



## Course Specification

### 1- Basic Information

Course Title	Mathematics (5)	
Course Code	BAS 311	
Academic Year	2022-2023	
Coordinator	Dr. Gamal El-Anani	
Teaching Staff	Dr. Gamal El-Anani	
Level	Level (3)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	2
	Lab	0
Department offering the program	<ul style="list-style-type: none"><li>• Electronics and Communications Engineering,</li><li>• Computers and Systems Engineering,</li><li>• Communications and Computer Engineering</li></ul>	
Department offering the course	Basic Science	

### 2- Aim of the course

1. Understand the concept of complex function.
2. Understand the methods to solve the numerical equations.
3. Understand the methods to solve the numerical equations of linear and non-linear equations.
4. Be familiar with the methods to solve the numerical differential equations.
5. Understand the methods to solve the numerical integral equations.
6. Be familiar with the orthogonal expansion.

### 3- Course related program competencies

Level A – General	<p><b>A.1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.</b></p> <p><b>A.2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions</b></p> <p><b>A.3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.</b></p> <p><b>A.5. Practice research techniques and methods of investigation as an inherent part of learning.</b></p>		
Level B - Speciality			
4- Course Contents	<p><b>Syllabus</b> Power Series Methods - Functions of a complex variable including Cauchy - Riemann conditions - Conformal mappings - Complex series - Complex integral - Special functions - Numerical analysis including the solution of nonlinear algebraic equations - System of linear and nonlinear equations and ordinary differential equations - series solution of differential equations - Vector Analysis Fourier Analysis - Orthogonal Expansions - Wavelets.</p>		
# Topic	Lecture	Tutorial/Practical	No of hours
Power Series Methods - Functions of a complex variable including Cauchy - Riemann conditions	4	4	8
Conformal mappings - Complex series - Complex integral	6	6	12

Special functions - Numerical analysis including the solution of nonlinear algebraic equations - System of linear and nonlinear equations and ordinary differential equations - series solution of differential equations	8	8	16
Vector Analys	6	6	12
Fourier Analysis - Orthogonal Expansions - Wavelets	4	4	8
Total sum	28	28	56
<b>5- Teaching and learning methods</b>	<ol style="list-style-type: none"> <li>1. Lecture (online/in class)</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Problem solving</li> <li>5. Brain storming</li> <li>6. Projects</li> <li>7. Self-learning</li> <li>8. Research and Reporting</li> <li>9. Computer Simulation</li> <li>10. Teamwork</li> </ol>		
<b>6- Teaching and learning methods for disable students</b>	<ol style="list-style-type: none"> <li>1. Additional Tutorials</li> <li>2. Online lectures and assignments</li> <li>3. Using as many audio/visual aids as possible.</li> <li>4. Providing extra opportunities for practice</li> </ol>		
<b>7- Teaching and learning methods for low capacity students</b>	<ol style="list-style-type: none"> <li>1. Assign a portion of the office hours for those students and</li> <li>2. provide them with specific tailored tasks.</li> <li>3. Repeat the explanation of some of the material and tutorials.</li> <li>4. Assign a teaching assistance to follow up their performance</li> </ol>		
<b>8- Teaching and learning methods for outstanding students</b>	<ol style="list-style-type: none"> <li>1. Assign course project tasks to those students.</li> <li>2. Give them advanced extra-curriculum topics.</li> <li>3. Encourage them to take part in a pilot research and case studies.</li> </ol>		
<b>9- Students assessment</b>			
<b>a- Assessment methods</b>	<ol style="list-style-type: none"> <li>1. Mid Term Examination (written/ online)</li> <li>2. Practical Examination</li> <li>3. Oral Examination</li> <li>4. Formative (quizzes- presentation -reports)</li> <li>5. Final Term Examination (written)</li> </ol>		

<b>b- Assessment schedule</b>	- Exercise sheet/ Lab assignment : Weekly - Quiz-1: Week no. 5 - Mid-Term exam: Week no . 8 - Quiz-2: Week no. 12 - Final – term examination: Week no. 16
<b>c- Weighting of assessment</b>	- Class tutorial and quizzes : 10 % - Mid-term examination: 20 % - Final – term examination: 70 % Total 100 %
<b>10- List of text books and references:</b>	
<b>a- Course notes</b>	<a href="#">There are lectures notes prepared in the form of a book authorized by the department.</a>
<b>b- Text books/ References</b>	<ul style="list-style-type: none"> <li>▪ Swokowski, E, Olinick ,M and Pence, D., Calculus, PWS Publishing Company - Boston, 1994.</li> <li>▪ Mary Attenborough, Engineering Mathematics, McGraw - HILL Book Company Europe, 1994.</li> <li>▪ Anthony croft,Robert Davison, Engineering Mathematics A modern Foundation for Electrical, Electronic &amp; Control Engineering, Addison - Wesley - Publishing Company, 1992.</li> </ul>
<b>c- Periodicals, Web sites .....etc</b>	Web Sites related to Mathematics and Mathematical engineering as: <a href="http://www.math.hmc.edu">www.math.hmc.edu</a> , <a href="http://www.tutorial.math.lamar.edu">www.tutorial.math.lamar.edu</a> , <a href="http://www.web.mit.edu">www.web.mit.edu</a>

<b>11-Course contents – Course related program competencies</b>				
	<b>Level A</b>			
	<b>A.1</b>	<b>A.2</b>	<b>A.3</b>	<b>A.5</b>
Power Series Methods - Functions of a complex variable including Cauchy - Riemann conditions	√			
Conformal mappings - Complex series - Complex integral	√	√		√
Special functions - Numerical analysis including the solution of nonlinear algebraic equations - System of linear and nonlinear equations and ordinary differential equations -		√	√	

series solution of differential equations				
Vector Analys	√	√	√	
Fourier Analysis - Orthogonal Expansions - Wavelets			√	

**12-Teaching and learning methods - Course related program competencies**

	Level A			
	A.1	A.2	A.3	A.5
Lecture (online/in class)	√	√	√	√
Discussion	√	√	√	√
Tutorial	√	√	√	√
Problem solving	√	√	√	√
Brain storming	√	√	√	√
Projects	√	√	√	√
Self-learning		√		
Research and Reporting			√	
Computer Simulation				
Teamwork				

**13- Assessment methods - Course related program competencies**

Assessment methods	Course related program competencies			
	Level A			
	A.1	A.2	A.3	A.5
1. Mid Term Examination (written/ online)	√	√	√	√
2. Practical Examination				
3. Oral Examination				
4. Formative (quizzes- presentation -reports)	√	√	√	√
5. Final Term Examination (written	√	√	√	√

**Authorized from board of the department at 1/9/2022**

**Course coordinator:**

Dr. Gamal El-Anany





## Course Specification

### 1- Basic Information

<b>Course Title</b>	<b>Environmental Impacts of Projects</b>	
<b>Course Code</b>	<b>CIW 312</b>	
<b>Academic Year</b>	2022-2023	
<b>Coordinator</b>	Dr/ aya salem	
<b>Teaching Staff</b>	Dr/ aya salem	
<b>Level</b>	Level (3)	
<b>Semester</b>	First Term	
<b>Number of Weekly Contact Hours</b>	Lecture	1
	Tutorial	0
	Lab	0
<b>Department offering the program</b>	<ul style="list-style-type: none"> <li>• Electronics and Communications Engineering,</li> <li>• Computers and Systems Engineering,</li> <li>• Communications and Computer Engineering</li> </ul>	
<b>Department offering the course</b>	Electronics Engineering and Electrical Communication  Computers and Systems Engineering	
<b>2- Aim of the course</b>		
<ol style="list-style-type: none"> <li>1. introduce the concepts, procedures and methodology of Environmental Impact Assessment (EIA).</li> <li>2. develop a critical awareness of factors which affect the use of EIA as part of project.</li> <li>3. management in the legislative and regulatory context of recently.</li> <li>4. industrialized or less - industrialized countries.</li> <li>5. expose the students to the need for environmental impact assessments and how to prepare the various documents required by state and federal regulations.</li> </ol>		
<b>3- Course related program competencies</b>		

