Course Specification

Course Title	**Principles of Antennas and Wave Propagation**	
Course Code	**EEC 412**	
Academic Year	**2015-2016**	
Coordinator	**Associate Prof. Salah El Dean Khamise**	
Teaching Staff	**Associate Prof. Salah El Dean Khamise** **Dr. Amr Hussein Hussein Abdallah**	
Branch / Level	**Master/ Level 4**	
Semester	**First**	
Pre-Requisite	**--**	
Course Delivery	**Lecture 3**	**14 x 3=42 h lectures**
	Practical/ Tutorial 3	**14 x 3=42 h practical/tutorial**
Parent Department	**Electronics and Electrical Communication Engineering**	
Date of Approval	**28/9/2015**	

1. Course Aims

The aims of this course are to:

- Understanding of the basic principles of wave propagation.
- Be familiar with working knowledge about the different antenna types.
- Study the fundamentals (basics) of antennas.
- Learn the basic principles of antenna Arrays and their advantages over one element.
- Acquire working knowledge of the Application of Antenna in communication.
- Train students to use software packages to design antennas.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A1. Define basics of antenna theory.
A2. Describe the fundamental concepts of Antenna parameters.
A3. Identify the main types of antennas as resonant antennas (wires and patches) and travelingwave antennas.
A4. Be aware of the antenna performance which corrupted by noise.
A5. Recognize the advantages and limitations of reflector antenna.
A6. Analyze the basic principles of antenna Arrays and their advantages over one element.

B. Intellectual skills:

By the end of this course, the students should be able to:

B1. Ability to solve antenna problems and search for the optimized solutions.

B2. Differentiate between the one element radiating systems and antenna arrays.

B3. Compare between resonant and non-resonant antennas (wires and patches).

C. Professional and practical skills:

By the end of this course, the students should be able to:

C1. Use software packages to solve antenna problems.

C2. Construct design of antenna for specific application.
C3. Create ability for writing a structural report.

D. General and transferable skills:

By the end of this course, the students should be able to:

D1. Work in teamwork
D2. Build self confidence
D3. Manage time
D4. Work under pressure

3. Course Contents

Week	Topics
1	Communication with radio-wave
2	Fundamentals of electromagnetic radiating antenna and antenna impedance
3	Dipoles, Arrays and long wire antenna
4	Biconical antennas
5	Folded dipole antenna &Array pattern synthesis
6	Phased arrays
7	Aperture type antenna
8	Application of field equivalence principles to aperture radiation
9	Open wave-guides and horn antennas
10	Receiving antennas: reciprocity theorem and effective area for antennas
12	Antenna noise temperature
13	Propagation: surface wave propagation& Ionosphere propagation
14	Microwave and millimeter wave propagation & Introduction to microstrip antenna

4. Teaching and Learning Methods

- Lectures
- Problems solving
- Web-sites show and demonstration
- General reading and discussion
- Experiments

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	60%
Oral Assessment	15-30minuite	On week 15	10%
Practical Examination	15-30minuite	On week 15	10%
Semester work	--	On week 2,5,7,8,10	20%

6. List of references

Course notes:

Lectures prepared Dr. Amr Hussein Hussein Abdullah

Essential Books:

1. John D Kraus Antennas McGraw Hill, 2002.
2. Constantine Balanis, "antenna Theory", John Wiley, Inc., 2000.
3. Joseph Carr, George Hippisley, “Practical Antenna Handbook”, McGraw-Hill/TAB Electronics; 5 edition (Nov. 15 2011).

Web sites:

Cite during the course.

7. Facilities required for teaching and learning

- PC, data show and portable display screen.
- Lab
- Computer Lab with simulation Packages such as MATLAB, Multisim, and ISE Xilinc.

	Course Coordinator	**Head of Department**
Name	**Associate Prof. Salah El Dean Khamise**	**Assoc. Prof. Mahmoud A. A. Ali**
Name (Arabic)	**د. صلاح الدين عبد الغني خميس**	**د. محمود أحمد عطية علي**
Signature		
Date	**28/9/2015**	**28/9/2015**

5.5 Course contents – Course ILOs Matrix **Academic Year: First 2015-2016**

Course Code / Course Title: EEC 412 / Principles of Antennas and Wave Propagation

Course Contents	Course outcomes ILOs															
	Knowledge and Understanding						Intellectual			Practical			Transferable			
	A1	A2	A3	A4	A5	A6	B1	B2	B3	C1	C2	C3	D1	D2	D3	D4
Communication with radio wave	X			X			X					X	X			
Fundamentals of electromagnetic		X			X			X			X				X	
Dipoles, Arrays and long wire antenna	X					X			X	X		X		X		
Biconical antennas			X				X	X						X		X
Folded dipole antenna& Array pattern		X				X					X	X				
Phased arrays	X				X								X		X	
Aperture type antenna		X		X		X	X				X		X			
Application of field equivalence principles			X						X	X				X		
Open wave-guides and horn antennas	X				X	X		X			X	X				X
Receiving antennas: reciprocity theorem and		X		X			X								X	
Antenna noise temperature	X								X		X					
Propagation: surface wave propagation&			X			X				X		X		X		
Microwave and millimeter wave	X			X			X									X
Introduction to microstrip antenna		X						X					X	X		

Course coordinator: **Associate Prof. Salah El Dean Khamise**

Head of Department: ***Assoc. Prof. Mahmoud A. A. Ali***

Date: 28/9/2015

Course Specification

Course Title	**Principles of Optical Communication**	
Course Code	**EEC 415**	
Academic Year	**2015-2016**	
Coordinator	**Associate Prof. Salah El Dean Khamise**	
Teaching Staff	**Associate Prof. Salah El Dean Khamise** **Dr. Amr Hussein Hussein Abdallah**	
Branch / Level	**Master/ Level 4**	
Semester	**First**	
Pre-Requisite	**--**	
Course Delivery	**Lecture 3**	**14 x 3=42 h lectures**
	Practical /Tutorial 3	**14 x 3=42 h**
Parent Department	**Electronics and Electrical Communication Engineering**	
Date of Approval	**28/9/2015**	

1. Course Aims

The aims of this course are to:

- Discuss the difference between radiometry and photometry.
- Discuss measurement units for photometry.
- Discuss different types of optical sources.
- Discuss optical receivers.
- Be familiar with noise in optical receivers.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A1. Define radiometry and photometry.
A2. List different quantities used for measuring photometry.
A3. Describe the optical sources.
A4. Describe the optical receivers.
A5. Explain different noise types in optical receivers.

B. Intellectual skills:

By the end of this course, the students should be able to:

B1. Analyze the operation of LED, Laser light sources.
B2. Interpret how light detection can be done using photodiodes.
B3. Evaluate the light source and the light detector for each application.
B4. Evaluate the performance of optical detectors.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C1. Perform the luminance of a source.

C2. Show the difference between lens and mirrors.
C3. Verify the optical receiver operation under several operating conditions.

D. General and transferable skills:

By the end of this course, the students should be able to:

D1. Become skilled at designing optical systems.
D2. Work under pressure
D3. Collect data about optical sources and receivers.

3. Course Contents

Week	Topics
1,2	Radiometry and Photometry
3,4	Elements of Geometric Optics
5,6	Optical Sources
7	LED
8	Lasers
9,10	Optical Receivers
11,12	Photodiodes
13	Avalanche Photo detectors
14	Noise in Optical Receivers

4. Teaching and Learning Methods

4.1-Lectures.
4.2-Problems solving.
4.3-Web-sites show and demonstration.
4.4-General reading and discussion.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 15	67 %
Oral Assessment	--	--	0.0%
Practical Examination	--	--	0.0%
Semester work	5h(overall)	weekly	33%

6. List of references

Course notes:

- *Taken by the student inside classroom*

Essential Books:

- Keigo Iizuka, “Elements of Photonics, Volume II: For Fiber and Integrated Optics”, John Wiley & Sons, Inc._2002.
- J. Gower, “Optical communication systems”, Prentice Hall International, 2nd Edition, 2002.
- C. R. Pollock, “Fundamentals of Optoelectronics”, Richard D. Irwin Inc., 2000.
- Joseph T. Verdeyen., "Laser Electronics", Prentice-Hall Inc., 2000.
- Ivan P. Kaminow, Tingye Li, Alan E. Willner,” Optical Fiber Telecommunications V B, Fifth Edition: Systems and Networks”, 5th ed, Academic Press, 2008.

