



Electronic Engineering

Specialization	Electronic Equipment Technology
Course Number	20403121
Course Title	Electronics Workshops 1
Credit Hours	1
Theoretical Hours	0
Practical Hours	3



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Brief Course Description:

- ❖ Electrical safety at workshops and laboratories, hand tools, measuring devices , electronic components testing ,practicing soldering and desoldering and building electronic circuits.

Course Objectives:

Upon the completion of the course, the student will be able to:

1. Health and safety.
2. Electronic components recognition.
3. Soldering and disordering.
4. Electronic circuit board assembly.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Detailed Course Description:

lab Number	lab Name	lab Content	Time Needed
1.	Health and safety	<ul style="list-style-type: none"> The health and safety at work, personal protective equipment, electrical safety in workshop and laboratories. standards marks, first aid at work, risk and hazard, fire control, manual handling, personal awareness. operation hazards exercises 	
2.	Electronic components recognition	<ul style="list-style-type: none"> Abbreviations used in electronics ,types of resistors ,standard color code,.5-band metal film resistors,capacitors,types of capacitors, coupling and decoupling, color code capacitors.insulators,transformers,motors 	
3.	Measuring devices and hand tools	<ul style="list-style-type: none"> Practicing using measurements devices as multimeters, oscilloscope,function generator, transistor taster and logic probe 	
4.	Electronics components testing	<ul style="list-style-type: none"> Diodes, transistors (BJT, FET, MOSFET), SCR TRIAC, DIAC and digital linear circuits 	
5.	Data Sheet	<ul style="list-style-type: none"> Data sheet for electronic components, the equivalence for electronic components 	

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		(transistors, diodes, ICs)	
6.	Soldering and desoldering	<ul style="list-style-type: none"> Soldering and desoldering process, how to use soldering iron, solders, flux, dry joints and soldering techniques, how to use hot air solder 	
7.	Removing components	<ul style="list-style-type: none"> Removing faulty components as resistors, capacitors, diodes, transistors and ICs 	
8.	Electric Wires	<ul style="list-style-type: none"> Electrical wire, types of wires and cables, the American and local standards 	

Evaluation Strategies:

Exams		Percentage	Date
Exams	Midterm Exam	20%	--/--/----
	Assignments	30%	--/--/----
	Final Exam	50%	--/--/----
Discussions and lecture Presentations			
Homework and Projects			

Teaching Methodology:

- ❖ Lab. work

Textbook & References:

1. Electronic Servicing and Repairs by TREVOR LINSLEY ,Third edition, by Butterworth ,Heinemann 2000,ISBN 07506505320
2. Build Your Own Electronics Workshop ,ISBN: 0071447245 ,Publisher: McGraw-Hill/TAB Electronics,1 edition (December 1, 2004) , by [Thomas Petruzzellis](#)

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Electronic Engineering

Specialty	Electronic Devices Technology - ELD
Course Number	20403251
Course Title	Communication Systems 1
Credit Hours	3
Theoretical Hours	3
Practical Hours	0



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Communication systems concept. Block & functional diagrams .Analogue & digital Communication. Analogue & digital MW transmitting systems

Course Objectives:

Upon the completion of the course, the student will be able to:

1. Define the transmission system.
2. Explain the transmission concepts.
3. Analyze the modulation techniques.
4. Draw block & functional diagrams of the transmitting diagram.
5. Mention the differences between analogue & digital transmitting.



Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Introduction to communication systems	<ul style="list-style-type: none"> ▪ concept of communication services(voice,data,image, multimedia) ▪ general block diagram of communication system ,one way&two way communication ▪ noise, types of noises ▪ radio spectrum and transmission media 	
2.	signal analysis	<ul style="list-style-type: none"> ▪ signals(types and properties) ▪ fourier series/basic equations and simple examples ▪ fourier transform/basic equation and simple examples 	
3.	analog Communication	<ul style="list-style-type: none"> ▪ analog Communication ▪ Principles of Amplitude modulation, the need for modulation, types of modulation ▪ Principles of amplitude modulation (AM) ▪ Double side band (DSB) modulation ▪ Double side band suppressed carrier (DSB-SC) modulation ▪ Single side band(SSB) modulation ▪ Vestigial Side BAND (VSB) modulation 	