<b>Level A – General</b>	<p>A.5 Practice research techniques and methods of investigation as an inherent part of learning.</p> <p>A.7 Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.</p> <p>A.8 Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools</p> <p>A.9 Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.</p> <p>A.10 Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.</p>		
<b>Level B - Speciality</b>			
<b>4- Course Contents</b>	<p>Availability of natural resources, Natural cycles for some basic elements (carbon, oxygen, nitrogen, sulfur, phosphorous...). Conflicts between developments, Economics and environments. Defining emissions sources, Impacts, Standards and precautions. Water, Air and soil pollution and measurements. Historical development for recognizing the need for environmental impact assessment. Assessing the impacts on health, Social, Cultural and economic activities. Procedures of the environmental impact assessment: Screening, Scoping, Defining impacts, Comparing alternatives, Plans for mitigation and alleviation, Environmental auditing. Public participation. Environmental impact statement and reporting, Contents and forms. Examples for assessing the impacts of water resources projects on the environment and impacts of different activities on the water environment.</p> <p>(كربون ، أكسجين ، مقدمة: توافر الموارد الطبيعية ، الدورات الطبيعية لبعض العناصر الأساسية نيتروجين ، كبريت ، فوسفور ...). الصراع بين التطورات ،الاقتصاد والبيئات. تحديد مصادر الانبعاثات الاعتراف الاحتياطات. وقياسات تلوث المياه والهواء والتربة. التطور التاريخي لـ والتأثيرات والمعايير و الأنشطة الصحية والاجتماعية والثقافية والاقتصادية. بالحاجة إلى تقييم الأثر البيئي. تقييم التأثيرات على التخفيف التقييم: الفرز ، تحديد النطاق ، تحديد التأثيرات ، مقارنة البدائل ، خطط إجراءات التأثير البيئي بيان التأثير والتقارير والمحتويات والنماذج. أمثلة لتقييم والتخفيف ، التدقيق البيئي. المشاركة العامة. بيئي الأنشطة على البيئة المائية. تأثيرات مشاريع الموارد المائية على البيئة وتأثيراتها المختلفة</p>		
<b># Topic</b>	<b>Lecture</b>	<b>Tutorial/Practical</b>	<b>No of hours</b>
Availability of natural resources, Natural cycles for some basic elements (carbon, oxygen, nitrogen, sulfur,	2	0	2



phosphorous...).			
Conflicts between developments, Economics and environments.	3	0	3
Defining emissions sources, Impacts, Standards and precautions. Water, Air and soil pollution and measurements.	4	0	4
Historical development for recognizing the need for environmental impact assessment.	3	0	3
Assessing the impacts on health, Social, Cultural and economic activities.	2	0	2
Total sum	14	0	14
<b>5- Teaching and learning methods</b>	<ol style="list-style-type: none"> <li>1. Lecture (online/in class)</li> <li>2. Discussion</li> <li>3. brain storming</li> <li>4. Projects</li> <li>5. Self-learning</li> <li>6. Research and Reporting</li> <li>7. Computer Simulation</li> <li>8. Teamwork</li> </ol>		
<b>6- Teaching and learning methods for disable students</b>	<ol style="list-style-type: none"> <li>1. Additional Tutorials</li> <li>2. Online lectures and assignments</li> <li>3. Using as many audio/visual aids as possible.</li> <li>4. Providing extra opportunities for practice</li> </ol>		
<b>7- Teaching and learning methods for low capacity students</b>	<ol style="list-style-type: none"> <li>1. Assign a portion of the office hours for those students and</li> <li>2. provide them with specific tailored tasks.</li> <li>3. Assign a teaching assistance to follow up their performance</li> </ol>		
<b>8- Teaching and learning methods for outstanding students</b>	<ol style="list-style-type: none"> <li>1. Assign course project tasks to those students.</li> <li>2. Give them advanced extra-curriculum topics.</li> <li>3. Encourage them to take part in a pilot research and case studies.</li> </ol>		
<b>9- Students assessment</b>			
<b>a- Assessment methods</b>	<ol style="list-style-type: none"> <li>1. Mid Term Examination (written/ online)</li> <li>2. Practical Examination</li> <li>3. Oral Examination</li> <li>4. Formative (quizzes- presentation -reports)</li> </ol>		

	5. Final Term Examination (written)	
<b>b- Assessment schedule</b>	- Quizz-1:	Week no. 5
	- Mid-Term exam:	Week no . 8
	- Quizz-2:	Week no. 12
	- Final – term examination:	Week no. 16
<b>c- Weighting of assessment</b>	- quizzes :	15 %
	- Mid-term examination:	15 %
	- Final – term examination:	70 %
	Total	<u>100 %</u>
<b>10- List of text books and references:</b>		
<b>a- Course notes</b>	<a href="#">There are lectures notes prepared in the form of a book authorized by the department.</a>	
<b>b- Text books/ References</b>	<ul style="list-style-type: none"> <li>▪ John Glasson, Riki Therivel and Andrew Chadwick, Introduction to environmental impact assessment, Routledge, 2005</li> </ul>	
<b>c- Periodicals, Web sites .....etc</b>		

11-Course contents – Course related program competencies					
	Level A				
	A.5	A.7	A.8	A.9	A.10
Availability of natural resources, Natural cycles for some basic elements (carbon, oxygen, nitrogen, sulfur, phosphorous...).	√	√			
Conflicts between developments, Economics and environments.	√	√			
Defining emissions sources, Impacts, Standards and precautions. Water, Air and soil pollution and measurements.		√	√		
Historical development for recognizing the need for environmental impact assessment.			√	√	
Assessing the impacts on health, Social, Cultural and economic activities.				√	√

12-Teaching and learning methods - Course related program competencies					
	Level A				
	A.5	A.7	A.8	A.9	A.10
Lecture (online/in class)	√				
Discussion	√	√			
Tutorial	√	√	√	√	
Problem solving		√		√	
Brain storming			√		
Projects			√	√	
Self-learning					√
Research and Reporting			√		√
Computer Simulation				√	
Teamwork					√

13- Assessment methods - Course related program competencies					
Assessment methods	Course related program competencies				
	Level A				
	A.5	A.7	A.8	A.9	A.10
1. Mid Term Examination (written/ online)	√	√			
2. Practical Examination		√			
3. Oral Examination		√	√		
4. Formative (quizzes- presentation -reports)			√	√	
5. Final Term Examination (written)				√	√

Authorized from board of the department at 1/9/2022

Course coordinator:

Dr./ aya .m. salem

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## Course Specification

### 1- Basic Information

<b>Course Title</b>	<b>Electrical Communications</b>	
<b>Course Code</b>	ECE314	
<b>Academic Year</b>	2022-2023	
<b>Coordinator</b>	Dr. Amira A. Mahmoud	
<b>Teaching Staff</b>	Dr. Amira A. Mahmoud	
<b>Level</b>	Level (3)	
<b>Semester</b>	First Term	
<b>Number of Weekly Contact Hours</b>	Lecture	2
	Tutorial	2
	Lab	-
<b>Department offering the program</b>	<ul style="list-style-type: none"><li>• Electronics and Communications Engineering,</li><li>• Computers and Systems Engineering,</li><li>• Communications and Computer Engineering</li></ul>	
<b>Department offering the course</b>	Electronics Engineering and Electrical Communication	
<b>2- Aim of the course</b>		
<ol style="list-style-type: none"><li>1. To introduce the communication system components and the need of modulation.</li><li>2. To explain the concepts of analog modulation and its different types.</li><li>3. To describe the behavior of analog communications in the presence of noise and the basics of analog pulse modulation techniques.</li><li>4. To demonstrate various digital modulation and demodulation techniques.</li><li>5. To explain the concepts of multiple access techniques.</li></ol>		
<b>3- Course related program competencies</b>		

