

PROGRAM VISION

66 Achieve leadership in the field of communications and computer engineering and gain the confidence of the local and regional community in the graduate of the program 66

PROGRAM MISSION

The Communications and Computers Engineering program at Mansoura University committed to prepare scientifically and ethically qualified and professional engineers in the fields of communications and computer engineering, able to compete in the local and regional labor market and conduct scientific research to serve society and develop the environment 🚜



PROGRAM AIMS

Upon successful completion of the program, graduates must be

- 1. Acquire knowledge of mathematics, elementary science, necessary to solve engineering fundamental problems, design systems, conduct experiments, and analyze data within realistic constraints and considering the impacts on society and environment.
- 2. Identify practical, soft, presentation, management and language skills to ensure effective communication, display professional, manage projects and ethical responsibilities, engage in self and life-long learning, and demonstrate knowledge of contemporary engineering issues.
- 3. Acquire knowledge and practical skills of communication and computer engineering requirements to solve their associated problems, design and conduct experiments within heterogeneous teams under realistic constraints.
- 4. Identify different kinds of communication, network, security, control, and electronics, embedded systems with an understanding the design, operation, maintenance and associated limitations in industrial applications.
- 5. Use current advanced techniques, skills, necessary to design, implement computer-based systems in diverse fields with appropriate attention to hardware installation, software design, data manipulation and system operations.
- 6. Incorporate economics and business practices on both operational and decision-making levels including projects and risks using system analysis tools and techniques.

Intended Learning Outcomes (ILO's)



Knowledge and Understanding

The graduates of the Communications and Computers engineering program should be able to:

- 1. Memorize concepts and theories of mathematics and elementary sciences related to the communication and information engineering. 2. Recognize the basics of information and communication
- technology (ICT). 3. Identify the characteristics of engineering materials related to the communication and computer engineering.
- 4. Underline the principles of design for elements, processes and systems related to communication and computer
- engineering. 5. Define the methodologies of solving engineering problems, data collection and interpretation.
- 6. Describe the quality assurance systems, codes of practice and standards
- 7. Recognize the health and safety requirements and environmental issues.
- 8. Recognize business and management principles relevant to
- 9. Identify current engineering technologies as related to communication and Computer engineering.
- 10. Be aware of topics related to humanitarian interests and moral issues. 11. Be aware of Technical language and report writing
- 12. Identify Professional ethics and impacts of engineering solutions on society and environment.
- 13. Identify Contemporary engineering topics. 14. List principles of analyzing and design of electronic circuits and control systems.
- 15. Recognize Biomedical instrumentation.





