



Model No.12

Course Specifications : elective course 3

2014 - 2015

Faculty of Engineering at
Shoubra

University : Benha university

Faculty : Faculty of Engineering at Shoubra

Department : Electrical Engineering Department

1- Course Data

Course Code : ECE443 Course Title : elective course 3 Study Year : Fourth Year
Specialization : Electronic and Communication Engineering
Teaching Hours:
Lecture : 4 Tutorial : 2 Practical :

2- Course Aim

For students undertaking this course, the aims are to:

- 2.1- Describe and Evaluate the basic features of Mobile Communication Systems and Technologies and to provide students with an understanding of the fundamental of Cellular system and its functions.
- 2.2- Demonstrate the design fundamentals of wireless networks and mobile generations.

3- Intended Learning Outcomes of Course (ILOS)

a- Knowledge and Understanding

On completing this course, students will be able to:

- a- 1 - Define current engineering technologies related to mobile communications and wireless systems. (a9)
- a- 2 - Illustrate elementary science underlying electronic engineering systems used in mobile systems. (a15)
- a- 3 - Illustrate communication systems as First generation, GSM and GPRS. (a22)

b- Intellectual Skills

At the end of this course, the students will be able to:

- b- 1- Think in a creative and innovative way in problem solving and design of mobile communication systems. (b4)
- b- 2 - Judge engineering decisions considering benefits, quality and reliability of mobile communication systems. (b10)
- b- 3 - Create systematic and methodic approaches when dealing with new and advancing generations of mobile communications . (b13)
- b- 4 - Analyze the performance of digital and analog generations of mobile communications. (b16)
- b-5- Analyze the performance of mobile digital communication, Bandwidth Utilization schemes (b17)

c- Professional Skills

On completing this course, the students are expected to be able to:

- c- 1 - Professionally merges the engineering knowledge and understanding to improve design and services in wireless branch.(c2)
- c- 2- Apply numerical modeling methods to engineering problems related to mobile systems. (c7)
- c- 3- Practice computer programming for the design and diagnostics of mobile communication systems. (c15)

d- General Skills

At the end of this course, the students will be able to:

- d-1 - Work in stressful environment and within constraints. (d2)
- d-2- Search for information and engage in life-long self learning Electronic and Communication Engineering. (d7)

4- Course Contents

No.	Topics	No of hours
1	Bandwidth Utilization: Multiplexing	4
2	Bandwidth Utilization: Spreading	4
3	Multiple Access :FDMA	4
4	TDMA	4
5	CDMA	4
6	Wireless WANs: Cellular Telephone	4
7	The cellular concept system design fundamental	4
8	First generation	8
9	Global System for Mobile Communications (GSM)	8
10	GPRS	4

5- Teaching and Learning Methods

- 5.1-Modified Lectures
- 5.2- Class activity
- 5.3- Case study
- 5.4- Assignments / homework

6- Teaching and Learning Methods of Disables

- 6.1- Nothing

7- Student Assessment

a- Student Assessment Methods

1	Assignments to assess knowledge, intellectual and professional skills.
2	Quiz to assess knowledge, intellectual and professional skills.
3	Mid-term exam to assess knowledge, intellectual skills
4	Final exam to assess knowledge, intellectual skills.

b- Assessment Schedule

No.	Assessment	Week
1	Assessment 1	4,7,11
2	Quizzes	3, 6, 10, 13
3	Mid-term exam	8
4	Final exam	15

c- Weighting of Assessments

Assessment	Weight
Mid_Term Examination	13.4 %
Final_Term Examination	66.6 %
Oral Examination	0 %
Practical Examination	0 %
Semester work	10 %
Other types of assessment	10 %
Total	100 %

8- List of References

a- Course Notes

- 1- Course notes prepared by instructor

b- Books

1- A. Behrouz Forouzan, Data_Communications_and_networking, 4th edition, McGraw-Hill Education (India) Pvt L

2- Martin Sauter, Communication Systems for the Mobile Information Society,2006

c- Recommended Books

1- Upamanyu Madhow, Fundamentals of Digital Communication, Cram101, 2012.

2- David Tse, Pramod Viswanath, Fundamentals of wireless communication,2005

Course Instructor:

- **Course Coordinator :** **Dr. Rokaia Mounir Zaki Emam**

- **Head of Department :** **Prof. Dr. Sayed Abo -Elsood Ward**



Faculty of Engineering at
Shoubra

Model No.11A

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University : Benha university

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Department : Electrical Engineering Department

Matrix of Knowledge and Skills of the course

No.	Topics	week	Basic Knowledge	Intellectual Skills	Professional Skills
1	Bandwidth Utilization: Multiplexing	1	a1		
2	Bandwidth Utilization: Spreading	2	a1	b1	c1
3	Multiple Access :FDMA	3	a2	b2, b4	c1, c2
4	TDMA	4	a2	b2, b4	c1, c2
5	CDMA	5	a2	b2, b4	c1, c2
6	Wireless WANs: Cellular Telephone	6	a1,a2	b1,b3	c1, c2
7	The cellular concept system design fundamental	7	a1,a2	b1,b3,b5	c1, c2
8	Mid-term exam	8	a1,a2	b1,b3,b4	
9	First generation	9	a3	b2,b4	c2, c3
10	First generation AMPS	10	a3	b2,b4	c1, c2
11	Second generation D-AMPS	11	a2, a3	b1,b2,b4	c2, c3
12	Global System for Mobile Communications (GSM)	12	a1, a2, a3	b2, b3	c2, c3
13	GSM Architecture and frame format	13	a1,a2,a3	b1, b2, b3,b4	c1, c2, c3
14	GPRS	14	a1,a3	b1, b2, b3	c2, c3
15	Final exam	15	a1,a2,a3	b1,b3,b4	

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- Head of Department : **Prof. Dr. Sayed Abo -Elsood Ward**

Matrix of course content and ILO's

Course Title: elective course 3

Code: ECE443

Lecture: 4

Tutorial: 2

Practical: -

Total: 6

Program on which the course is given: B.Sc. Electrical Engineering (Communications)

Major or minor element of program: Major

Department offering the program: Electrical Engineering Department

Department offering the course: Electrical Engineering Department

Academic year / level: Fourth Year / First Semester 2014-2015

Date of specifications approval: 20/6/2010

Course content	a1	a2	a3	b1	b2	b3	b4	b5	c1	c2	c3	d1	d2
Bandwidth Utilization: Multiplexing	✓												
Bandwidth Utilization: Spreading	✓			✓						✓			✓
Multiple Access :FDMA		✓			✓		✓		✓	✓			
TDMA		✓			✓		✓		✓	✓			
CDMA		✓			✓		✓		✓	✓			
Wireless WANs: Cellular Telephone	✓	✓		✓		✓				✓			✓
The cellular concept system design fundamental	✓	✓		✓		✓		✓	✓	✓			
First generation			✓		✓		✓		✓	✓	✓		
Global System for Mobile Communications (GSM)	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓
GPRS	✓		✓	✓	✓	✓				✓	✓		