<b>Level A – General</b>	<p>A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.</p> <p>A.3 Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development</p> <p>A.4 Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.</p>		
<b>Level B – Speciality</b>	<p>B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.</p> <p>B.4 Estimate and measure the performance of an electrical / electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.</p> <p>B.5 Adopt suitable national and international standards and codes to design, build, operate, inspect, and maintain electrical/electronic/digital equipment, systems, and services.</p>		
<b>4- Course Contents</b>	<p>Communication system elements, Overview of current communication systems. Communication channels properties. Basics of analog communication: amplitude, angle, frequency, and analog pulse modulation; frequency division multiplexing. Basics of digital communication: sampling, quantization, pulse code modulation, Delta Modulation, Differential PCM, time division multiplexing, binary signal formats. Digital carrier modulation: ASK, PSK, FSK and QAM. Multiple - access techniques.</p>		
<b># Topic</b>	<b>Lecture</b>	<b>Tutorial/Practical</b>	<b>No of hours</b>
Communication system elements, Overview of current communication systems. Communication channels properties.	4	4	8
Basics of analog communication: amplitude, angle, frequency, and analog pulse modulation	6	6	12
frequency division multiplexing	2	2	4
Basics of digital communication: sampling, quantization, pulse code modulation, Delta Modulation, Differential PCM	6	6	12
time division multiplexing, binary signal	4	4	8

formats			
Digital carrier modulation: ASK, PSK, FSK and QAM. Multiple - access techniques.	6	6	12
Total sum	28	28	56
<b>5- Teaching and learning methods</b>	<ol style="list-style-type: none"> <li>1. Lecture (online/in class)</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Problem solving</li> <li>5. Brain storming</li> <li>6. Projects</li> <li>7. Self-learning</li> <li>8. Research and Reporting</li> <li>9. Computer Simulation</li> <li>10. Teamwork</li> </ol>		
<b>6- Teaching and learning methods for disable students</b>	<ol style="list-style-type: none"> <li>1. Additional Tutorials</li> <li>2. Online lectures and assignments</li> <li>3. Using as many audio/visual aids as possible.</li> <li>4. Providing extra opportunities for practice</li> </ol>		
<b>7- Teaching and learning methods for low capacity students</b>	<ol style="list-style-type: none"> <li>1. Assign a portion of the office hours for those students.</li> <li>2. Provide them with specific tailored tasks.</li> <li>3. Repeat the explanation of some of the material and tutorials.</li> <li>4. Assign a teaching assistance to follow up their performance</li> </ol>		
<b>8- Teaching and learning methods for outstanding students</b>	<ol style="list-style-type: none"> <li>1. Assign course project tasks to those students.</li> <li>2. Give them advanced extra-curriculum topics.</li> <li>3. Encourage them to take part in a pilot research and case studies.</li> </ol>		
<b>9- Students assessment</b>			
<b>a- Assessment methods</b>	<ol style="list-style-type: none"> <li>1. Mid Term Examination (written/ online)</li> <li>2. Formative (quizzes- presentation -reports)</li> <li>3. Final Term Examination (written)</li> </ol>		
<b>b- Assessment schedule</b>	<ul style="list-style-type: none"> <li>- Exercise sheet/ Lab assignment : Weekly</li> <li>- Quizz-1: Week no. 5</li> <li>- Mid-Term exam: Week no. 8</li> <li>- Quizz-2: Week no. 12</li> <li>- Final – term examination: Week no. 16</li> </ul>		
<b>c- Weighting of assessment</b>	<ul style="list-style-type: none"> <li>- Class tutorial and quizzes: 10 %</li> <li>- Mid-term examination: 20 %</li> </ul>		

	- Final – term examination:	70 %
	Total	100 %
<b>10- List of text books and references:</b>		
<b>a- Course notes</b>	<a href="#">There are lectures notes prepared in the form of a pdf file.</a>	
<b>b- Text books/ References</b>	[1] Lathi, B. P. (Bhagwandas Pannalal) Modern digital and analog communication systems/ B. P. Lathi, Zhi Ding. -4th ed, 2009. [2] Simon Haykin and Michael Moher, Introduction to Analog & Digital Communications, Second Edition, John Wiley & Sons, 2006 [3] Signals and Systems with MATLAB Computing and Simulink Modeling, Fifth Edition by Karris, Steven T. and Steven T. (Mar 19, 2012) [4] Roger L. Freeman, Fundamentals of Telecommunications, (Aug 12, 2013)	
<b>c- Periodicals, Web sites .....etc</b>	Web Sites related to Electrical Communications as: <a href="https://en.wikipedia.org/wiki/">https://en.wikipedia.org/wiki/</a>	

<b>11-Course contents – Course related program competencies</b>						
	Level A			Level B		
	A.1	A.3	A.4	B.2	B.4	B.5
Communication system elements, Overview of current communication systems. Communication channels properties.	√	√			√	√
Basics of analog communication: amplitude, angle, frequency, and analog pulse modulation	√	√		√	√	√
frequency division multiplexing	√	√	√	√	√	√
Basics of digital communication: sampling, quantization, pulse code modulation, Delta Modulation, Differential PCM	√	√	√	√	√	√
Time division multiplexing, binary signal formats	√		√	√	√	√
Digital carrier modulation: ASK, PSK, FSK and QAM. Multiple - access techniques.	√	√	√	√	√	√

**12-Teaching and learning methods - Course related program competencies**

	Level A			Level B		
	A.1	A.3	A.4	B.2	B.4	B.5
Lecture (online/in class)	√					
Discussion	√	√	√	√	√	√
Tutorial	√	√	√	√		
Problem solving			√	√		
Brain storming				√	√	√
Projects				√	√	√
Self-learning						√
Research and Reporting					√	
Computer Simulation					√	√
Teamwork						

13- Assessment methods - Course related program competencies						
Assessment methods	Course related program competencies					
	Level A			Level B		
	A.1	A.3	A.4	B.2	B.4	B.5
1. Mid Term Examination (written/ online)	√	√	√	√	√	
2. Formative (quizzes- presentation -reports)	√	√	√	√	√	
3. Final Term Examination (written	√	√	√	√	√	

Authorized from board of the department at 1/9/2022

Course coordinator:

*Amira A. Mahmoud*



Dr. Amira A. Mahmoud





## Course Specification

### 1- Basic Information

<b>Course Title</b>	<b>Computer Networks</b>	
<b>Course Code</b>	CSE 315	
<b>Academic Year</b>	2022-2023	
<b>Coordinator</b>	Dr. Elhossiny Ibrahim Elhossiny	
<b>Teaching Staff</b>	Dr. Elhossiny Ibrahim Elhossiny	
<b>Level</b>	Level (3)	
<b>Semester</b>	First Term	
<b>Number of Weekly Contact Hours</b>	Lecture	2
	Tutorial	1
	Lab	1
<b>Department offering the program</b>	<ul style="list-style-type: none"> <li>• Electronics and Communications Engineering,</li> <li>• Computers and Systems Engineering,</li> <li>• Communications and Computer Engineering</li> </ul>	
<b>Department offering the course</b>		

### 2- Aim of the course

1. Understand the Data Communication.
2. Learn the computer networks basics, components, and Media Access Control.
3. Know the Different kinds of networks.
4. Understand the networking and internetworking technologies.
5. Demonstrate the up-to-date information on computer networks.