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		<ul style="list-style-type: none"> Frequency spectrum of AM signals, power calculation, circuits of AM modulators, AM transmitter 	
4.	Frequency Modulation (FM)	<ul style="list-style-type: none"> Principles of FM ,modulation maximum frequency deviation Narrow band (NBFM) and Wide band(WBFM) modulation FM modulators,FM transmitter,pre-emphasis ,AFC Principle of angle modulation comparison between AM and FM 	
5.	Television Transmitter	<ul style="list-style-type: none"> Basic Television transmitter,low&high level modulation,AFC,generation of AM and FM signals, Sync pulse generation, complete TV transmitter block diagram 	
6.	Transmission Techniques and multiplexing	<ul style="list-style-type: none"> Concept Band Width Carriers, modulation, base and Transmission Simplex transmission, duplex transmission, symmetrical and asymmetrical transmission Analog multiplexing, basic group Frequency Division Multiplexing (FDM) (super group, master group, super master group) 	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

7.	Analog to Digital conversion and digital modulation	<ul style="list-style-type: none"> ▪ Pulse code modulation (PCM), Delta modulation, PPM, PAM, PDM ▪ Time Division Multiplex (TDM) ▪ Preciples of digital modulations ▪ Amplitude Shift Keying (ASK), (FSK) and (PSK) 	
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Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Assignments	10%	--/--/----
	Final Exam	50%	
Discussions and lecture Presentations			
Homework and Projects			

Teaching Methodology:

- ❖ Lectures

Textbook & References:

1. Simon Haykin ,Communication System 3th edition, puplisher Wiely,2001
2. Tom Wheeler ,electronic Communication for technicicans ,Prentice Hall, 2001
3. Marttin S.Roden ,Analog and Digital Communication ,Prentice Hall,1996
4. Bernard Sklar ,Digital Fundemetals and applications,2nd edition, Prentice Hall,2001



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Electronic Engineering

Specialty	Electronic Devices Technology - ELD
Course Number	20403252
Course Title	Communication Systems 1 Lab
Credit Hours	1
Theoretical Hours	0
Practical Hours	3



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Experiments in Amplitude modulation ,(AM,DSBSC,SSB) ,Frequency modulation(FM),Filters, Frequency Division Frequency Multiplex (FDM) ,Analog to Digital conversion , Pulse modulation , modulators and Demodulators.

Course Objectives:

Upon the completion of the course, the student will be able to:

1. Measure modulation techniques factors (modulation index,deviations,...etc)
2. Scope and analyze modulated signals.
3. distinguish between different types of modulators and demodulators



Detailed Course Description:

lab Number	lab Name	lab Content	Time Needed
1.	Frequency combiner		
2.	Balanced modulators		
3.	FM		
4.	Side Band Filters		
5.	Low pass Filter		
6.	Band pass Filter		
7.	Analog/Digital conversion		
8.	Sampling theorem		
9.	PAM		
10.	PCM		
11.	ASK		
12.	FSK		

Evaluation Strategies:

Exams		Percentage	Date
Exams	Assignments	30%	--/--/----
	Mid-tern exam	20%	--/--/----
	Final practical exam	50%	--/--/----
Homework and Projects			
Discussions and lecture Presentations			

Teaching Methodology:

References:

Lab sheet.



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Electronic Engineering

Specialization	Electronic Equipment Technology
Course Number	20403221
Course Title	Electronics Workshops 2
Credit Hour	2
Theoretical Hours	0
Practical Hours	6



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Brief Course Description:

- ❖ Reading block, functional diagrams of electronic equipments and electronic systems, design, build electronics circuit, printed circuit technology, troubleshooting and installation.