Web sites:

- To be cited during the course

7. Facilities required for teaching and learning

7.1- Laptop, data show, portable display screen.
7.2- Computer Lab with simulation Packages such as MATLAB, and Multisim.

	Course Coordinator	Head of Department
Name	**Assoc. Prof. Salah El Dean Khamise**	**Assoc. Prof. Mahmoud A. A. Ali**
Name (Arabic)	**د. صلاح الدين عبد الغني خميس**	**د. محمود أحمد عطية علي**
Signature		
Date	**28/9/2015**	**28/9/2015**

5.5 Course contents – Course ILOs Matrix **Academic Year: First 2015-2016**

Course Code / Course Title: EEC 415 / Principles of Optical Communication

Course Contents	Course outcomes ILOs														
	Knowledge and Understanding					Intellectual				Practical			Transferable		
	A1	A2	A3	A4	A5	B1	B2	B3	B4	C1	C2	C3	D1	D2	D3
Radiometry and Photometry	X									X				X	
Elements of Geometric Optics		X									X				
Optical Sources			X					X					X		
LED			X	X		X		X					X		X
Lasers					X	X		X					X		X
Optical Receivers				X				X					X		X
Photodiodes				X			X	X					X		X
Avalanche Photo detectors					X			X					X		
Noise in Optical Receivers					X				X			X	X		

Course coordinator: **Assoc. Prof. Salah El Dean Khamise**

Head of Department: ***Assoc. Prof. Mahmoud A. A. A***

Date: 28/9/2015

Course Specification

Course Title	**Principles of Satellite Communication**	
Course Code	**EEC 417**	
Academic Year	**2015-2016**	
Coordinator	**Assoc. Prof. Mahmoud Ahmed Attia Ali**	
Teaching Staff	**Assoc. Prof. Mahmoud Ahmed Attia Ali**	
Branch / Level	--/ **Fourth Year**	
Semester	**First**	
Pre-Requisite	--	
Course Delivery	**Lecture 4**	**13 x 4=52 h lectures**
	Practical / Tutorial 3	**13 x 3=39 h practical/tutorial**
Parent Department	**Electronics and Electrical Communication Engineering**	
Date of Approval	**28/9/2015**	

1. Course Aims

The aims of this course are to:

- Understand the methods of launching of satellites and types of orbits.
- Study the main parameters affecting the satellite launching, including Kepler's laws, and dealing with perturbations of orbits.
- Define principles of design of satellite transponders including wideband receiver and TWT amplifier.
- Recognize the space and Earth subsystems.
- Recognize the block diagram of satellite reception and TV home including design standards for DBS, MATV, and CATV.
- Understand multiplexing and multiple access techniques and some applications with Intelsat satellites including FDM/FM/FDMA and spade systems.
- Study the operation and performance of ALOHA techniques.
- Recognize the advantages and concepts of spread spectrum communication systems.
- Study the main concepts and the analysis of direct sequence spread spectrum techniques.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

A1. Understand the Kepler's laws based on Newton's gravitation concepts and define various parameters that describe power, antenna gain, EIRP, position, and orientation of satellites in orbits.

A2. Recognize the basics of launching of satellites and dealing with perturbations of orbits.

A3. Define principles of design of satellite transponders including antenna gain, losses, EIRP, wideband receiver and TWT amplifier and recognize the block diagram of satellite reception and TV home reception according to direct broadcasting satellite "DBS".

A4. The efficient use of Kepler's laws and Kepler's element set to specify the desired satellite orbit while dealing with power and orbital perturbations.

A5. Recognize the design standards for DBS, MATV, CATV, FDMA, TDMA, FDM/FM/FDMA, SPADE, ALOHA techniques, Demand Assignment, Spread Spectrum.
A7. Mention some INTELSAT applications for both FDMA and TDMA.
A10. Explain the basics analysis of access algorithms such as ALOHA, slotted and reservation in addition to spread spectrum techniques.

B. Intellectual skills:

By the end of this course, the students should be able to:

B1. Using Kepler's laws, theory of probability, and logic concepts to analyze satellite orbits ALOHA techniques, and PN sequences respectively.
B2. Select the appropriate value of mean motion by computer iteration using its modified relationship.
B5. Compare and evaluate the performance of the transponder due to number of carriers, polarization, hot standby equipment, antenna gain, losses, and EIRP.
B8. Select the appropriate multiple access technique considering the efficient use of resources, service quality, security, including spread spectrum techniques.
B12. Analyze the performance of various multiple access techniques including demand assignment and ALOHA Schemes, and analyze the data collected form telemetry, tracking, and command to estimate the required action to keep the satellite in the preassigned orbit.

C. Professional and practical skills:

By the end of this course, the students should be able to:

C1. Apply Kepler's laws, gravitation principles, elliptical rules and the perturbation concepts to design and maintain satellite orbit. Apply concepts of shift registers to produce an efficient PN code sequences. Estimation of antenna gain, losses and EIRP.
C10. Verify exchanging knowledge and skills of satellites in INTELSAT applications compared to demand assignment systems and protocols including SS techniques.
C11. Using a subroutine to define the required inclination angle to maintain the mean motion due to non-spherical Earth.

D. General and transferable skills:

By the end of this course, the students should be able to:

D2. Work in stressful environment and within constraints.
D4. Build self confidence
D5. Manage time.
D6. Use general basics for self and continuous learning.

3. Course Contents

Week	Topics
1, 2, 3	Kepler’s Laws, Orbits Perturbation and Spacing, Launching Satellites, Geostationary Satellites, and Satellite Channels
4, 5, 6	Space Segment, Satellite Power, Attitude Control, Station Keeping, Thermal Control,

	Telemetry, Tracking and Command, in addition to TWT Amplifier DBS, MATV, CATV, Transmit-Receive Earth Stations
7	Multiplexing and Multiple Access: FDM Hierarchy, FDM/FM/FDMA, FDM/FM, etc.
8, 9	Demand Assignment, Access Protocols and Pure, Slotted, and Reservation ALOHA Techniques, Polling Techniques, Satellite losses, and EIRP
10, 11	INTELSAT Applications: FDMA, SPADE, High rate TDMA for Europe and American, TDMA operation and Satellite Switching
12, 13 ١4	Fundamentals of Spread Spectrum Analysis of DSSS Pseudo-noise and PN Sequence Generators.

4. Teaching and Learning Methods

4.1 Lectures.
4.2 Problems solving.
4.3 Web-sites show and demonstration.
4.4 General reading and discussion.
4.5 Research skills development.
4.6 Direct reading and independent studies.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 16	66.67 %
Oral Assessment	--	--	--
Practical Examination	--	--	--
Semester work	5 hours (overall)	On week 3,5,6,9,12	33.33 %

6. List of references

Course notes:

- Mahmoud A. A. Ali, “Selected Topics in Satellite Communications” 2015.

Essential Books:

1.Dennis Roddy, Satellite Communications, McGraw Hill, 3rd edition, 2001.
2.T.Pratt, C. Bostian and J. Allnutt; “Satellite Communications”, John Wiley and Sons, 2003, Second Edition.
3.Emilio Chuvieco, Jonathan Li, Xiaojun Yang, “Advances in Earth Observation of Global Change”, Space Technology Library, 2010.
4.Dennis C. Brewer, “Build Your Own Free-To-Air (FTA) Satellite TV System”, Chris Red field, 2011.
5.Miguel A. Aguirre, “Introduction to Space Systems: Design and Synthesis”, Space Technology Library, 2013.

6.Teresa M. Braun, "Satellite Communications Payload and System", John Wiley and Sons, 2013.

Web sites:

- URL:http://www.hotcourses.com/uk-courses/Satellite-Communications-courses/hc2_browse.pg_loc_tree/16180339/0/p_type_id/4/p_bcat_id/3861/page.htm

7. Facilities required for teaching and learning

- PC, data show and portable display screen.
- White board and erasable markers.