### 3- Course related program competencies

<b>Level A – General</b>	<p><b>A4.</b> Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.</p> <p><b>A9.</b> Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.</p> <p><b>A10.</b> Acquire and apply new knowledge; and practice self, lifelong, and other learning strategies.</p>
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<b>Level B - Speciality</b>	<p><b>B4.</b> Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application.</p> <p><b>B5.</b> Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services</p>		
<b>4- Course Contents</b>	<p>Network layers(Physical layer – Data Link layer – MAC sub-layer - Network layer – Transport layer – Application layer – Security layer), TCP/IP Network Protocol, routing Protocols, Network Design, Network management, congestion, Examples of LAN's and WAN's, High Speed Networks, other network protocols.</p>		
<b># Topic</b>	<b>Lecture</b>	<b>Tutorial/Practical</b>	<b>No of hours</b>
Network layers(Physical layer – Data Link layer – MAC sub-layer - Network layer – Transport layer – Application layer – Security layer)	8	8	16
TCP/IP Network Protocol,	6	6	12
Routing Protocols	6	6	12
Network Design, Network management	4	4	8
Congestion, Examples of LAN's and WAN's, High Speed Networks, other network protocols.	4	4	8
<b>Total sum</b>	<b>28</b>	<b>28</b>	<b>56</b>
<b>5- Teaching and learning methods</b>	<ol style="list-style-type: none"> <li>1. Lecture (online/in class)</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Problem solving</li> <li>5. Brain storming</li> <li>6. Projects</li> <li>7. Self-learning</li> <li>8. Research and Reporting</li> <li>9. Computer Simulation</li> <li>10. Teamwork</li> </ol>		
<b>6- Teaching and learning methods for disable students</b>	<ol style="list-style-type: none"> <li>1. Additional Tutorials</li> <li>2. Online lectures and assignments</li> <li>3. Using as many audio/visual aids as possible.</li> <li>4. Providing extra opportunities for practice</li> </ol>		
<b>7- Teaching and learning methods for</b>	<ol style="list-style-type: none"> <li>1. Assign a portion of the office hours for those students and</li> </ol>		

<b>low capacity students</b>	<ol style="list-style-type: none"> <li>2. Provide them with specific tailored tasks.</li> <li>3. Repeat the explanation of some of the material and tutorials.</li> <li>4. Assign a teaching assistance to follow up their performance</li> </ol>										
<b>8- Teaching and learning methods for outstanding students</b>	<ol style="list-style-type: none"> <li>1. Assign course project tasks to those students.</li> <li>2. Give them advanced extra-curriculum topics.</li> <li>3. Encourage them to take part in a pilot research and case studies.</li> </ol>										
<b>9- Students assessment</b>											
<b>a- Assessment methods</b>	<ol style="list-style-type: none"> <li>1. Mid Term Examination (written/ online)</li> <li>2. Practical Examination</li> <li>3. Oral Examination</li> <li>4. Formative (quizzes- presentation -reports)</li> <li>5. Final Term Examination (written)</li> </ol>										
<b>b- Assessment schedule</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 20px;">- Exercise sheet/ Lab assignment :</td> <td style="text-align: right;">Weekly</td> </tr> <tr> <td style="padding-left: 20px;">- Quiz-1:</td> <td style="text-align: right;">Week no. 5</td> </tr> <tr> <td style="padding-left: 20px;">- Mid-Term exam:</td> <td style="text-align: right;">Week no. 8</td> </tr> <tr> <td style="padding-left: 20px;">- Quiz-2:</td> <td style="text-align: right;">Week no. 12</td> </tr> <tr> <td style="padding-left: 20px;">- Final – term examination:</td> <td style="text-align: right;">Week no. 16</td> </tr> </table>	- Exercise sheet/ Lab assignment :	Weekly	- Quiz-1:	Week no. 5	- Mid-Term exam:	Week no. 8	- Quiz-2:	Week no. 12	- Final – term examination:	Week no. 16
- Exercise sheet/ Lab assignment :	Weekly										
- Quiz-1:	Week no. 5										
- Mid-Term exam:	Week no. 8										
- Quiz-2:	Week no. 12										
- Final – term examination:	Week no. 16										
<b>c- Weighting of assessment</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 20px;">- Class tutorial and quizzes :</td> <td style="text-align: right;">%</td> </tr> <tr> <td style="padding-left: 20px;">- Mid-term examination:</td> <td style="text-align: right;">%</td> </tr> <tr> <td style="padding-left: 20px;">- Final – term examination:</td> <td style="text-align: right;">%</td> </tr> <tr> <td style="text-align: right; padding-right: 20px;">Total</td> <td style="text-align: right;">100 % _____</td> </tr> </table>	- Class tutorial and quizzes :	%	- Mid-term examination:	%	- Final – term examination:	%	Total	100 % _____		
- Class tutorial and quizzes :	%										
- Mid-term examination:	%										
- Final – term examination:	%										
Total	100 % _____										
<b>10- List of text books and references:</b>											
<b>a- Course notes</b>	<a href="#">There are lectures notes prepared in the form of a book</a>										
<b>b- Text books/ References</b>	<p>[1] William Stalling, “Data and Computer Communications”, 10<sup>th</sup> Edition, 2013.</p> <p>[2] Andrew S. Tanenbaum and David J. Wetherall, “Computer Networks”, 5<sup>th</sup> Edition, Oct. 2010</p>										
<b>c- Periodicals, Web sites .....etc</b>	<p>1] University of Washington Computer Networks course at Coursera <a href="https://www.coursera.org/course/comnetworks">https://www.coursera.org/course/comnetworks</a></p> <p>[2] MIT Computer Networks course at MIT open courseware  HYPERLINK "<a href="http://ocw.mit.edu/courses/electrical-engineeringand-computer-science/6-829-computer-networks-fall-2002/">http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-829-computer-networks-fall-2002/</a>"  <a href="http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6.8">http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6.8</a></p>										

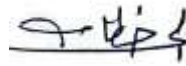
11-Course contents – Course related program competencies					
	Level A			Level B	
	A.4	A.9	A.10	B.4	B.5
Network layers(Physical layer – Data Link layer – MAC sublayer - Network layer – Transport layer – Application layer – Security layer)				√	
TCP/IP Network Protocol,	√	√			√
Routing Protocols	√	√	√	√	√
Network Design, Network management	√	√	√		√
Congestion, Examples of LAN's and WAN's, High Speed Networks, other network protocols.	√	√		√	√

12-Teaching and learning methods - Course related program competencies					
	Level A			Level B	
	A.4	A.9	A.10	B.4	B.5
Lecture (online/in class)	√		√		
Discussion	√	√	√	√	√
Tutorial	√		√		
Problem solving	√		√		
Brain storming	√	√	√	√	√
Projects		√		√	√
Self-learning	√	√	√	√	√
Research and Reporting	√		√		√
Computer Simulation		√		√	
Teamwork	√	√	√	√	√

13- Assessment methods - Course related program competencies					
Assessment methods	Course related program competencies				
	Level A			Level B	
	A.4	A.9	A.10	B.4	B.5
1. Mid Term Examination (written/ online)	√		√		
2. Practical Examination		√	√	√	√
3. Oral Examination	√	√	√	√	√
4. Formative (quizzes- presentation -reports)	√		√		
5. Final Term Examination (written)	√		√		

