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University : Menoufiya University

College : Faculty of Electronic Engineering

Department : Electronics and electrical communication engineering

Course Specification

| 1- Course basic information : | | |
|-------------------------------|--|---|
| Course Code: EC 423 | Course Title: Mobile Communication | Academic year: 20012/2013 Level (٤) – Semester : ١ |
| Department requirement | Teaching hours: Lecture <input type="text" value="٣"/> Tutorial <input type="text" value="٢"/> Lab <input type="text" value="٠"/> | |

| 2- Aim of the course | <ul style="list-style-type: none">• Understanding the basic principles of mobile radio.• Knowing the different Cellular structures and mobile radio network.• Understanding the basics of Diversity and Combining Techniques• Having acquired a good knowledge of Modulation Techniques and Multiple Access Techniques. |
|--|--|
| 3- Intended Learning Outcomes: | |
| A- Knowledge and Understanding: | a1) Concepts and theories of mathematics and sciences, appropriate to the Mobile Communication. a3) Characteristics of engineering materials related to the Mobile Communication. a4) Principles of design including elements design, process and/or a system related to specific Mobile Communication. a8) Current engineering technologies as related to Mobile Communications. a12) Contemporary engineering topics. |
| B- Intellectual Skills | b1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems. b4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources. b6) Investigate the failure of components, systems, and processes. b8) Select and appraise appropriate ICT tools to a variety of engineering problems. b12) Create systematic and methodic approaches when dealing with new and advancing technology. |

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|--|---|
| C- Professional Skills | c2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services. c3) Create and/or re-design a process, component or system, and carry out specialized engineering designs. c4) Practice the neatness and aesthetics in design and approach. c12) Use appropriate mathematical methods or IT tools. |
| D- General Skills | d1) Collaborate effectively within multidisciplinary team. d3) Communicate effectively. d6) Effectively manage tasks, time, and resources. d9) Refer to relevant literatures. |
| 4- Course Contents | Fundamental of Mobile Radio -Cellular Structure - Mobile Radio Network Structure- Channel Allocation Techniques - Mobile Radio Propagation Channels - Diversity and Combining Techniques - System Capacity Analysis - Digital Cellular Mobile Radio -Modulation Techniques - Multiple Access Techniques -Operating Systems-3 rd – Generation Systems - Radio cognitive network safety Aspects. |
| 5- Teaching and Learning Methods | <ul style="list-style-type: none"> - Lectures - Tutorials - Labs and/or case studies - Research assignments |
| 6- Teaching and Learning Methods for disable students | NA |
| 7- Student Assessment | |
| a- Assessment Methods | <ul style="list-style-type: none"> - Weekly sheet exercises at class room - Quizzes - Labs and/or case study for more demonstration. - Mid term, and final exams |
| b- Assessment Schedule | <ul style="list-style-type: none"> - Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week <u>no4</u> - Mid-Term exam: Week <u>no 8</u> - Quizz-2: Week <u>no12</u> - Lab exam: Week <u>no 15</u> - Final – term examination: Week <u>no 16</u> |
| c- Weighting of Assessment | <ul style="list-style-type: none"> - Class tutorial and quizzes : 5 % - Mid-term examination: 15 % - Case study and/or practical exam: 5 % - Final – term examination: 70 % - Other types of assessment: 5 % <p style="text-align: right;">Total <u>100 %</u></p> |

| 8- List of text books and references: | |
|--|---|
| a- Course notes | There are lectures notes prepared in the form of a book authorized by the department |
| b- Text books | <ul style="list-style-type: none"> Mark Aakhus, James E. Katz, Perpetual Contact: Mobile Communication, Private Talk, Public Performance, Cambridge University Press, 2002. |
| c- Recommended books | <ul style="list-style-type: none"> Hillebrand, Friedhelm, ed. (Devenber 2001). GSM and UMTS, The Creation of Global Mobile Communications. John Wiley & Sons. ISBN 978-0-470-84322-2. Mouly, Michel; Pautet, Marie-Bernardette (June 2002). The GSM System for Mobile Communications. Telecom Publishing. ISBN 978-0-945592-15-0. |
| d- Periodicals, Web sitesetc | 1- IEEE Transaction |

Course contents - ILOs Matrix

| Content Topics | We ek | A- Knowledge & Understanding | B- Intellectual skills | C- Professional and practical skills | D- General and transferable skills |
|---|-------|------------------------------|------------------------|--------------------------------------|------------------------------------|
| Fundamental of Mobile Radio | 1-2 | A1,a3 | B1,b4 | C2,c3 | D1 |
| Cellular Structure- Mobile Radio Network Structure | 3-4 | A3,a4 | B1,b6 | C3,c4 | D1,d3 |
| Channel Allocation Techniques - Mobile Radio Propagation Channels | 5-6 | A4,a8 | B6,b8 | C4,c12 | D6,d9 |
| Diversity and Combining Techniques - System Capacity | 7 | A8,a12 | B8,b12 | C12 | D1,d9 |

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|--|-------|--------|-------|--------|-------|
| Analysis | | | | | |
| Digital Cellular Mobile Radio - Modulation Techniques | 8-9 | A1,a4 | B6,b8 | C2,c12 | D3,d9 |
| Modulation Techniques - Multiple Access Techniques - Operating Systems | 10-11 | A4,a12 | B6 | C3,c12 | D6 |
| 3 rd – Generation Systems | 12-13 | A4 | B12 | C3 | D1 |
| Radio cognitive network safety Aspects | 14 | A4 | B12 | C3 | D9 |

Course coordinator:

Head of Department:

Date: / /