	Course Coordinator	Head of Department
Name:	**Assoc. Prof/ Mahmoud A. A. Ali**	**Assoc. Prof/ Mahmoud A. A. Ali**
Name (Arabic)	**د. محمود أحمد عطية علي**	**د. محمود أحمد عطية علي**
Signature:		
Date:	**28/9/2015**	**28/9/2015**

5.5 Course contents – Course ILOs Matrix

Course Code / Course Title: EEC 417 / Principles of Satellite Communications **Academic Year First 2015-2016**

Course Contents	Course outcomes ILOs																		
	Knowledge and Understanding							Intellectual					Practical			Transferable			
Number	A1	A2	A3	A4	A5	A7	A10	B1	B2	B5	B8	B12	C1	C10	C11	D2	D4	D5	D6
Kepler's Laws, Orbits Perturbation and Spacing, Launching Satellites, Geostationary Satellites, and Satellite Channels	X	X		X				X	X				X		X	X	X		X
Space Segment, Satellite Power, Attitude Control, Station Keeping, Thermal Control, Telemetry, Tracking and Command, in addition to TWT Amplifier DBS, MATV, CATV, Transmit-Receive Earth Stations			X		X			X		X		X	X			X	X	X	X
Multiplexing and Multiple Access: FDM Hierarchy, FDM/FM/FDMA, FDM/FM, TDMA, CDMA					X	X					X	X					X		X
Demand Assignment, Access Protocols and Pure, Slotted, and Reservation ALOHA Techniques, Polling Techniques					X		X				X	X				X	X	X	X
INTELSAT Applications: FDMA, SPADE, High rate TDMA for Europe and American, TDMA operation and Satellite Switching					X	X					X	X		X		X	X	X	X
Fundamentals of Spread Spectrum Analysis of DSSS Pseudo-noise and PN Sequence Generators.					X		X				X		X			X	X	X	X

Course coordinator: ***Assoc. Prof. Mahmoud A. A. Ali*** **Head of Department:** ***Assoc. Prof. Mahmoud A. A. Ali***

Date: 28/9/2015

Course Specification

University	**Tanta**	
Faculty	**Engineering**	
Major or Minor Element of Program	**Minor**	
Course Title	**Biomedical Electronics Equipment**	
Course Code	**EEC 606**	
Academic Year	**2013-2014**	
Coordinator	**Assoc. Prof. Salah El Dean Khamise**	
Teaching Staff	**Assoc. Prof. Salah El Dean Khamise** **Intisar Saied Gemeeye**	
Branch / Level	--/**Level 600**	
Semester	**Second**	
Pre-Requisite	--	
Course Delivery	**Lecture 3**	**14 x 3=42 h lectures**
	Practical / Tutorial 0	
Department Offering the Program	**Electronics and Electrical Communication Engineering**	
Department Offering the Course	**Electronics and Electrical Communication Engineering**	
Date of Specification Approval	**9/2/2014**	

1. Course Aims

The aims of this course are to:

This course aims to provide the basic knowledge required by practicing engineers for dealing with Biomedical Electronics Equipment in order to:

- Recognize the operations of different Biomedical equipment
- Learn the idea of basic medical reading system
- Acquire knowledge about various properties and uses of Lasers and used in the medical field.
- Be familiar with anesthesia delivering equipment, surgical microscopes, electrosurgical equipment and NIBP equipment
- Understand the idea of infection control and safety

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

a1. List the analytical equipment used in clinical environment.
a2. Determine basic operation of unit, circuits, reasons of failure, troubleshooting techniques, maintenance, and study materials.
a3. Develop awareness about biological transducers.
a4. Identify the different types of equipment used in various departments (different models, manufactures and suppliers should specified with appropriate technical specifications.

B. Intellectual skills:

By the end of this course, the students should be able to:

b1. Develop an elementary knowledge about various terms used to describe human body cells and tissues.
b2. Explain bioelectric potential.
b3. Develop an awareness of various departments in hospital environment
b4. Summarize imaging equipment and computer applications in medicine

C. Professional and practical skills:

By the end of this course, the students should be able to:

c1. Construct an understanding to repair, installation and management of biomedical equipment.
c2. Create the ability to operate, maintenance, handling, usage, cleaning, etc.
c3. Build up acquire skills in sales, service and marketing biomedical equipment c4. Build up troubleshooting and problem solving capabilities.

D. General and transferable skills:

By the end of this course, the students should be able to:

d1. Become successful entrepreneurs through self-employment and wage employment.
d2. Logical thinking
d3. Time management and project organization.

3. Course Contents

Week	Topics
1	Lasers
2, 3	Surgical microscopes
4, 5	Electrosurgical equipment
6	IV and PCA pumps
7	Anaesthesia delivering equipment
8	Patient monitors
9	Infection control and safety
10,11	NIBP equipment
12	Defibrillators
13,14	An overview of imaging equipment and computer applications in medicine

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solving.
4.3- Web-sites show and demonstration.
4.4- General reading and discussion.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 15	70 %
Oral Assessment	--	--	0.0%
Practical Examination	--	--	0.0%
Semester work	5h(overall)	On weeks 2,6,8,10,12	30 %

6. List of references

6.1- Course Notes

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6.2- Essential Books: (Text Books)

1- R. S. Khandpur, "Handbook of Biomedical Instrumentation", Recent Edition.
2- Raja Rao, C and Guha, S.K, "Principles of Medical Electronics and Biomedical Instrumentation", Recent Edition.

6.3- Recommended book

1- Leslie Cromwell, Fred J Weibell and Erich A. Pfeiffer, "Biomedical Instrumentation and Measurement", Recent Edition.
2- John G. Webster, "Medical Instrumentation: Application and Design", Recent Edition.
3- Joseph J. Carr and John M. Brown, "Introduction to Biomedical equipment technology", Recent Edition.

6.4- Periodicals, Web Sites, … etc.

- To be cited during the course

7- Facilities Required for Teaching and Learning

7.1- Laptop, data show, and portable display screen.

7.2- White board and erasable markers.

	Course Coordinator	Head of Department
Name:	**Assoc. Prof/ Salah El Dean Khamise**	**Assoc. Prof/ Mahmoud A. A. Ali**
Name (Arabic)	**د. صلاح الدين عبد الغني خميس**	**د. محمود أحمد عطية علي**
Signature:		
Date:	**9/2/2014**	**16/2/2014**

5.5 Course contents – Course ILOs Matrix **Academic Year: Second 2013-2014**

Course Code / Course Title: EEC 606 / Biomedical Electronics Equipment

ILOs	**a** Knowledge and Understanding						**b** Intellectual Skills						**c** Professional and Practical Skills					**D** General and Transferable Skills		
Topic	a1	a2	a3	a4	a5	a6	b1	b2	b3	b4	b5	b6	c1	c2	c3	c4	c5	d1	d2	d3
1	X	X					X						X		X			X	X	
2		X	X					X	X					X		X			X	X
3				X				X		X			X					X	X	
4		X		X				X					X		X	X				X
5			X	X				X		X				X					X	
6	X		X						X					X	X	X			X	X
7	X		X				X		X					X				X		
8		X		X				X		X					X	X		X	X	X
9		X	X						X					X		X			X	
10	X	X		X			X			X				X	X	X		X	X	X

Course Coordinator: Assoc. Prof/ Salah El Dean Khamise

Head of Department: Associate Prof. Mahmoud A. A. Ali

Date: 9/2/2014

Course Specification

University	**Tanta**	
Faculty	**Engineering**	
Major or Minor Element of Program	**Major**	
Course Title	**Wireless Networks**	
Course Code	**EEC 608**	
Academic Year	**2015-2016**	
Coordinator	**Assoc. Prof. Mahmoud Ahmed Attia Ali**	
Teaching Staff	**Assoc. Prof. Mahmoud Ahmed Attia Ali** **Dr. Hassam Mohamed Qasem**	
Branch / Level	--/**Level 600**	
Semester	**Second**	
Pre-Requisite	--	
Course Delivery	**Lecture 3**	**14 x 3=42 h lectures**
	Practical / Tutorial 0	
Department Offering the Program	**Electronics and Electrical Communication Engineering**	
Department Offering the Course	**Electronics and Electrical Communication Engineering**	
Date of Specification Approval	**13/2/2016**	

1. Course Aims

The aims of this course are to:

- Understand physical as wireless MAC layer alternatives techniques.
- Learn planning and operation of wireless networks.
- Study various wireless LAN and WAN concepts.
- Understand WPAN and geo-location systems.
- Recognition of mobile systems.
- Be familiar with wireless ATM networks.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

a1. Define diversity and smart receiving techniques.
a2. Classify different types of wireless transmission techniques.
a3. Recognition of wireless network planning and operation.
a4. Describe the operating principles of mobility management in PCS/PCNs.
a5. Explain the operation of wireless ATM networks and satellite ATM networks.