**Authorized from board of the department at 1/9/2022**

**Course coordinator:**




Dr. Elhossiny Ibrahim Elhossiny



## Course Specification

### 1- Basic Information

<b>Course Title</b>	<b>Automatic Control</b>	
<b>Course Code</b>	CSE 316	
<b>Academic Year</b>	2022-2023	
<b>Coordinator</b>	Doctor. Soheir metwaly affi	
<b>Teaching Staff</b>	Doctor. Soheir metwaly affi	
<b>Level</b>	Level (3)	
<b>Semester</b>	First Term	
<b>Number of Weekly Contact Hours</b>	Lecture	2
	Tutorial	2
	Lab	0
<b>Department offering the program</b>	<ul style="list-style-type: none"> <li>Communications and Computer Engineering</li> </ul>	
<b>Department offering the course</b>	<ul style="list-style-type: none"> <li>Communications and Computer Engineering</li> </ul>	
<b>2- Aim of the course</b>		

1. Learn the transient response and steady-state analyses of control systems
2. Learn the Routh's stability criterion for stability analysis of control systems
3. Learn the basic and modified PID controllers. Computational approaches for obtaining optimal parameter values for PID controllers are discussed in detail, particularly with respect to satisfying requirements for step-response characteristics..
4. Learn the root-locus analysis and design of control systems, including positive feedback systems and conditionally stable systems Plotting root loci
5. The Bode diagram approach to the design of lead, lag, and lag-lead compensators is discussed.

### 3- Course related program competencies

Level A – General

**A.1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.**

A.2. Demonstrate principles of design including elements design, process and/or a system related to specific disciplines.

**A.2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.**

**A.3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.**

**A.4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.**

**A.5 Practice research techniques and methods of investigation as an inherent part of learning.**

<b>Level B - Speciality</b>	<p><b>B1 Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of: generation, transmission and distribution of electrical power systems.</b></p> <p><b>B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.</b></p> <p><b>B.3 Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.</b></p> <p><b>B4. Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application.</b></p> <p><b>B5. Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.</b></p>
<b>4- Course Contents</b>	<p>Transient and steady state response analysis of continuous time feedback control systems; Routh's stability criterion; Error analysis of stable control systems;</p> <p>Effects of integral and derivative control actions; Control systems analysis and design</p> <p>root locus method; PID controllers; Control systems analysis and design by</p> <p>frequency response method; Bode Diagrams; Relative stability analysis; Lead, Lag,</p> <p>Lag - Lead compensation.</p> <p>الاستجابة المؤقتة والحالة الثابتة لنظم التحكم ذات التغذية الراجعة في الزمن المستمر – اختبار</p> <p>الاستقرار بطريقة راوث – تحليل الخطأ لنظم التحكم المستقرة – تأثير التحكم باستخدام</p>



	<p>والتفاضل – التحليل والتصميم لنظم التحكم باستخدام طريقة المحل ادوات التكامل الهندسي للحدور – المتحكمات المتناسبة والتكاملية والتفاضلية – تحليل وتصميم النظم باستخدام طريقة الاستجابة الترددية – اشكال بود – الاستقرار النسبي – التعويض باستخدام عناصر التقدم والتأخر</p>		
# Topic	Lecture	Tutorial/Practical	No of hours
Introduction to Control Systems	2	2	4
Transient and Steady-State Response Analyses	4	4	8
PID Controllers and Modified PID Controllers	4	4	8
STABILITY OF LINEAR FEEDBACK SYSTEMS	4	4	8
Steady state errors	8	8	16
Root locus	4	4	8
Bode plote	2	2	4
Total sum	28	28	56
<b>5- Teaching and learning methods</b>	<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Tutorials.</li> <li>3. Homework Exercises</li> <li>4. Reports</li> </ol>		
<b>6- Teaching and learning methods for disable students</b>	<ol style="list-style-type: none"> <li>1. Assign a portion of the office hours for those students.</li> <li>2. Give them specific tasks and evaluate them in it.</li> <li>3. Repeat the explanation of some of the course material and tutorials.</li> <li>4. Assign a teaching assistance to follow up the performance of this group of students.</li> </ol>		
<b>7- Teaching and learning methods for low capacity students</b>	<ol style="list-style-type: none"> <li>1. Assign a portion of the office hours for those students and</li> <li>2. provide them with specific tailored tasks.</li> <li>3. Repeat the explanation of some of the material and tutorials.</li> <li>4. Assign a teaching assistance to follow up their performance</li> </ol>		
<b>8- Teaching and learning methods for outstanding students</b>	<ol style="list-style-type: none"> <li>1. Assign course project tasks to those students.</li> <li>2. Give them advanced extra-curriculum topics.</li> <li>3. Encourage them to take part in a pilot research and case studies.</li> </ol>		

9- Students assessment	
<b>a- Assessment methods</b>	1. Mid Term Examination (written/ online) 2. Oral Examination 3. Formative (quizzes- presentation -reports) 4. Final Term Examination (written)
<b>b- Assessment schedule</b>	- Exercise sheet/ Lab assignment : Weekly - Quiz-1: Week no. 5 - Mid-Term exam: Week no . 8 - Quiz-2: Week no. 12 - Final – term examination: Week no. 16
<b>c- Weighting of assessment</b>	- Class tutorial and quizzes : 10 % - Mid-term examination: 20 % - Final – term examination: 70 % Total 100 %
10- List of text books and references:	
<b>a- Course notes</b>	<a href="#">There are lectures notes prepared in the form of a book authorized by the department.</a>
<b>b- Text books/ References</b>	<ul style="list-style-type: none"> <li>• K. Ogata, Modern Control Engineering, Pearson, Modern control systems, Richard C, Dorf, Robert H, Bishop</li> </ul>
<b>c- Periodicals, Web sites .....etc</b>	

11-Course contents – Course related program competencies										
	Level A					Level B				
	A.1	A2	A.3	A.4	A5	B1	B.2	B.3	B.4	B.5
Introduction to Control Systems	√	√				√				
Transient and Steady-State Response Analyses	√		√				√	√	√	√
PID Controllers and Modified PID Controllers		√	√	√	√				√	√
STABILITY OF LINEAR FEEDBACK SYSTEMS	√		√	√				√	√	
Steady state errors	√		√	√	√		√		√	√

Root locus		√	√						√	√
Bode plot	√	√		√			√	√		

### 12-Teaching and learning methods - Course related program competencies

	Level A			Level B			
	A.1	A.3	A.4	B.2	B.3	B.4	B.5
Lecture (online/in class)	√						
Discussion	√	√	√	√	√	√	√
Tutorial	√	√	√	√	√		
Problem solving			√	√	√		
Brain storming				√	√	√	√
Projects				√	√	√	√
Self-learning							√
Research and Reporting						√	
Computer Simulation						√	√
Teamwork							

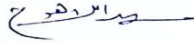
### 13- Assessment methods - Course related program competencies

Assessment methods	Course related program competencies						
	Level A			Level B			
	A.1	A.3	A.4	B.2	B.3	B.4	B.5
1. Mid Term Examination (written/ online)	√	√	√	√	√		
2. Practical Examination							
3. Oral Examination							
4. Formative (quizzes- presentation -reports)	√	√	√	√	√		
5. Final Term Examination (written	√	√	√	√	√		

**Authorized from board of the department at 1/9/2022**

**Course coordinator:**

Doctor. Soheir afifi





## Course Specification

### 1- Basic Information

<b>Course Title</b>	<b>Languages &amp; Compilers</b>	
<b>Course Code</b>	CSE 317	
<b>Academic Year</b>	2022-2023	
<b>Coordinator</b>	Dr. Nader Mohamed Abd Elmohsen	
<b>Teaching Staff</b>	Dr. Nader Mohamed Abd Elmohsen	
<b>Level</b>	Level (3)	
<b>Semester</b>	First Term	
<b>Number of Weekly Contact Hours</b>	Lecture	2
	Tutorial	-
	Lab	2
<b>Department offering the program</b>	<ul style="list-style-type: none"> <li>• Electronics and Communications Engineering,</li> <li>• Computers and Systems Engineering,</li> <li>• Communications and Computer Engineering</li> </ul>	
<b>Department offering the course</b>	Computers and Systems Engineering	