Course Objectives:

Upon the completion of the course, the student will be able to:

1. Block, functional and circuit diagrams for electronics equipments
2. Electronic circuits' assembly
3. Printed circuit technology
4. Troubleshooting, monitoring, installation for electronics equipments



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Reading Block&Functional Diagrams	<ul style="list-style-type: none"> Block, Functional and circuit diagrams of electronic equipments as radio, TV, Cassette recorder, video Cassette recorder, Video CD, satellite receiver, mobile telephone, computer 	
2.	Electronics Circuits assembly	<ul style="list-style-type: none"> Electronics circuits' assembly, Power supply units (5V,10,15), Amplifiers, testing Audio amplifiers, lighting circuits 	
3.	Printed circuit	<ul style="list-style-type: none"> Printed circuit technology, design PCB, Single side, Double side, using software for designing PCB (OrCad, Eeasy PCB, pRoto, Eagle and PCB123), silk screen and UV, Chemical Etching, Splitting machine, identify puncture machine build intercom circuit digital timer circuit 	
4.	Inter connector's methods	<ul style="list-style-type: none"> PCB Edge Connectors, Ribbon Cable Connectors, Din Connectors and Jack Connectors 	
5.	Troubleshooting & Maintenance	<ul style="list-style-type: none"> Simple telephone system, modern telephone system, mobile telephone, Radio, TV, Cassette recorder, video Cassette recorder, Video CD, satellite receiver, computer 	

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Evaluation Strategies:

Exams		Percentage	Date
Exams	Mid term Exam	20%	--/--/----
	Assignments	30%	--/--/----
	Final Practical Exam	50%	--/--/----
Homework and Projects			
Discussions and lecture Presentations			

Teaching Methodology:

- ❖ Laboratory

Textbook & References:

1. Electronic Drafting Printed Circuit board, by S. Villanucc, ISBN 0 02 423050
2. Electronic Troubleshooting ; by [Daniel R. Tomal](#), [Neal S. Widmer](#), [Daniel Tomal](#), [Neal Widmer](#) "A career in electrical, Publisher: McGraw-Hill/TAB Electronics; 3 edition , September 26, 2003) , Language: English , ISBN: 0071423079
3. Servicing Electronic Systems Volume 3: Digital Techniques and Microprocessor Systems (Servicing Electronic Systems , Vol 3) , Ian Sinclair, Geoff Lewis



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Electronic Engineering

Specialty	Electronic Devices Technology - ELD
Course Number	20403253
Course Title	Communication Systems 2
Credit Hours	3
Theoretical Hours	3
Practical Hours	0



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Wireless Communication Systems (HF ,VHF &UHF),Satellite Communication Systems ,Fiber Optical Communication Systems ,Public Line Mobile Network (PLMN),Cellular Systems (GSM, AMPS,UMTS,IMT2000).

Course Objectives:

Upon the completion of the course, the student will be able to:

1. Define the Wireless Communication Systems ,Comapare Between Different Types (HF,VHF &UHF).
2. Mention the defferets types of communication systems (Fiber optic, Satellite ,Wirless, Mobile)
3. comparison the defferets types of communication system.



Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Communication Systems	<ul style="list-style-type: none"> ▪ Introduction ▪ HF Wireless Communication Systems, Transmitters and Receivers ▪ VHF Wireless Communication Systems, Transmitters and Receivers ▪ UHF Wireless Communication Systems, Transmitters 	
2.	Satellite Communication Systems:	<ul style="list-style-type: none"> ▪ Introduction to satellite Communication Systems ▪ Satellite orbits and Types ▪ Satellite Networks, FM Technique ▪ Access Technique in Satellite 	
3.	Fiber Optical Communication System	<ul style="list-style-type: none"> ▪ Introduction ▪ Advantages of Fiber Optics ▪ Block Diagram of Fiber Optical System ▪ Types of Fiber Optic, Transmission Properties ▪ Fiber Optical Components ▪ Light Propagation in Optical Fiber ▪ Optical Fiber Calculation ▪ Type of Modulation used in Optical Fiber ▪ Optical Sources used Optical Fiber 	