B. Intellectual skills:

By the end of this course, the students should be able to:

b1. Suggest design of wireless network for specific application.
b2. Ability to solve wireless networks problems and search for the optimized solutions.
b3. Construct wireless home network.

b4. Analyze how mobility management, radio resources and power management being performed in wireless networks.

C. Professional and practical skills:

By the end of this course, the students should be able to:

c1. Design of suitable wireless networks for specific application.
c2. Writing a structural report.
c3. Build up wireless home network.

D. General and transferable skills:

By the end of this course, the students should be able to:

d1. Familiarize with time management and project organization.
d2. Ability to cooperate with others to efficient design of wireless network.
d3. Become skilled to have ability to develop ideas and share these ideas with others.

3. Course Contents

Week	Topics
1	PACKET RADIO NETWORKS (architecture and wireless media).
2	Spread Spectrum LANs.
3, 4	Wireless LAN Standard: IEEE 802.11 (High Performance Radio LAN).
5, 6	ENABLING TECHNOLOGIES (FDMA – TDMA – CDMA - FDD and TDD).
7, 8	MOBILE SYSTEMS (1st, 2nd, and 3rd generation).
9	SECOND GENERATION MOBILE SYSTEMS.
10, 11	MOBILITY MANAGEMENT in PCS/PCNs
12	MULTI-TIER WIRELESS NETWORKS.
13	PERSONAL ACCESS COMMUNICATION SYSTEM (PACS).
14	WIRELESS ATM NETWORKS
15	SATELLITE ATM NETWORKS

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Discussions.
4.3- Assignments.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 15	70 %
Oral Assessment	--	--	0.0%
Practical Examination	--	--	0.0%
Semester work	5h(overall)	On weeks 2,6,8,10,12	30 %

6. List of references

6.1- Course Notes

- Taken by the student inside classroom

6.2- Essential Books: (Text Books)

1- Kaveth Pahlavan, K., Prashanth Krishnamuorthy, "Principles of Wireless Networks", Pearson Education Asia, 2002.

6.3- Recommended book

1-Leon Garcia, Widjaja, "Communication Networks", Tata McGraw Hill, New Delhi 2000.
2-William Stallings, "Wireless Communications and networks" Prentice Hall, 2002.
3-X.Wang and H.V.Poor, Wireless Communication Systems, Pearson education, 2004.

6.4- Periodicals, Web Sites, … etc.

- To be cited during the course

7- Facilities Required for Teaching and Learning

7-1. PC, data show, portable display screen
7-2. Computer Lab with simulation Packages such as MATLAB, Multisim, and ISE Xilinx.

	Course Coordinator	Head of Department
Name:	**Assoc. Prof. Mahmoud A. A. Ali**	**Assoc. Prof/ Mahmoud A. A. Ali**
Name (Arabic)	**د. محمود أحمد عطية علي**	**د. محمود أحمد عطية علي**
Signature:		
Date:	**13/2/2016**	**13/2/2016**

5.5 Course contents – Course ILOs Matrix **Academic Year: Second 2015-2016**

Course Code / Course Title: EE C608 / Wireless Networks

ILOs	**a** and Knowledge Understanding					**b** Intellectual Skil				**c** Professional and Practical Skills			**d** General and Transferable Skills		
Topic	a1	a2	a3	a4	a5	b1	b2	b3	b4	c1	c2	c3	d1	d2	d3
1	X			X		X			X			X	X		X
2		X			X		X				X				X
3	X					X		X		X		X		X	
4			X					X			X			X	
5					X		X					X	X		
6	X		X						X		X		X		X
7		X		X		X					X	X		X	
8					X			X		X				X	
9		X					X		X		X		X		X
10			X					X				X			
11		X			X	X		X			X		X		X

Course Coordinator: Associate Prof. Mahmoud A. A. Ali

Head of Department: Associate Prof. Mahmoud A. A. Ali

Date: 13/2/2016

Course Specification

University	**Tanta**	
Faculty	**Engineering**	
Major or Minor Element of Program	**Major**	
Course Title	**Personal and Mobile Communications**	
Course Code	**EEC 609**	
Academic Year	**2015-2016**	
Coordinator	**Assoc. Prof. Mahmoud Ahmed Attia Ali**	
Teaching Staff	**Assoc. Prof. Mahmoud Ahmed Attia Ali** **Dr. Amr Hussein Hussein Abdullah**	
Branch / Level	--/**Level 600**	
Semester	**First**	
Pre-Requisite	--	
Course Delivery	**Lecture 3**	**14 x 3=42 h lectures**
	Practical / Tutorial 0	
Department Offering the Program	**Electronics and Electrical Communication Engineering**	
Department Offering the Course	**Electronics and Electrical Communication Engineering**	
Date of Specification Approval	**28/9/2015**	

1. Course Aims

The aims of this course are to:

- Understand basic knowledge in the fields of personal and mobile communication engineering.
- Learn the definition, analysis, and solving of problems related to the personal and mobile communications: wave propagation, traffic management, wireless network planning.
- Be familiar with mobile communications network planning, management, maintenance and development.
- Deals with the infinite and finite models of traffic and being familiar with a lot of well known formulas such as Erlange, Ingest, Palm Jacobus, …
- Learn valuable information on numbering, identities, and performance benchmarks to help you plan and design mobile systems and networks.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

a1. Identify the basic concepts of personal communication systems and link systems analysis.
a2. Recognize infinite and finite sources traffic modeling.
a3. Understand blocking, passage and loss probabilities, offered and carried traffic.
a4. Recognize multiple access architectures in personnel and mobile communications.
a5. Describe single and multistage network planning, cell planning, and frequency reuse.
a6. Define traffic models, diversity techniques.
a7. Recognize mobile communication system: GSM, CDMA systems, 3G systems.

B. Intellectual skills:

By the end of this course, the students should be able to:

b1. Analyze the traffic models to estimate the blocking probability and the probability of loss of the single and multistage link system.
b2. Estimate Erlange, Ingest, Palm Jacobus and modified Palm Jacobus formulas.
b3. Visualize the past, present, and future of mobile and personal communication systems.
b4. Predict how the evolution toward next-generation systems will shape tomorrow's mobile communications industry.
b5. Develop a clear understanding of the basic technology, architecture, and applications associated with mobile communications.

C. Professional and practical skills:

By the end of this course, the students should be able to:

c1. Simulate the single and multistage link system.
c2. Create the ability to measure and control emissions from base stations.
c3. Create the ability to deal with customers and suppliers.
c4. Confirm operation and maintenance of base stations and switching centers.
c5. Construct mobile communication sites.

D. General and transferable skills:

By the end of this course, the students should be able to:

d1. Teamwork
d2. Ideas development and sharing with others

3. Course Contents

Week	Topics
1, 2	Basics of Traffic Modelling, Probability of Occupation
3, 4	Approximate and Exact Calculation of Probability of Loss
5, 6	Analysis of Multistage Link Systems
7	Survey of Propagation models for Mobile Communications
8, 9	Cellular Systems, Propagation Modeling
10, 11	Co-channel Interference, Modulation and Power Spectral Densities
12, 13	Digital Signalling on Flat Fading and ISI Channels
14	Cellular Coverage Planning, Link Quality Measurements and Handoff Limitation

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Problems solving.
4.3- Web-sites show and demonstration.
4.4- General reading and discussion.