http://engfac.mans.edu.eg/

Faculty of Engineering – Mansoura University



COMMUNICATIONS & COMPUTERS ENGINEERING

PROGRAM MATRIX

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	Course	ar	Aims		Knowledge and Understanding						Intellictual Skills				Professional and Practical Skills				General Skills			Course	
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CHEM 021	Chemistry	8																				CHEM 021	Chemistry
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CSE 051	Computer Programming			Н											+++						+	C SE 051	Computer Programming
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PHYS 013	Physics-2			Н								++										PHY S 0 13	Physics-2
UNC 041	English-1			П					Ш													UNC 041	English-1
UNC 042	English-2			Щ	\bot				Ш													UNC 042	English-2
CSE 156 CSE 162	Computer Architecture Digital Design	-		+		Н			╫			++						Н				C SE 156 C SE 162	Computer Architecture Digital Design
ECE171	Solid State Electronics	-		Н		Н			ш			++								+		ECE171	Solid State Electronics
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C SE 155	Computer Engineering	7										$\perp \! \! \! \! \! \! \! \! \perp$		ш								C SE 155	Computer Engineering
UNC143	Technical English Writing	, se							₩			-			+++			++		+		UNC 143	Technical English Writing
UNC142 UNC144	Finance Decision Support System	Le																				UNC 14 4	Finance Decision Support System
ENG 111	Introduction to Civil Engineering																					ENG 111	Introduction to Civil Engineering
CSE 153	Introduction to Data Structures & Software Engineering																					C SE 153	Introduction to Data Structures & Software Enginee
ECE 172	Electronics 1																					ECE 172	Electronics 1
ECE 161	Electric Circuit Analysis																					ECE 161	Electric Circuit Analysis
501	Training 1																					501	Training 1
CSE 265 MATH 209	Databases Probability and Statistics											++						+		+		C SE 265 M A TH 209	Databases Probability and Statistics
ECE264	Electromagnetic Fields											++								+		ECE264	Electromagnetic Fields
M ath 208	Discrete Mathematics																 	$\dagger \dagger$		Ħ		M ath 208	Discrete M athematics
CSE 257	Operating System	8																				C SE 257	Operating System
ENG 234	Fundamentals Thermo-Fluids	2																		Ш		ENG 234	Fundamentals Thermo-Fluids
UNC 245	M anagement Information Systems	∮ ¥e													+			+		\blacksquare		UNC 245	M anagement Information Systems
ECE 275 ECE 274	Signals and Systems Electronics 2	ן ב									++++							++		+		ECE 275 ECE 274	Signals and Systems Electronics 2
ECE 277	Introduction to Communication System	-									HHH	++										ECE 277	Introduction to Communication System
ENG 233	Engineering Economy	-										++										ENG 233	Engineering Economy
CSE 276	Control System																					C SE 276	Control System
ECE 378	Analog and Digital Communications																	\blacksquare		\Box		ECE 378	Analog and Digital Communications
CSE 358 UNC 345	Computer Graphics										++++				++++					+		C SE 358	Computer Graphics
ENG 368	Operation Research Electrical Energy Systems	-									++++				+++		 	++		+		UNC 345 ENG 368	Operation Research Electrical Energy Systems
CSE 357	Internet Programming										\Box											C SE 357	Internet Programming
CSE 359	Microprocessor System	=																				C SE 359	M icroprocessor System
ECE 379	Digital Signal Processing																					ECE 379	Digital Signal Processing
UNC 344	Law for M anagement	30			++++				+++						++++					\perp		UNC 344	Law for Management
UNC 346 CSE 301	M arketing Software Engineering	<u> </u>																+		+		UNC 346 CSE 301	Marketing Software Engineering
CSE 302	Computer & Network Security fundamentals	e																++		+		C SE 302	Computer & Network Security fundamentals
CSE 303	Foundations of Informations																 	+		Н		C SE 303	Foundations of Informations
CSE 304	Distributed Systems																					C SE 304	Distributed Systems
ECE 301	Electronics of Communications																					ECE 301	Electronics of Communications
ECE 302	Mobile Communication System			\perp																		ECE 302	Mobile Communication System
ECE 303 ECE 304	Electromagnetic Waves Optoelectronics			+																		ECE 303 ECE 304	Electromagnetic Waves Optoelectronics
502	Training 2																					502	Training 2
UNC446	Quantitative M ethods Of Quality Control																					UNC446	Quantitative M ethods Of Quality Control
UNC 447	Communication Skills																					UNC 447	Communication Skills
UNC448	Projects Management																					UNC448	Projects M anagement
498 499	Project and Report 1 Project and Report 2																					498	Project and Report 1 Project and Report 2
CSE 401	Human- Computer Interaction																					C SE 401	Human- Computer Interaction
CSE 402	Web Based Information System																					C SE 402	Web Based Information System
CSE 403	Compilers																					C SE 403	Compilers
CSE 404	M ul timedia	0																				C SE 404	Multimedia
CSE 405	Parallel Algorithms	40																				C SE 405	Parallel Algorithms
CSE 406 CSE 407	Embedded and Real Time System Decision Algorithms	ve																				C SE 406 C SE 407	Embedded and Real Time System Decision Algorithms
CSE 407	Selected Topics in Computer and Informations	Le																				C SE 407	Selected Topics in Computer and Informations
ECE 401	Intergrated Circuit Design																					ECE 401	Intergrated Circuit Design
ECE 402	RF Circuits and Devices																					ECE 402	RF Circuits and Devices
ECE 403	Microwave Engineering																					ECE 403	Microwave Engineering
ECE 404	Antennas			\perp																		ECE 404	Antennas
ECE 405 ECE 406	Communication Networks Telecommunication Systems																					ECE 405 ECE 406	Communication Networks Telecommunication Systems
ECE 400	Digital Image Processing			+																		ECE 400	Digital Image Processing
ECE 408	Selected Topics in Electronics & Communications																					ECE 408	Selected Topics in Electronics & Communications



