

## Faculty of Engineering & Technology

### Mobile Communication Systems

#### Information :

**Course Code :** COM 523

**Level :** Undergraduate

**Course Hours :** 3.00- Hours

**Department :** Specialization of Electronics & Communication

#### Instructor Information :

Title	Name	Office hours
Lecturer	MOHAMED MOUSA SAYED EMAM AHMED	4
Teaching Assistant	Merna Mohamed Emad Khafagy	

#### Area Of Study :

- Develop student knowledge about the fundamentals of mobile communication systems and their evolution.
- Prepare students to design mobile communication networks.
- Train students to evaluate the performance of mobile communication systems.

#### Description :

Conventional telephone systems, Traffic theory, Conventional mobile system, Frequency spectral efficiency, Methods of increasing system capacity, System, Architecture, Access schemes, Interference in cellular system, Hand off, propagation models, Fading and Doppler in cellular system, GSM system architecture, GSM channel coding, Ciphering and modulation, System management, CDMA spread spectrum systems, Direct sequence SSS, The performance of DS-SSS, CDMA air links: the forward pilot channel, sync channel, paging channel, traffic channel, Access channel, Types of codes used in CDMA, Power and Hand-off

#### Course outcomes :

##### **a. Knowledge and Understanding: :**

1 -	a1. Explain the fundamentals of mobile communication systems and their terms.
2 -	a2. Interpret the principles of teletraffic theory and its application in mobile network design.
3 -	a3. Describe the principles of mobile network design and analysis.

##### **b. Intellectual Skills: :**

1 -	b1. Design and analyze the performance of mobile radio networks.
2 -	b2. Apply tele-traffic theory for modelling mobile radio networks.
3 -	b3. Use software tools in programming the parameters of tele-traffic theory and evaluate the performance.

#### Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
The Cellular Concept and its Fundamentals	15	9	6
Interference and System Capacity	10	6	4
Trunking and Grade of Service	10	6	4

**Course Topic And Contents :**

Topic	No. of hours	Lecture	Tutorial / Practical
Improving Capacity in Cellular Systems	10	6	4
Large-Scale Path Loss	15	9	6
Small-Scale Fading and Multipath	10	6	4
Time Dispersion and Coherence Bandwidth	5	3	2

**Teaching And Learning Methodologies :**

Lecture  
Discussion  
Problem Solving  
Computer Work

**Course Assessment :**

Methods of assessment	Relative weight %	Week No	Assess What
Final exam	40.00		
o In Class Quizzes	10.00		
o Mid-Term exams	30.00		
o Performance/Attendance	20.00		

**Recommended books :**

A. Goldsmith, Wireless Communications, Cambridge University Press, 2005.