4.5- Research skills development.
4.6- Direct reading and independent studies.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 15	70 %
Oral Assessment	--	--	0.0%
Practical Examination	--	--	0.0%
Semester work	5h(overall)	On week 2,6,8,10,12	30 %

6. List of references

6.1- Course Notes

- Mahmoud A. A. Ali, Selected Course on "Traffic of Single and Multistage Link Systems", 201٥.
- Notes for Dr. Intisar Saied Gameeye

6.2- Essential Books: (Text Books)

1- Saleh Faruque, "Cellular Mobile Systems Engineering".
2- W.C. Y. Lee, "Mobile Cellular Telecommunications".
3- Raymond Steele, "Mobile Radio Communications".

6.3- Recommended book

1. Eithne Cavanagh, "Personal and mobile communications", Last Edition.
2. Raj Pandya, "Mobile and personal communication services and systems", Last Edition.
3. Eileen McGrath and Hadwen, "Wireless technologies and services for cellular and personal communication", Last Edition.
4. John Gardiner and Barry West, "Personal communication systems and technologies", Last Edition.
5. D. J. Goodman, "Wireless Personal Communications Systems", Last Edition.
6. Theodore S. Rappaport, "Wireless Communications Principles and Practice", Last Edition.
7. Jon W. Mark and Weihua Zhuang, "Wireless Communications and Networking", Last Edition.
8. M.R. Karim and M. Sarraf, "WCDMA and cdma2000 for 3G Mobile Networks", Last Edition.

6.4- Periodicals, Web Sites, … etc.

- To be cited during the course

7- Facilities Required for Teaching and Learning

7.1- Laptop, data show, and portable display screen.

7.2- White board and erasable markers.

	Course Coordinator	Head of Department
Name:	**Assoc. Prof/ Mahmoud A. A. Ali**	**Assoc. Prof/ Mahmoud A. A. Ali**
Name (Arabic)	**د. محمود أحمد عطية علي**	**د. محمود أحمد عطية علي**
Signature:		
Date:	**28/9/2015**	**28/9/2015**

5.5 Course contents – Course ILOs Matrix **Academic Year: First 2015-2016**

Course Code/ Course Title: EEC609 / Personal and Mobile Communications

ILOs	**a** Knowledge and Understanding							**b** Intellectual Skills						**c** Professional and Practical Skills					**d** General and Transferable Skills		
Topic	a1	a2	a3	a4	a5	a6	a7	b1	b2	b3	b4	b5	b6	c1	c2	c3	c4	c5	d1	d2	d3
1	X	X						X						X		X			X	X	
2		X	X		X				X	X					X		X			X	
3				X					X					X					X	X	
4		X		X	X				X					X		X	X				
5			X	X					X						X					X	
6	X		X							X					X	X	X			X	
7	X		X		X			X		X					X				X		
8		X		X	X				X							X	X		X	X	
9		X	X		X					X					X		X			X	
10	X	X		X	X			X							X		X		X	X	

Course Coordinator: Department: Associate Prof. Mahmoud A. A. Ali

Head of Department: Associate Prof. Mahmoud A. A. Ali

Date: 28/9/2015

Course Specification

University	**Tanta**	
Faculty	**Engineering**	
Major or Minor Element of Program	**Minor**	
Course Title	**Cryptography and Security**	
Course Code	**EEC 610**	
Academic Year	**2013-2014**	
Coordinator	**Assoc. Prof. Salah El Dean Khamise**	
Teaching Staff	**Assoc. Prof. Salah El Dean Khamise** **Dr. Intisar Saied Gameey**	
Branch / Level	--/**Level 600**	
Semester	**First**	
Pre-Requisite	--	
Course Delivery	**Lecture 3**	**14 x 3=42 h lectures**
	Practical / Tutorial 0	
Department Offering the Program	**Electronics and Electrical Communication Engineering**	
Department Offering the Course	**Electronics and Electrical Communication Engineering**	
Date of Specification Approval	**15/9/2013**	

1. Course Aims

The aims of this course are to:

- Be familiar with cryptography.
  Understand Shannon's theory.
- Learn Secret Key Encryption.
- Learn Public Key Cryptosystems.
- Learn RSA Cryptosystem.
- Learn Digital Signatures - Hashing techniques.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

a1. Define cryptography.
a2. Describe Shannon's theory.
a3. Recognize secret key encryption.
a4. Recognize and give examples on public key cryptosystems.
a6. Give examples on digital signatures - hashing techniques.

B. Intellectual skills:

By the end of this course, the students should be able to:

b1. Describe cryptography.
b2. Interpret Shannon's theory.

b3. Explain secret key encryption.
b4. Describe public key cryptosystems.
b5. Comment on RSA cryptosystem.
b6. Compare digital signatures - hashing techniques

C. Professional and practical skills:

By the end of this course, the students should be able to:

c1. Create knowledge about cryptography.
c2. Build up simulation program for secret key encryption and RSA cryptosystem.
c3. Construct simulation programs for digital signatures - hashing techniques.

D. General and transferable skills:

By the end of this course, the students should be able to:

d1. Familiarize cryptography.
d2. Deal with secret key encryption.
d3. Deal with public key cryptosystems, and digital signatures -hashing techniques

3. Course Contents

Week	Topics
1	Review of Algebra and Number Theory
2	Overview of Cryptography
3	Complexity of Computations
4, 5	Shannon's Theory
6, 7	Secret Code Encryption (Block Ciphers)
8, 9	RSA Cryptosystem (Public Key Cryptosystem)
10, 11	Square Root Modulo n, RSA: Decryption
12, 13	Public Key Cryptosystem Based on Discrete Logarithm Problem
14	Digital Signatures-Hashing Techniques

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Discussion.
4.3- Assignments.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 15	70 %
Oral Assessment	--	--	0.0%
Practical Examination	--	--	0.0%
Semester work	5h(overall)	On week 2,6,8,10,12	30 %

6. List of references

6.1- Course Notes

- Taken by the student inside classrooms.

6.2- Essential Books: (Text Books)

1- Douglas Robert Stinson, "Cryptography: theory and practice", Last Edition.
2- Atul Kahate, "Cryptography and network security", Last Edition.

6.3- Recommended book

1- William Stalling, "Cryptography and network security", Last Edition.

6.4- Periodicals, Web Sites, … etc.

- To be cited during the course.

7- Facilities Required for Teaching and Learning

7-1. PC, data show, portable display screen
7-2. Computer Lab with simulation Packages such as MATLAB, Multisim, and ISE Xilinx.

	Course Coordinator	Head of Department
Name:	**Assoc. Prof. Salah Khamise**	**Assoc. Prof/ Mahmoud A. A. Ali**
Name (Arabic)	صلاح الدين عبد الغني خميس	د. محمود أحمد عطية علي
Signature:		
Date:	**15/9/2013**	**15/9/2013**

5.5 Course contents – Course ILOs Matrix **Academic Year: First 2013-2014**

Course Code / Course Title: EEC 610 / Cryptography and Security

ILOs	Knowledge and Understanding					Intellectual Skills						Professional and Practical Skills			General and Transferable Skills		
Topic	a1	a2	a3	a4	a5	b1	b2	b3	b4	b5	b6	c1	c2	c3	d1	d2	d3
1	X					X											
2	X					X									X		
3	X					X											
4		X					X										
5			X					X				X	X			X	
6				X					X			X	X				X
7				X					X	X		X	X				X
8					X						X	X	X				X
9					X						X	X		X			X

Course Coordinator: Assoc**.** Prof. Salah El Dean Khamees

Head of Department: Assoc**.** Prof. Dr. Mahmoud A. A. Ali

Date: 15/9/2013

Course Specification

University	**Tanta**	
Faculty	**Engineering**	
Major or Minor Element of Program	**Minor**	
Course Title	**Information Theory, Coding, and Cryptography**	
Course Code	**EEC 611**	
Academic Year	**2015-2016**	
Coordinator	**Assoc. Prof. Salah El Dean Khamise**	
Teaching Staff	**Assoc. Prof. Salah El Dean Khamise** **Dr. Heba Ali Elkhoppy**	
Branch / Level	--/**Level 600**	
Semester	**Second**	
Pre-Requisite	--	
Course Delivery	**Lecture 3**	**14 x 3=42 h lectures**
	Practical / Tutorial 0	
Department Offering the Program	**Electronics and Electrical Communication Engineering**	
Department Offering the Course	**Electronics and Electrical Communication Engineering**	
Date of Specification Approval	**13/2/2016**	

1. Course Aims

The aims of this course are to:

- Study Entropy and mutual information theory, joint Entropy, conditional Entropy.
- Be familiar source coding and the AEP - joint typicality (Neuhoff / Forney notes) - Entropy rate- Conditional independence and Markov chains - Entropy rate.
- Be familiar discrete memory less channels and their capacity - Arimoto-Blahut algorithm proof of the channel coding theorem-converse of channel coding theorem.
- Study capacity of AWGN, bandlimited AWGN channels - capacity of nonwhite channels: water filling.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

a1. Describe mutual information theory, joint Entropy, and conditional Entropy.
a2. Describe behavior of source coding and the AEP - joint typicality (Neuhoff/Forney notes) - Entropy rate - conditional independence and Markov chains - Entropy rate.
a3. Give example of usage of information theory, coding, and cryptography.

