



كلية الهندسة بشبرا

## Model No.12

### Course Specifications : elective course 3

Alfarabi for Quality Assurance and Accreditation System - at 16/12/2013 10:39 PM

**University :** Benha university

**Faculty :** كلية الهندسة بشبرا

**Department :** Electrical Engineering Department

#### 1- Course Data

Course Code : 443 كهت Course Title : elective course 3 Study Year : Fourth Year

Specialization :

Teaching Hours:

Lecture : 3

Tutorial : 2

Practical :

#### 2- Course Aim

For students undertaking this course, the aims are to:

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

#### 3- Intended Learning Outcomes of Course (ILOS)

##### a- Knowledge and Understanding

On completing this course, students will be able to:

- a- 2 - Define basics of information and communication technology (ICT).
- a- 8 - Define current engineering technologies as related to mobile communications.
- a- 12 - Demonstrate contemporary engineering topics.
- a- 18 - Explain communication systems
- a- 19 - Explain coding and decoding techniques.

##### b- Intellectual Skills

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

- b- 3- Think in a creative and innovative way in problem solving and design.
- b- 4 - Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.
- b- 9 - Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.
- b- 12 - Create systematic and methodic approaches when dealing with new and advancing technology.
- b- 15 - ) Analyze the performance of digital and analog communication, mobile communication, coding and decoding systems.

##### c- Professional Skills

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

- c- 2 - Professionally merge the engineering knowledge, understanding, and feedback to improve design, product and/or services.
- c- 7 - Apply numerical modeling methods to engineering problems.
- c- 10 - Apply quality assurance procedures and follow codes and standards.
- c- 14 - Practice computer programming for the design and diagnostics of digital and analog communication, mobile communication,

coding and decoding systems.

#### d- General Skills

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

d- 2 - Work in stressful environment and within constraints.

d- 3 - Communicate effectively.

d- 6 - Effectively manage tasks, time, and resources.

d- 7 - Search for information and engage in life-long self learning mobile communication.

d- 12 - Develop skills related to creative and critical thinking as well as problem solving

#### 4- Course Contents

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

#### 5- Teaching and Learning Methods

5.1- Lectures

5.2- Class activity

5.3- Case study

5.4- Assignments / homework

#### 6- Teaching and Learning Methods of Disables

6.1- not found

#### 7- Student Assessment

##### a- Student Assessment Methods

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

##### b- Assessment Schedule

No.	Assessment	Week
1	Assessment 1	3,7,11
2	Quizzes	4, 6, 12
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 Limited, 2006.

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 Coordinator : Rokaia Mounir Zaki Emam

- Head of Department : سيد ابو السعود سيد ورد



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## Model No.11A Course Specifications : elective course 3

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### Matrix of Knowledge and Skills of the course

No.	Topics	week	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Bandwidth Utilization: Multiplexing	1	a2,a8,a18	b4,b9	c2,c7	d2,d3
2	Bandwidth Utilization: Spreading	2	a2,a8,a18	b4,b9	c2,c7	d2,d3
3	Multiple Access :FDMA	3	a2,a8,a18	b3,b4,b9	c2,c7	d2,d3
4	TDMA	4	a2,a8,a18	b3,b4,b9	c2,c7	d2,d3
5	CDMA	5	a2,a8,a18	b3,b4,b9	c2,c7	d2,d3
6	Wireless WANs: Cellular Telephone	6	a2,a8,a12,a18	b3,b4,b9	c2,c7,c10	d2,d3,d7
7	The cellular concept system design fundamental	7	a2,a8,a12,a18	b4,b9,b12	c2,c7,c10	d2,d3,d7
8	Mid-term exam	8	a2,a8,a12,a18,a19	b3,b4,b9,b12	c2,c7,c10	d2,d3,d6,d7,d12
9	First generation	9	a2,a8,a12,a18,a19	b4,b9,b12	c2,c7,c10	d2,d3,d7,
10	First generation AMPS	10	a2,a8,a12,a18,a19	b4,b9,b12	c2,c7,c10	d2,d3,d7
11	Second generation D-AMPS	11	a2,a8,a12,a18,a19	b4,b9,b12	c2,c7,c10	d2,d3,d7
12	Global System for Mobile Communications (GSM)	12	a2,a8,a12,a18,a19	b3,b4,b9,b12,b15	c2,c7,c10,c14	d2,d3,d7
13	GSM Architecture	13	a2,a8,a12,a18,a19	b3,b4,b9,b12,b15	c2,c7,c10,c14	d2,d3,d7
14	GSM frame format	14	a2,a8,a12,a18,a19	b3,b4,b9,b12,b15	c2,c7,c10,c14	d2,d3,d7
15	Final exam	15	a2,a8,a12,a18,a19	b3,b4,b9,b12,b15	c2,c7,c10,c14	d2,d3,d6,d7,d12

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