Knowledge and Understanding

16. Acquire the basics of communication systems. 17. Describe the characteristics of coding and decoding

techniques related to ICT. 18. Acquire an understanding of microwave applications.

19. Acquire an understanding of antennas and wave

23. Recall engineering principles in the fields of data

20. State Nanotechnology applications.

21. Identify related research and current advances in the field of computer software and hardware. 22. Recognize the use of optical fiber.

manipulation, logic design, circuit analysis, machine and assembly languages, computer organization and architectures, memory hierarchy, embedded systems, signal processing, operating and distributed systems, real-time systems and reliability analysis.



Intellectual Skills

The graduates of the Communications and Computers engineering program should be able to: 1. Select appropriate mathematical and computer-based

methods for modeling and analyzing problems.

2. Select appropriate solutions for engineering problems based on analytical thinking. 3. Think in a creative and innovative way in problem solving and

4. Combine, exchange, and assess different ideas, views, and

knowledge from a range of sources. 5. Assess and evaluate the characteristics and performance of

components, systems and processes. 6. Investigate the failure of components, systems, and

7. Solve engineering problems, often on the basis of limited and possibly contradicting information.

8. Select and appraise appropriate ICT tools to a variety of engineering problems.

9. Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact. 10. Incorporate economic, societal, environmental dimensions and risk management in design.

11. Analyze results of numerical models and assess their 12. Create systematic and methodic approaches when dealing

with new and advancing technology.

13. Formulate mathematical tools, computing methods, design techniques for modeling and analyzing communication and computer-based systems.

14. Integrate computer objects running on different system configurations.

15. Synthesize, and apply suitable IT tools to computer engineering problems.

16. Create various computer-based solutions to business system problems including direct and indirect costs and cost-benefit 17. Identify symptoms in problematic situations.

18. Innovate solutions based on non-traditional thinking and the use of the latest information and communication technologies.



Practical and Professional

On successful completion of the program, the graduates of the Communications and Computers engineering program should be

L. Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems. 2. Professionally merge the engineering knowledge,

understanding, and feedback to improve design, products and/or services. 3. Create and/or re-design a process, component or system,

and carry out specialized engineering designs. 4. Practice the neatness and aesthetics in design and approach.

5. Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results. 6. Use a wide range of analytical tools, techniques, equipment,

and software packages pertaining to the discipline and develop required computer programs. . Apply numerical modeling methods to engineering problems. 8. Apply safe systems at work and observe the appropriate

steps to manage risks. 9. Demonstrate basic organizational and project management

10. Apply quality assurance procedures and follow codes and 11. Exchange knowledge and skills with engineering community

and industry.

12. Prepare and present technical reports. 13. Design and operate computer-based, electronic and communication systems.

14. Use appropriate specialized communication and information engineering tools throughout the phases of the life cycle of

system development; 15. Write computer programs on professional levels achieving

acceptable quality measures in software development 16. Conduct user support activities appropriate to the discipline.



General and Transferrable

The graduates of the Communications and Computers engineering program should be able to:

1. Collaborate effectively within multidisciplinary team. 2. Work in stressful environment and within constraints. 3. Communicate effectively.

4. Demonstrate efficient IT capabilities. 5. Lead and motivate individuals.

8. Acquire entrepreneurial skills. 9. Refer to relevant literatures.

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

6. Effectively manage tasks, time, and resources.