B. Intellectual skills:

By the end of this course, the students should be able to:

b1. Distinguish between mutual information theory, joint Entropy, conditional Entropy.
b2. Analyze behavior source coding and the AEP - joint typicality.
b3. Analyze capacity of AWGN, bandlimited AWGN channels - capacity of nonwhite channels: water filling.

C. Professional and practical skills:

By the end of this course, the students should be able to:

c1. Build up design of source coding and the AEP - joint typicality.
c2. Construct of between mutual information theory, joint Entropy, conditional Entropy.

D. General and transferable skills:

By the end of this course, the students should be able to:

d1. Familiarize with source coding and the AEP - joint typicality (Neuhoff/ Forney notes)
d2. Familiarize with discrete memory less channels and their capacity - Arimoto-Blahut algorithm - proof of the channel coding theorem -converse of channel coding theorem.

3. Course Contents

Week	Topics
1, 2	Entropy and Mutual Information Theory - Joint Entropy, Conditional Entropy
3, 4	Data Processing Theorem - Fano's Inequality
5, 6	Source Coding and the AEP - Joint Typicality (Neuhoff /Forney notes) -Entropy Rate - Conditional Independence and Markov Chains - Entropy Rate
7, 8	Lossless Source Coding - Kraft Inequality - Shannon and Huffman Codes - Shannon, Fano, Elias Codes - Arithmetic Codes - Lempel Ziv Codes -Channel apacity - Symmetric Channels.
9, 10	Discrete Memoryless Channels and Their Capacity - Arimoto-Blahut Algorithm - Proof of the Channel Coding Theorem -Converse of Channel Coding Theorem
11	Mutual Information, AEP for Continuous rv's - Gaussian Channel
12, 13	Capacity of AWGN, Bandlimited AWGN Channels - Capacity of Nonwhite Channels: Water Filling
14	Quantization - Rate Distortion Functions - Vector Quantization –Vector Quantization Gains - Vector Quantization Design - Multiuser Information Theory - Information theory and Statistics

4. Teaching and Learning Methods

4.1-Lectures.
4.2-Problems solving.
4.3-Web-sites show and demonstration.
4.4-General reading and discussion.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 15	70 %
Oral Assessment	--	--	0.0%
Practical Examination	--	--	0.0%
Semester work	5h(overall)	On week 2,6,8,10,12	30 %

6. List of references

6.1- Course Notes

- Taken by the student inside classrooms.

6.2- Essential Books: (Text Books)

-

6.3- Recommended book

- Principles of Communication Systems Simulation with Wireless Applications.

6.4- Periodicals, Web Sites, … etc.

- To be cited during the course.

7- Facilities Required for Teaching and Learning

7-1. PC, data show, portable display screen
7-2. Computer Lab with simulation Packages such as MATLAB, Multisim, and ISE Xilinx.

	Course Coordinator	Head of Department
Name:	**Assoc. Prof/ Prof. Salah El Dean Khamise**	**Assoc. Prof/ Mahmoud A. A. Ali**
Name (Arabic)	**د. صلاح الدين عبد الغني خميس**	**د. محمود أحمد عطية علي**
Signature:		
Date:	**13/2/2016**	**13/2/2016**

5.5 Course contents – Course ILOs Matrix **Academic Year: Second 2015-2016**

Course Code / Course Title: EEC 611 / Information Theory, Coding, and Cryptography

ILOs	**A** Knowledge and Understanding						**B** Intellectual Skills					**c** Professional and Practical Skills					**d** General and Transferable Skills		
Topic	a1	a2	a3	a4	a5	a6	b1	b2	b3	b4	b5	c1	c2	c3	c4	c5	d1	d2	D3
1	X					X	X				X	X					X		
2		X		X			X		X			X			X		X		
3			X		X		X			X		X					X		X
4			X			X	X				X	X	X				X	X	
5			X		X			X		X			X	X				X	
6			X			X		X			X		X			X		X	X
7			X	X				X	X				X					X	
8			X		X			X		X			X	X				X	

Course Coordinator: Associate Prof. Salah El Dean Khamise

Head of Department: Associate Prof. Dr. Mahmoud A. A. Ali

Date: 13/2/2016

Course Specification

University	**Tanta**	
Faculty	**Engineering**	
Major or Minor Element of Program	**Minor**	
Course Title	**Sensor Networks**	
Course Code	**EEC 612**	
Academic Year	**2015-2016**	
Coordinator	**Assoc. Prof. Salah El Dean Khamise**	
Teaching Staff	**Assoc. Prof. Salah El Dean Khamise** **Dr. Sameh Napoleon**	
Branch / Level	--/**Level 600**	
Semester	**Second**	
Pre-Requisite	--	
Course Delivery	**Lecture 3**	**14 x 3=42 h lectures**
	Practical / Tutorial 0	
Department Offering the Program	**Electronics and Electrical Communication Engineering**	
Department Offering the Course	**Electronics and Electrical Communication Engineering**	
Date of Specification Approval	**13/2/2016**	

1. Course Aims

The aims of this course are to:

- Understand sensor networks' architecture, protocols, design, and applications.
- Be familiar with localization and target detection algorithms.
- Be familiar with routing time synchronization.
- Know coordination and communication problems.
- Know underwater sensor networks.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

a1. Recognize sensor networks' architecture, protocols, design, and applications.
a2. Outline localization and target detection algorithms.
a3. Recognize routing time synchronization.
a4. State coordination and communication problems.
a5. Recognize underwater sensor Networks.

B. Intellectual skills:

By the end of this course, the students should be able to:

b1. Analyze sensor networks' architecture protocols.
b2. Analyze and construct designs for different applications.
b3. Compare localization and target detection algorithms.

b4. Describe routing time synchronization.
b5. Distinguish coordination and communication problems.
b6. Explain underwater sensor networks.

C. Professional and practical skills:

By the end of this course, the students should be able to:

c1. Assemble a practical sensor network.
c2. Confirm the localization, synchronization, and coordination problem.

D. General and transferable skills:

By the end of this course, the students should be able to:

d1. Become skilled at design and applications for sensor networks in all environments.
d2. Deal with problems concerning reliable operation.
d3. Familiarize some sensor application.

3. Course Contents

Week	Topics
1	Introduction, Sensor Networks Architecture and Protocol Stack
2	Factors Influencing the design of sensor Networks
3	Sensor network applications
4	Application Layer
5	Transport Layer Protocol
6	Routing Algorithms
7	Medium Access Control Protocols
8	Error Control Algorithms
9	Physical Layer Solutions
10	Localization and Target detection Algorithms
11	Time Synchronization Algorithms
12	Sensor and Actor (Actuator) Networks
13	Coordination and Communication Problems
14	Underwater Sensor Networks and Application Examples

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Discussions
4.3- Assignments

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 15	70 %

Oral Assessment	--	--	0.0%
Practical Examination	--	--	0.0%
Semester work	5h(overall)	On week 2,6,8,10,12	30 %

6. List of references

6.1- Course Notes

- Taken by the student inside classrooms.

