8 | | | | | |  | | |
| **4. Teaching and Learning Methods** | | | | Lectures (Y) | | | | Practical Training/ Laboratory (N) | | | | | | Seminar/Workshop (Y) | | |
| Class Activity (N) | | | | Case Study (N) | | | | | | Projects (N) | | |
| E-learning (N) | | | | Assignments /Homework (Y) | | | | | | Other: | | |
| **5. Student Assessment Methods** | | | | | | | | | | | | | | | | |
| **5.a. Method** | | | | | | | | **To assess (with reference to the ILOs)** | | | | | | | | |
| -presentation and reports | | | | | | | | b2,d1,d2 | | | | | | | | |
| -Mid-term and final exam | | | | | | | | a1,b1,c1 | | | | | | | | |
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| **5.b. Assessment Schedule** | | | | | | | | **Week** | | | | | | | | |
| -reports and presentations delivered at | | | | | | | | 12 | | | | | | | | |
| -Assessment 2; Mid-term exam | | | | | | | | 8 | | | | | | | | |
| * Final | | | | | | | | 15 | | | | | | | | |
| **5.c. Weighting of Assessments** | | | | | | | | | | | | | | | | |
| -Mid-Term Examination | | | | | | | | 20 % | | | | | | | | |
| -Final-term Examination | | | | | | | | 70 % | | | | | | | | |
| -Semester Work | | | | | | | | 10 % | | | | | | | | |
|  | | | | | | | |  | | | | | | | | |
| -Total | | | | | | | | 100 % | | | | | | | | |
| **6. List of References** | | | | | | | | | | | | | | | | |
| 6.a. Course Notes : A part of the course is available with the students in electronic form and hard copy. | | | | | | | | | | | | | | | | |
| 6.b. Essential Books (Text Books) | | | | | | | | | | | | | | | | |
| - Mobile Cellular Telecommunications( lee).  - Wireless Com., Principles & Practice T.S. Rappaport  - The GSM System for Mobile Communications. TELECOM. M. Mouly | | | | | | | | | | | | | | | | |
| 6.c. Recommended Books. | | | | | | | | | | | | | | | | |
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| 6.d. Periodicals, Web Sites, … etc | | | | | | | | | | | | | | | | |
| **7. Facilities Required for Teaching and Learning** | | | | | | | | | | | | | | | | |
| **White/black board – Data show** | | | | | | | | | | | | | | | | |
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| **Course Coordinator:** | | | **Prof. Dr. Emad K. Al-Hussaini** | | | | | | | | | | | | | |
| **Head of Department:** | | | **Prof. Dr. Mahmoud T. Al-Hadidi** | | | | | | | | | | | | | |
| **Date:** | | | **2010-2011** | | | | | | | | | | | | | |

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