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<p>4.</p>	<p>Public Line Mobile Network (PLMN)</p>	<ul style="list-style-type: none"> ▪ Cells Concept, Network Components ▪ Operation of the Public Line Mobile Network ▪ Small and Large Cell System, advantages and disadvantages ▪ Spectrum, Frequency Allocation for Mobile Systems ▪ Interference in Mobile Systems ▪ Handover in Mobile system 	
<p>5.</p>	<p>Mobile Communications</p>	<ul style="list-style-type: none"> ▪ Analog Mobile Communication System (First Generation) ▪ Digital Mobile Communication System - Second Generation ▪ (GSM, PCS, D-APS, PDC), Techniques and Properties ▪ GSM Structure, Principles, Geographical Areas ▪ Multiple Accesses in GSM ▪ Modulation in GSM ▪ Digital Mobile Communication System Third Generation, (IMT2000, UMTS), Techniques and Properties 	





Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:

- ❖ Lecture

Textbook References:

1. Jochen Schiller, Mobile Communication, Addison Wesley , Second Edition, 2004
2. Joseph C.Palais Optic Communication, Fifth Edition Prentice , Hall, 2005
3. R.Allen Shotwell, An Introduction to Fiber Optics, Prentice-Hall, 1997



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Electronic Engineering

Specialty	Electronic Devices Technology - ELD
Course Number	20403271
Course Title	Audio/visual Receiving Equipments Repairing
Credit Hours	3
Theoretical Hours	3
Practical Hours	0



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Block & functional diagrams of Radio ,TV ,Satellite receivers ,Receiving systems components ,operation ,faults ,trouble shooting, and installation.

Course Objectives:

Upon the completion of the course, the student will be able to:

1. Mention the receiving system components, stages & circuits.
2. Draw the block diagrams for Radio, TV & Satellite receivers.
3. Draw the received signals wave shapes & mention their c/s.
4. Explain the operation of the circuits include in the receiver & mention their functions.
5. Mention the trouble shooting steps for each receiver.



Detailed Course Description:

Unit Number	Unit Name	Unit Content	Time Needed
1.	Receivers' introduction	<ul style="list-style-type: none"> Introduction, superheterodyne receiver, tuning range, sensitivity, image rejection, automatic gain control, double conversion electrically tuned circuit 	
2.	AM & FM Receivers	<ul style="list-style-type: none"> Block diagrams, functional and circuit diagrams, waveform and frequency Response for each stage, faults in each stage 	
3.	TV Receiver	<ul style="list-style-type: none"> Television color receiver block diagram, RF tuner (VHF, UHF), Complete types of tuners (transistor, ICs) 	
4.	Video IF Amplifier and Video Circuits	<ul style="list-style-type: none"> Requirements of gain and band pass response, inter stage coupling methods, IF amplifier circuits, video detector, video amplifier requirements and circuits. AGC Circuits 	
5.	Synchronization	<ul style="list-style-type: none"> Vertical and Horizontal sync, separator, AFC, Sync Circuits, Vertical Oscillator, Horizontal Oscillator, Vertical deflection Amplifier, Horizontal deflection Amplifier 	

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6.	Power Supply, Picture Tubes, TV Display	<ul style="list-style-type: none"> Power supply circuit, HT, Picture tubes ,Types ,Structure ,TV Display ,types 	
7.	Television systems and standards	<ul style="list-style-type: none"> NTSC Color system, PAL Color system, SECAM Color system 	
8.	Color Fundamentals ,CCTV	<ul style="list-style-type: none"> Color Mixing, Subtractive & additive of colors, color circle diagram, chromaticity diagram chromaticity diagram, Closed Circuit System(CCTV 	

Evaluation Strategies:

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Assignments	10%	--/--/----
	Final Exam	50%	
Discussions and lecture Presentations			
Homework and Projects			

Teaching Methodology:

- ❖ Lecture

Textbook References:

Video Scrambling & Descrambling ,Second Edition ,for Satellite & Cable TV Rudolf F. Graf, William Sheets. Publisher: Newnes , 3 edition (November 5, 1998), Language , English, ISBN: 0750699973 .