6.2- Essential Books: (Text Books)

1. Holger Karl, Andreas Willig, "Protocols and architectures for wireless sensor networks", Last Edition.
2. KazemSohraby, Daniel Minoli, and Taieb F. Znati, "Wireless sensor networks: technology, protocols, and applications", Last Edition.

6.3- Recommended book

3. Holger Karl, Andreas Willig, "Protocols and architectures for wireless sensor networks", Last Edition.
4. KazemSohraby, Daniel Minoli, and Taieb F. Znati, "Wireless sensor networks: technology, protocols, and applications", Last Edition.

6.4- Periodicals, Web Sites, … etc.

- To be cited during the course.

7- Facilities Required for Teaching and Learning

7.1- Laptop, data show, portable display screen.
7.2- Computer lab with simulation packages such as MATLAB, Multisim, Opnet, and NS2.

	Course Coordinator	Head of Department
Name:	**Assoc. Prof/ Salah El Dean Khamise**	**Assoc. Prof/ Mahmoud A. A. Ali**
Name (Arabic)	**د. صلاح الدين عبد الغني خميس**	**د. محمود أحمد عطية علي**
Signature:		
Date:	**13/2/2016**	**13/2/2016**

5.5 Course contents – Course ILOs Matrix **Academic Year: Second 2015-2016**

Course Code / Course Title: EEC 612 / Sensor Networks

ILOs	Knowledge and Understanding					Intellectual Skills						Professional and Practical Skills		General and Transferable Skills		
Topic	a1	a2	a3	a4	a5	b1	b2	b3	b4	b5	b6	c1	c2	d1	d2	d3
1	X					X						X				
2	X						X									
3	X						X					X		X		X
4				X												
5				X												
6				X					X							
7				X						X						
8				X						X						
9		X						X				X		X	X	
10		X						X					X		X	
11			X						X			X	X		X	
12											X			X		
13				X						X		X	X	X	X	
14					X						X	X		X		X

Course Coordinator: Assoc. Prof. Salah El Dean Khamise

Head of Department: Assoc. Prof. Mahmoud A. A. Ali

Date: 13/2/2016

Course Specification

University	**Tanta**	
Faculty	**Engineering**	
Major or Minor Element of Program	**Minor**	
Course Title	**Computer Network Security**	
Course Code	**EEC 613**	
Academic Year	**2015-2016**	
Coordinator	**Assoc. Prof. Salah El Dean Khamise**	
Teaching Staff	**Assoc. Prof. Salah El Dean Khamise** **Dr. Sameh Atiff Napoleon**	
Branch / Level	--/**Level 600**	
Semester	**First**	
Pre-Requisite	--	
Course Delivery	**Lecture 3**	**14 x 3=42 h lectures**
	Practical / Tutorial 0	
Department Offering the Program	**Electronics and Electrical Communication Engineering**	
Department Offering the Course	**Electronics and Electrical Communication Engineering**	
Date of Specification Approval	**28/9/2015**	

1. Course Aims

The aims of this course are to:

- Understand web security and security standards.
- Recognize email security.
- Understand firewalls.
- Be familiar with cryptography.
- Understand authentication systems.
- Be familiar with digital signatures and certificates.
- Realize network security.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

a1. Define web security.
a2. Classify security standards.
a3. Give examples email security methods.
a4. Define firewalls.
a5. Describe authentication systems.
a6. Recognize signatures and certificate.
a7. Outline network security.

B. Intellectual skills:

By the end of this course, the students should be able to:

b1. Explain web security.
b2. Compare security standards.
b3. Summarize email security methods.
b4. Explain firewalls.
b5. Compare authentication systems.
b6. Compare digital signatures and certificates.

C. Professional and practical skills:

By the end of this course, the students should be able to:

c1. Build up information about web security, security standards.
c2. Confirm the importance of email security and firewalls.
c3. Construct simulation programs to show digital signatures and certificates work.

D. General and transferable skills:

By the end of this course, the students should be able to:

d1. Become skilled at securing network services
d2. Familiarize security standards and authentication systems and digital signatures and certificates.

3. Course Contents

Week	Topics
1	Web Security
2	Security Standards
3, 4	Electronic Mail Security
5	Firewalls
6, 7	Secret Key and Public/Private Key Cryptography
8, 9	Cryptographic Hashes and Message Digests
10, 11	Authentication Systems (Kerberos)
12, 13	Digital Signature and Certificates
14	Current Network Security

4. Teaching and Learning Methods

4.1- Lectures.
4.2- Discussions.
4.3- Assignments.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 15	70 %
Oral Assessment	--	--	0.0%
Practical Examination	--	--	0.0%
Semester work	5h(overall)	On week 2,6,8,10,12	30 %

6. List of references

6.1- Course Notes

- Taken by the student inside classrooms.

6.2- Essential Books: (Text Books)

1. Jie Wang, "Computer network security: theory and practice", Last Edition.
2. William Stallings, "Cryptography and Network Security: Principles and Practice", Last Edition.

6.3- Recommended book

1- Stevan, "Cryptography and Data Security", Last Edition.

6.4- Periodicals, Web Sites, … etc.

- To be cited during the course.

7- Facilities Required for Teaching and Learning

7.1 Laptop, data show, portable display screen.
7.2 Computer lab with simulation packages such as MATLAB, Multisim, and Mathematica.

	Course Coordinator	Head of Department
Name:	**Assoc. Prof/ Salah El Dean Khamise**	**Assoc. Prof/ Mahmoud A. A. Ali**
Name (Arabic)	**د. صلاح الدين عبد الغني خميس**	**د. محمود أحمد عطية علي**
Signature:		
Date:	**28/9/2015**	**28/9/2015**

5.5 Course contents – Course ILOs Matrix **Academic Year: First 2015-2016**

Course Code / Course Title: EEC 613 / Computer Network Security

ILOs	**a** Knowledge and Understanding							**b** Intellectual Skills						**c** Professional and Practical Skills			**d** General and Transferable Skills	
Topic	a1	a2	a3	a4	a5	a6	a7	b1	b2	b3	b4	b5	b6	c1	c2	c3	d1	d2
1	X							X						X			X	
2		X							X					X			X	
3			X							X					X		X	
4				X							X				X			X
5					X							X				X		
6					X							X				X		
7					X							X				X		X
8						X							X			X		X
9							X						X					

Course Coordinator: Assoc. Prof. Salah El Dean Khamise

Head of Department: Assoc. Prof. Mahmoud A. A. Ali

Date: 28/9/2015

Course Specification

University	**Tanta**	
Faculty	**Engineering**	
Major or Minor Element of Program	**Major**	
Course Title	**Adaptive Signal Processing**	
Course Code	**EEC 614**	
Academic Year	**2015-2016**	
Coordinator	**Assoc. Prof. Mahmoud Ahmed Attia Ali**	
Teaching Staff	**Assoc. Prof. Mahmoud A. A. Ali,** **Dr. Intisar Saeed Gameey**	
Branch / Level	--/**Level 600**	
Semester	**Second**	
Pre-Requisite	--	
Course Delivery	**Lecture 3**	**14 x 3=42 h lectures**
	Practical / Tutorial 0	
Department Offering the Program	**Electronics and Electrical Communication Engineering**	
Department Offering the Course	**Electronics and Electrical Communication Engineering**	
Date of Specification Approval	**13/2/2016**	

1. Course Aims

The aims of this course are to:

- Recognize adaptive modelling and system identification.
- Understand how adaptation is used if a system is needed to remain optimal in a continually changing environment.
- Study the most common block diagrams and structures used for adaptive filters and their properties.
- Be familiar with parameters needed to make the algorithms work.
- Understand signal prediction and estimation.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

a1. Recognize how to 0T 1T0formulate the mathematical problems, solve it and implement the solution for use with real-life signals.
a2. Identify different types of adaptive filters.
a3. Recognize adaptation rates and maladjustment.
a4. Describe theory and applications of adaptive signal processing.

B. Intellectual skills:

By the end of this course, the students should be able to:

b1. Develop the ideas of optimality and adaptation in signal processing
b2. Describe required adaptive algorithms with applications to specific engineering problems
b3. Manage to implement adaptive filters

C. Professional and practical skills:

By the end of this course, the students should be able to:

c1. Construct the ability to analysis, and implementation of digital signal processing systems.
c2. Create an understanding to dealing with various tools of analysis and design.
c3. Implement computer programs and algorithms on digital computers to solve engineering problem.