### 2- Aim of the course

1. Define language processor systems and its objectives
2. illustrate the compiler various substeps
3. Apply translation on source codes to target codes

### 3- Course related program competencies

<b>Level A – General</b>	<p>A.4 Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.</p> <p>A.6 Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.</p> <p>A.9 Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.</p> <p>A.10 Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.</p>
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<b>Level B - Speciality</b>	<p>B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.</p> <p>B.3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.</p> <p>B.4 Estimate and measure the performance of an electrical / electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.</p> <p>B.5 Adopt suitable national and international standards and codes to design, build, operate, inspect, and maintain electrical/electronic/digital equipment, systems, and services.</p>		
<b>4- Course Contents</b>	Introduction to the theory of languages, evolution of computer languages and translators, formal specification of languages, context dependent and context free languages, logical structure of a compiler, lexical, syntax and semantic analysis, code generation and optimization, storage and register allocation, runtime considerations.		
<b># Topic</b>	<b>Lecture</b>	<b>Tutorial/Practical</b>	<b>No of hours</b>
Introduction to the theory of languages, evolution of computer languages and translators	6	6	12
formal specification of languages, context dependent and context free languages	6	6	12
logical structure of a compiler, lexical, syntax and semantic ,analysis	6	6	12
code generation and optimization, storage and register allocation	6	6	12
.runtime considerations	4	4	8
Total sum	28	28	56
<b>5- Teaching and learning methods</b>	<ol style="list-style-type: none"> <li>1. Lecture (online/in class)</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Problem solving</li> <li>5. Brain storming</li> </ol>		

	<ol style="list-style-type: none"> <li>6. Projects</li> <li>7. Self-learning</li> <li>8. Research and Reporting</li> <li>9. Computer Simulation</li> <li>10. Teamwork</li> </ol>										
<b>6- Teaching and learning methods for disable students</b>	<ol style="list-style-type: none"> <li>1. Additional Tutorials</li> <li>2. Online lectures and assignments</li> <li>3. Using as many audio/visual aids as possible.</li> </ol>										
<b>7- Teaching and learning methods for low capacity students</b>	<ol style="list-style-type: none"> <li>1. Assign a portion of the office hours for those students and</li> <li>2. provide them with specific tailored tasks.</li> <li>3. Repeat the explanation of some of the material and tutorials.</li> <li>4. Assign a teaching assistance to follow up their performance</li> </ol>										
<b>8- Teaching and learning methods for outstanding students</b>	<ol style="list-style-type: none"> <li>1. Assign course project tasks to those students.</li> <li>2. Give them advanced extra-curriculum topics.</li> <li>3. Encourage them to take part in a pilot research and case studies.</li> </ol>										
<b>9- Students assessment</b>											
<b>a- Assessment methods</b>	<ol style="list-style-type: none"> <li>1. Mid Term Examination (written/ online)</li> <li>2. Oral Examination</li> <li>3. Formative (quizzes- presentation -reports)</li> <li>4. Final Term Examination (written)</li> </ol>										
<b>b- Assessment schedule</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 20px;">- Exercise sheet/ Lab assignment :</td> <td style="text-align: right;">Weekly</td> </tr> <tr> <td style="padding-left: 20px;">- Quizz-1:</td> <td style="text-align: right;">Week no. 5</td> </tr> <tr> <td style="padding-left: 20px;">- Mid-Term exam:</td> <td style="text-align: right;">Week no . 8</td> </tr> <tr> <td style="padding-left: 20px;">- Quizz-2:</td> <td style="text-align: right;">Week no. 12</td> </tr> <tr> <td style="padding-left: 20px;">- Final – term examination:</td> <td style="text-align: right;">Week no. 16</td> </tr> </table>	- Exercise sheet/ Lab assignment :	Weekly	- Quizz-1:	Week no. 5	- Mid-Term exam:	Week no . 8	- Quizz-2:	Week no. 12	- Final – term examination:	Week no. 16
- Exercise sheet/ Lab assignment :	Weekly										
- Quizz-1:	Week no. 5										
- Mid-Term exam:	Week no . 8										
- Quizz-2:	Week no. 12										
- Final – term examination:	Week no. 16										
<b>c- Weighting of assessment</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding-left: 20px;">- Class tutorial and quizzes :</td> <td style="text-align: right;">%</td> </tr> <tr> <td style="padding-left: 20px;">- Mid-term examination:</td> <td style="text-align: right;">%</td> </tr> <tr> <td style="padding-left: 20px;">- Final – term examination:</td> <td style="text-align: right;">%</td> </tr> <tr> <td style="text-align: right; padding-right: 20px;">Total</td> <td style="text-align: right;">100 % _____</td> </tr> </table>	- Class tutorial and quizzes :	%	- Mid-term examination:	%	- Final – term examination:	%	Total	100 % _____		
- Class tutorial and quizzes :	%										
- Mid-term examination:	%										
- Final – term examination:	%										
Total	100 % _____										
<b>10- List of text books and references:</b>											
<b>a- Course notes</b>	<a href="#">Lecture note not available</a>										
<b>b- Text books/ References</b>	[1] Alfred V. Aho, Monica S. Lam, Ravi Sethi and Jeffrey D. Ullman, Compilers: Principles, Techniques and Tools, Amazon, 2nd Ed , 2006.										





13- Assessment methods - Course related program competencies							
Assessment methods	Course related program competencies						
	Level A			Level B			
	A.1	A.3	A.4	B.2	B.3	B.4	B.5
1. Mid Term Examination (written/ online)	√	√	√	√	√		
2. Practical Examination							
3. Oral Examination		√	√		√	√	
4. Formative (quizzes- presentation -reports)	√	√	√	√	√	√	√
5. Final Term Examination (written	√	√	√	√	√	√	√

**Authorized from board of the department at 1/9/2022**

**Course coordinator:**




Dr. Nader Mohamed Abd

Elmohsen



## Course Specification

### 1- Basic Information

<b>Course Title</b>	<b>Electrical Power</b>	
<b>Course Code</b>	ELP 321	
<b>Academic Year</b>	2022-2023	
<b>Coordinator</b>	Assoc. Prof. Saad Awad Mohamed Abdelwahab	
<b>Teaching Staff</b>	Assoc. Prof. Saad Awad Mohamed Abdelwahab	
<b>Level</b>	Level (3)	
<b>Semester</b>	2	
<b>Number of Weekly Contact Hours</b>	Lecture	2
	Tutorial	2
	Lab	0
<b>Department offering the program</b>	<ul style="list-style-type: none"> <li>• Electronics and Communications Engineering,</li> <li>• Computers and Systems Engineering,</li> <li>• Communications and Computer Engineering</li> </ul>	
<b>Department offering the course</b>	<ul style="list-style-type: none"> <li>• Electronics Engineering and Electrical Communication.</li> <li>• Computers and Systems Engineering.</li> </ul>	

### 2- Aim of the course

1. Learn the Power System Components, Loads' characteristics, Load Power Factor Correction, Power Transformers, Mechanical Design of Transmission Lines
2. Learn the Steady State Performance of Transmission Lines, HVDC Transmission, Traveling Waves, Transient Over - voltages, Corona, Radio and Audible Noise Effects of Corona on Power Lines,
3. Study of Overhead Lines, Underground Cables (Construction, Types, Electric Stress Distribution, Fault Location),
4. Conversion, Distribution systems, Grounding of Power Systems,
5. Learn the Role of Communication and Computers in Power Systems.