- Basic guide to satellite TV ,Installation, Reception and Repair by Dereck J. Stephen Son.
- Newenes Guide to satellite TV ,Installation, Reception and Repair by Dereck, J. Stephenson 1997.

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Electronic Engineering

Specialty	Electronic Devices Technology - ELD
Course Number	20403272
Course Title	Audio/visual Receiving Equipments Repairing Lab
Credit Hours	2
Theoretical Hours	0
Practical Hours	6



❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

Brief Course Description:

- ❖ Block & functional diagrams of Radio & TV Receivers ,Troubleshooting ,and repairing systems.

Course Objectives:

Upon the completion of the course, the student will be able to:

1. Follow up the receivers block and circuit diagrams
2. Troubleshoot the receivers.
3. Repair the faults.



Detailed Course Description:

lab Number	lab Name	lab Content	Time Needed
1.	Troubleshooting & repairing radio(AM,FM)	<ul style="list-style-type: none"> Classifying Symptoms, Localization Troubles, Isolating Failures Within a section, and Identifying Defective Components 	
2.	Tuner Troubles	<ul style="list-style-type: none"> Recognizing the symptoms, tuning TV Receiver, RF Amplifier Circuits Troubleshooting Electronic Tuners 	
3.	Picture IF Troubles	<ul style="list-style-type: none"> Recognizing IF Amplifier Trouble, Video Detector, Picture IF Amplifier Circuits, Troubleshooting the IF Circuitry 	
4.	Troubleshooting Video Failure	<ul style="list-style-type: none"> Television Picture Tubes, Troubleshooting Television Picture Tube Failures, Video Amplifiers, Contrast Control 	
5.	Automatic Gain Control	<ul style="list-style-type: none"> AGC Action in RF & IF Amplifiers, AGC Trouble Symptoms , Troubleshooting AGC Problems 	
6.	Audio Section Failures	<ul style="list-style-type: none"> Identifying Audio Failure Symptoms, Speaker Circuits, Audio Power Amplifier, Push-Pull Power Amplifiers, ICs Amplifier, Audio circuits 	
7.	The Sound IF Section	<ul style="list-style-type: none"> Identifying the Trouble, Sound Section Operaton, The 	

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008

		<p>sound IF Amplifier,</p> <ul style="list-style-type: none"> ▪ The sound-Detector Stage, Cheking Sound IF Circuits 	
8.	Television Sync Problems	<ul style="list-style-type: none"> ▪ Loss of Vertical Sync Only, Loss of Horizontal Sync Only, Loss of Vertical and Horizontal Sync, Sync Separator, Troubleshooting the Sync Section 	
9.	Picture Sweep Section Failure	<ul style="list-style-type: none"> ▪ Picture Seep Section Failures, Vertical -Sweep Failures, of Vertical Sync 	
10.	Mobile telephone, block diagram , trouble shooting	<ul style="list-style-type: none"> ▪ 	
11.	Satellite receiver, block diagram , trouble shooting	<ul style="list-style-type: none"> ▪ 	
12.	Personal , block diagram , trouble shooting	<ul style="list-style-type: none"> ▪ 	

Evaluation Strategies:

Exams		Percentage	Date
Exams	Assignments	30%	--/--/----
	Mid-tern exam	20%	--/--/----
	Final practical exam	50%	--/--/----
Homework and Projects			
Discussions and lecture Presentations			

❖ تطبق هذه الخطة الدراسية اعتباراً من بداية العام الجامعي 2009/2008



Teaching Methodology:

❖ Laboratory

Textbook References:

1. Television Symptom Diagnosis ,By Richard W. Tinnel 2000
2. Newnes Guide to Satellite TV ,Installation, Reception and Repair DEREK J STEPHENSON Publisher ,Butterworth ,Heinemann ,4 edition (October 1997) Language: English ISBN: 0750634758
3. Troubleshooting and Repairing Solid-State TVs,Homer L. avidson ,Publisher ,Tab Books; 3rd edition (March 12, 1996) Language , English ISBN ,0070157537.



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