D. General and transferable skills:

By the end of this course, the students should be able to:

d1. Work as a part of a team in discussion group for a real case study
d2. Write scientific reports and discussions.
d3. Create new ideas (or simplification method of analysis).

3. Course Contents

Topic No.	Topic
1	Theory and Applications of Adaptive Signal Processing
2, 3	Adaptive Linear Combiner
4	Performance Surfaces
5, 6	Adaptive Optimization of Performance by Gradient Search
7, 8	Learning Curve Behaviour
9	Adaptation Rates and Maladjustment
10	Applications to Filtering
11, 12	Prediction
13	Estimation
14	Computer Simulation of Digital Filter

4. Teaching and Learning Methods

4.1 Lectures.
4.2 Problems solution.
4.3 Assignments.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 15	70 %

Oral Assessment	--	--	0.0%
Practical Examination	--	--	0.0%
Semester work	5h(overall)	On week 2,6,8,10,12	30 %

6. List of references

1.1 Course Notes

- Taken by the student inside classroom

1.2 Essential Books (Text Books)

1. Widrow and S. Stearns, "Adaptive Signal Processing", .
2. L. Tan, and J. Jiang, "Digital Signal Processing, Fundamentals and Applications", 2013.

1.3 Recommended Books

1. Haykin S - Adaptive Filter Theory.
2. J. Sztipanovits, G. Karsai, and T. Bapty, "Self-adaptive Software for Signal Processing",

1.4 Periodicals, Web Sites ...etc

- To be cited during the course

7- Facilities Required for Teaching and Learning

7.1 Laptop, data show, portable display screen.
7.2 Computer lab with simulation packages such as MATLAB.

	Course Coordinator	Head of Department
Name:	**Assoc. Prof/ Mahmoud A. A. Ali**	**Assoc. Prof/ Mahmoud A. A. Ali**
Name (Arabic)	**د. محمود أحمد عطية علي**	**د. محمود أحمد عطية علي**
Signature:		
Date:	**13/2/2016**	**13/2/2016**

5.5 Course contents – Course ILOs Matrix **Academic Year: Second 2015-2016**

Course Code / Course Title: EEC 614 / Adaptive Signal Processing

ILOs	**a** Knowledge and Understanding					**b** Intellectual Skills			**c** Professional and Practical Skills			**d** General and Transferable Skills		
Topic	a1	a2	a3	a4	a5	b1	b2	b3	c1	c2	c3	d1	d2	d3
1		X		X		X			X	X			X	X
2	X	X				X		X	X	X	X	X	X	
3	X						X	X		X	X		X	
4	X					X			X			X	X	X
5	X						X	X	X	X				X
6	X		X							X			X	
7	X			X			X	X	X	X			X	
8	X							X			X	X		
9	X							X	X	X	X		X	X
10	X			X			X		X		X	X		X

Course Coordinator: Assoc. Prof. Mahmoud A. A. Ali **Head of Department:** Assoc. Prof. Mahmoud A. A. Ali

Date: 13/2/2016

Course Specification

University	**Tanta**	
Faculty	**Engineering**	
Major or Minor Element of Program	**Minor**	
Course Title	**Microwave Devices and Circuits**	
Course Code	**EEC 616**	
Academic Year	**2014-2015**	
Coordinator	**Prof. Mustafa Mahmoud Abd El Naby**	
Teaching Staff	**Prof. Mustafa Mahmoud Abd El Naby**	
Branch / Level	--/**Level 600**	
Semester	**Second**	
Pre-Requisite	--	
Course Delivery	**Lecture 3**	**14 x 3=42 h lectures**
	Practical / Tutorial 0	
Department Offering the Program	**Electronics and Electrical Communication Engineering**	
Department Offering the Course	**Electronics and Electrical Communication Engineering**	
Date of Specification Approval	**7/2/2015**	

1. Course Aims

The aims of this course are to:

- To enable the student to become familiar with active & passive microwave devices & components used in Microwave communication systems.

2. Intended Learning outcomes (ILOs)

A. Knowledge and understanding:

By the end of this course students should be able to:

a1. To study passive microwave components and their S- parameters.
a2. To study microwave semiconductor devices and applications.
a3. To study microwave sources and amplifiers.
a4. To study the microwave linear and crossed field tubes.

B. Intellectual skills:

By the end of this course, the students should be able to:

b1. Analyze microwave frequencies, microwave devices, microwave systems, microwave units of measure, microwave hybrid circuits, waveguide tees, magic tees (hybrid trees), hybrid rings (rat-race circuits), waveguide corners, bends and twists, directional couplers, two-hole directional couplers, Z & ABCD parameters- introduction to S parameters, S matrix of a directional coupler, hybrid couplers, circulators and isolators, microwave circulators, microwave isolators.
b2. Analyze transferred electron devices (TEDs) and avalanche transit time devices.
b3. Analyze microwave linear beam tubes (O TYPE) and microwave crossed field tubes.

C. Professional and practical skills:

By the end of this course, the students should be able to:

c1. Analyze the microwave components.
c2. Familiar with the different types of microwave devices and circuit.

D. General and transferable skills:

By the end of this course, the students should be able to:

d1. Face and solve unexpected technical problems related to annotated topics Face and solve unexpected technical problems related to annotated topics.
d2. Manipulate and utilize the various tools of analysis, design, and related web-sites.
d3. Familiarities students with the correct methods of dealing with equipment.).

3. Course Contents

Topic No.	Topic
1, 2, 3	Microwave components
4, 5, 6	Transferred electron devices
7, 8, 9	Avalanche transit time devices
10, 11, 12	Microwave linear beam tubes
13, 14	Microwave crossed field tubes

4. Teaching and Learning Methods

4.1 Lectures.
4.2 Problems solution.
4.3 Assignments.

5. Student Assessment

Assessment Method	Assessment Length	Schedule	Proportion
Written Examination	3h	On week 15	70 %
Oral Assessment	--	--	0.0%
Practical Examination	--	--	0.0%
Semester work	5h(overall)	On week 2,6,8,10,12	30 %

6. List of references

6.1 Course Notes

- Taken by the student inside classroom

6.2 Essential Books (Text Books)

1- Samuel Y.LIAO, “Microwave Devices and Circuits”, Prentice Hall of India, 3rd Edition, 2003.

2- Annapurna Das and Sisir K. Das, "Microwave Engineering", (UNIT V), Tata McGraw-Hill, 2000.

6.3 Recommended Books

1- Samuel Y.LIAO, "Microwave Devices and Circuits", Prentice Hall of India, 3rd Edition, 2003.

6.4 Periodicals, Web Sites ...etc

- To be cited during the course

7- Facilities Required for Teaching and Learning

7.1- Laptop, data show, portable display screen.
7.2- Computer lab with simulation packages such as MATLAB, Multisim, and ISE Xilinc.

	Course Coordinator	Head of Department
Name:	**Prof/ Mustafa M. Abd El Naby**	**Assoc. Prof/ Mahmoud A. A. Ali**
Name (Arabic)	**أ.د. مصطفى محمود عبد النبي**	**د. محمود أحمد عطية علي**
Signature:		
Date:	**7/2/2015**	**7/2/2015**

5.5 Course contents – Course ILOs Matrix **Academic Year 2014-2015**

Course Code / Course Title: EEC 616 / Microwave Devices and Circuits

ILOs	**a** Knowledge and Understanding						**b** Intellectual Skills					**c** Professional and Practical Skills					**d** General and Transferable Skills			
Topic	a1	a2	a3	a4	a5	a6	b1	b2	b3	b4	b5	c1	c2	c3	c4	c5	d1	d2	d3	d4
1	X						X		X			X					X	X		
2		X	X				X			X		X	X		X		X	X	X	X
3			X			X		X				X	X				X	X		
4				X	X				X		X			X					X	
5					X			X	X				X			X			X	X

Course Coordinator: Prof. Mustafa Mahmoud Abd El Naby

Head of Department: Assoc. Prof. Mahmoud A. A. Ali

Date: 7/2/2015