### 3- Course related program competencies

<b>Level A – General</b>	<p>A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.</p> <p>A.3 Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development</p> <p>A.4 Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.</p>		
<b>Level B - Speciality</b>	<p>B.1 Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of: generation, transmission and distribution of electrical power systems.</p> <p>B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.</p> <p>B.3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.</p> <p>B.4 Estimate and measure the performance of an electrical / electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.</p> <p>B.5 Adopt suitable national and international standards and codes to design, build, operate, inspect, and maintain electrical/electronic/digital equipment, systems, and services.</p>		
<b>4- Course Contents</b>	<p>Power System Components, Loads' characteristics, Load Power Factor Correction, Overhead Lines, Underground Cables (Construction, Types, Electric Stress Distribution, Fault Location), Power Transformers, Steady State Performance of Transmission Lines, HVDC Transmission, Traveling Waves, Transient Over - voltages, Corona, Radio and Audible Noise Effects of Corona on Power Lines, Mechanical Design of Transmission Lines, Distribution systems, Grounding of Power Systems, Role of Communication and Computers in Power Systems .</p> <p>مكونات نظم القوي الكهربائية – خصائص الاحمال الكهربائية – تحسين معامل قدرة الاحمال الكهربائية – خطوط النقل الهوائية – الكابلات الارضية (التركيب – الانواع – تحديد اماكن انهيار العزل ) – اداء خطوط نقل القوي الكهربائية في ظروف التشغيل العادية – فكرة عن النقل بالتيار المستمر ذو الضغط العالي – الموجات المسافرة – الجهود الزائدة العابرة – الكورونا والضوضاء المسموعة والراديوية علي خطوط النقل بالضغط العالي – التصميم الميكانيكي لخطوط النقل – نظم التوزيع – تاريض الشبكات الكهربائية دور الاتصالات والحاسبات في شبكات القوي الكهربائية.</p>		
<b># Topic</b>	<b>Lecture</b>	<b>Tutorial/</b>	<b>No of hours</b>

Explain concepts of principle Power System Components, Loads' characteristics,	8	6	14
Load Power Factor Correction, Overhead Lines, Underground Cables (Construction, Types, Electric Stress Distribution, Fault Location), Power Transformers	6	5	11
Steady State Performance of Transmission Lines, Mechanical Design of Transmission Lines, Distribution systems, Grounding of Power Systems, Role of Communication and Computers in Power Systems.	6	5	11
HVDC Transmission, Traveling Waves, Transient Over - voltages, Corona, Radio and Audible Noise Effects of Corona on Power Lines,	8	6	14
Total sum	28	22	50
<b>5- Teaching and learning methods</b>	<ol style="list-style-type: none"> <li>1. Lecture (online/in class)</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Problem solving</li> <li>5. Brain storming</li> <li>6. Projects</li> <li>7. Self-learning</li> <li>8. Research and Reporting</li> <li>9. Computer Simulation</li> <li>10. Teamwork</li> </ol>		
<b>6- Teaching and learning methods for disable students</b>	<ol style="list-style-type: none"> <li>1. Additional Tutorials</li> <li>2. Online lectures and assignments</li> <li>3. Using as many audio/visual aids as possible.</li> <li>4. Providing extra opportunities for practice</li> </ol>		
<b>7- Teaching and learning methods for low capacity students</b>	<ol style="list-style-type: none"> <li>1. Assign a portion of the office hours for those students and provide them with specific tailored tasks.</li> <li>2. Repeat the explanation of some of the material and tutorials.</li> <li>3. Assign a teaching assistance to follow up their performance</li> <li>4. Guidance for distance learning</li> <li>5. Making small projects to facilitate the science material</li> </ol>		
<b>8- Teaching and learning methods for outstanding students</b>	<ol style="list-style-type: none"> <li>1. Assign course project tasks to those students.</li> <li>2. Give them advanced extra-curriculum topics.</li> <li>3. Encourage them to take part in a pilot research and case</li> </ol>		

	studies.
<b>9- Students assessment</b>	
<b>a- Assessment methods</b>	<ol style="list-style-type: none"> <li>1. Mid Term Examination (written/ online)</li> <li>2. Oral Examination</li> <li>3. Formative (quizzes- presentation -reports)</li> <li>4. Final Term Examination (written)</li> </ol>
<b>b- Assessment schedule</b>	<ul style="list-style-type: none"> <li>- Exercise sheet: Weekly</li> <li>- Quiz-1: Week no. 4</li> <li>- Mid-Term exam: Week no. 8</li> <li>- Quiz-2: Week no. 12</li> <li>- Final – term examination: Week no. 16</li> </ul>
<b>c- Weighting of assessment</b>	<ul style="list-style-type: none"> <li>- Class tutorial and quizzes : 20 %</li> <li>- Mid-term examination: 10 %</li> <li>- Final – term examination: 70 %</li> </ul> <p style="text-align: right;">Total 100 % _____</p>
<b>10- List of text books and references:</b>	
<b>a- Course notes</b>	There are lectures notes prepared in the form of a book
<b>b- Text books/ References</b>	<p>R. Bailie, Energy Conversion Engineering, Addison - Wesley Publishing Company, Inc, 1983.</p> <p>A. R. Foster and R. L. Wright, Basic Nuclear Engineering, Allyn and Bacon, Inc, 1989.</p>
<b>c- Periodicals, Web sites .....etc</b>	<a href="https://www.amazon.com/Direct-Alternating-Current-Machinery-2nd/dp/0675201608">https://www.amazon.com/Direct-Alternating-Current-Machinery-2nd/dp/0675201608</a>

<b>11-Course contents – Course related program competencies</b>									
	<b>Level A</b>				<b>Level B</b>				
	<b>A.1</b>	<b>A.3</b>	<b>A.4</b>		<b>B.1</b>	<b>B.2</b>	<b>B.3</b>	<b>B.4</b>	<b>B.5</b>
Explain concepts of principle Power System Components, Loads' characteristics,	√	√	√			√	√		
Load Power Factor Correction, Overhead Lines, Underground Cables (Construction, Types, Electric Stress Distribution, Fault Location), Power Transformers	√	√	√			√	√	√	√
Steady State Performance of Transmission Lines, Mechanical Design of Transmission Lines, Distribution	√	√	√			√	√	√	√



Oral Examination		√			√	√		√	√
Formative (quizzes- presentation -reports)					√	√			
Final Term Examination (written	√	√	√		√	√	√	√	√

**Authorized from board of the department at 11/2/2023**

**Course coordinator:**

Dr Saad Awad M. Abdelwahab






## Course Specification

### 1- Basic Information

<b>Course Title</b>	<b>Electronics Engineering</b>	
<b>Course Code</b>	<b>ECE 322</b>	
<b>Academic Year</b>	2022-2023	
<b>Coordinator</b>	Dr. Heba M. Emara	
<b>Teaching Staff</b>	Dr. Heba M. Emara	
<b>Level</b>	Level (3)	
<b>Semester</b>	Second Term	
<b>Number of Weekly Contact Hours</b>	Lecture	2
	Tutorial	1
	Lab	2
<b>Department offering the program</b>	<ul style="list-style-type: none"> <li>• Electronics and Communications Engineering,</li> <li>• Computers and Systems Engineering,</li> <li>• Communications and Computer Engineering</li> </ul>	
<b>Department offering the course</b>	Electronics Engineering and Electrical Communication	

### 2- Aim of the course

1. To provide students different methods and techniques required to model and analyze the electronic circuits.
2. To acquire students, the skills to find the equivalent circuit, the voltage gain, the current gain, the input impedance, and the output impedance.
3. To give students knowledge about Small geometry effects in MOSFETs, BJT and MOS analog multipliers.
4. To provide students with different types of oscillators and tuned amplifiers.
5. To provide students with different types of filters.
6. Training students on current conveyors and current feedback amplifiers and Voltage references.

### 3- Course related program competencies



<b>Level A – General</b>	<p>A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.</p> <p>A.3 Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development</p> <p>A.4 Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.</p>		
<b>Level B - Speciality</b>	<p>B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.</p> <p>B.3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.</p> <p>B.4 Estimate and measure the performance of an electrical / electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.</p> <p>B.5 Adopt suitable national and international standards and codes to design, build, operate, inspect, and maintain electrical/electronic/digital equipment, systems, and services.</p>		
<b>4- Course Contents</b>	<p>Small geometry effects in MOSFETs. BJT and MOS analog multipliers - Oscillators and waveform shaping - linear oscillators, nonlinear oscillators and multi-vibrators, MOS - C continuous time filters, switched - C filters - current conveyors and current feedback amplifiers - Voltage references - Data converters. Phase-locked loops.</p>		
<b># Topic</b>	<b>Lecture</b>	<b>Tutorial/Practical</b>	<b>No of hours</b>
- Small geometry effects in MOSFETs. - BJT and MOS analog multipliers.	4	4	8
- Oscillators and waveform shaping - Linear oscillators. - Nonlinear oscillators. -Multi-vibrators	6	6	12



	- Quiz-2:	Week no. 12
	- Final – term examination:	Week no. 16
<b>c- Weighting of assessment</b>	- Class tutorial and quizzes:	10 %
	- Mid-term examination:	10 %
	- Oral and Practical work	20%
	- Final – term examination:	<u>60 %</u>
	Total	100 %
<b>10- List of text books and references:</b>		
<b>a- Course notes</b>	<a href="#">There are lectures notes prepared in the form of power point.</a>	
<b>b- Text books/ References</b>	<ul style="list-style-type: none"> <li>▪ A. Sedra, K. Smith, Microelectronic Circuits, Oxford Press, 5th. Ed., 2004.</li> <li>▪ P. Grey, P. Hurst, S. Lewis, R. Meyer, Analysis and Design of Analog Integrated Circuits, J. Wiley and Sons, 5th. Ed., 2009.</li> <li>▪ D. Johns, K. Martin, Analog Integrated Circuit Design, J. Wiley and Sons, 1st. Ed., 1996.</li> <li>▪ B. Razavi, Design of Analog CMOS Integrated Circuits, McGraw Hill, 1st. Ed., 2000.</li> </ul>	
<b>c- Periodicals, Web sites .....etc</b>	<a href="http://www.aaroncake.net/circuits/">www.aaroncake.net/circuits/</a> <a href="http://www.electronics-circuit.com/">www.electronics-circuit.com/</a> <a href="http://www.coolcircuit.com/">www.coolcircuit.com/</a> <a href="http://www.uotiq.org/tec_magaz/volume262008/No2/abstracts/7.pdf">www.uotiq.org/tec_magaz/volume262008/No2/abstracts/7.pdf</a> <a href="http://www.allaboutcircuits.com/">www.allaboutcircuits.com/</a>	

<b>11-Course contents – Course related program competencies</b>							
	Level A			Level B			
	A.1	A.2	A.3	B.1	B.2	B.3	B.5
Small geometry effects in MOSFETs. BJT and MOS analog multipliers.	√						
- Oscillators and waveform shaping - Linear oscillators. - Nonlinear oscillators. Multi-vibrators	√	√		√	√	√	√
- MOS-C continuous-time filters. Switched-C filters -		√	√			√	√

- Current conveyors. Current feedback amplifiers. -	√	√	√				
- Voltage references. - Data converters. - Phase locked loops			√				

### 12-Teaching and learning methods - Course related program competencies

	Level A			Level B			
	A.1	A.3	A.4	B.2	B.3	B.4	B.5
Lecture (online/in class)	√						
Discussion	√	√	√	√	√	√	√
Tutorial	√	√	√	√	√		
Problem solving			√	√	√		
Brain storming				√	√	√	√
Projects				√	√	√	√
Self-learning							√
Research and Reporting						√	
Computer Simulation						√	√
Teamwork							

### 13- Assessment methods - Course related program competencies

Assessment methods	Course related program competencies						
	Level A			Level B			
	A.1	A.3	A.4	B.2	B.3	B.4	B.5
1. Mid Term Examination (written/ online)	√	√	√	√	√		
2. Practical Examination							
3. Oral Examination							
4. Formative (quizzes- presentation -reports)	√	√	√	√	√		
5. Final Term Examination (written	√	√	√	√	√		

**Authorized from board of the department at 4/2/2023.**

**Course coordinator:**

هبة م. عمارة



Dr. Heba M. Emara



## Course Specification

### 1- Basic Information

<b>Course Title</b>	<b>Power Electronics</b>	
<b>Course Code</b>	ELP 323	
<b>Academic Year</b>	2022-2023	
<b>Coordinator</b>	Assoc. Prof. Walid Salah Eldeen Abdellatif	
<b>Teaching Staff</b>	Assoc. Prof. Walid Salah Eldeen Abdellatif	
<b>Level</b>	Level (3)	
<b>Semester</b>	First Term	
<b>Number of Weekly Contact Hours</b>	Lecture	2
	Tutorial	1
	Lab	2
<b>Department offering the program</b>	<ul style="list-style-type: none"> <li>• Electronics and Communications Engineering,</li> <li>• Computers and Systems Engineering,</li> <li>• Communications and Computer Engineering</li> </ul>	
<b>Department offering the course</b>	Electronics and Communications Engineering	
<b>2- Aim of the course</b>		
<ol style="list-style-type: none"> <li>1. This course introducing basics of power electronics,</li> <li>2. Identify the power electronic systems,</li> <li>3. Discuss the different devices of power electronics, and</li> <li>4. Encourage the student to understand the main concept of power electronics.</li> </ol>		
<b>3- Course related program competencies</b>		
<b>Level A – General</b>	<p>A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.</p> <p>A.3 Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.</p>	

<b>Level B - Specialty</b>	<p>B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.</p> <p>B.3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.</p> <p>B.4 Estimate and measure the performance of an electrical / electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.</p>		
<b>4- Course Contents</b>	Power Diodes - Diode Rectifier Circuits, Thyristors (Types, Turn on, Turn off and Protection), Thyristor Commutation Techniques, GTO Thyristors, Power Transistors, Controlled Rectifier Circuits, AC Voltage Controllers, Choppers, Inverters, UPS, Static Switches.		
<b># Topic</b>	<b>Lecture</b>	<b>Tutorial/Practical</b>	<b>No of hours</b>
Introduction to power electronics	4	6	8
Power Diodes, Diode Rectifier Circuits	6	8	12
Thyristors (Types, Turn on, Turn off and Protection, Thyristor Commutation Techniques, GTO ,(Thyristors	4	8	8
Power Transistors, Controlled Rectifier Circuits,	6	12	12
AC Voltage Controllers, Choppers, Inverters, UPS, Static Switches.	8	8	16
Total sum	28	42	56
<b>5- Teaching and learning methods</b>	<ol style="list-style-type: none"> <li>1. Lecture (online/in class)</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Problem solving</li> <li>5. Brain storming</li> <li>6. Projects</li> <li>7. Self-learning</li> <li>8. Research and Reporting</li> <li>9. Computer Simulation</li> <li>10. Teamwork</li> </ol>		
<b>6- Teaching and learning</b>	<ol style="list-style-type: none"> <li>1. Additional Tutorials</li> </ol>		

<b>methods for disable students</b>	<ol style="list-style-type: none"> <li>2. Online lectures and assignments</li> <li>3. Using as many audio/visual aids as possible.</li> <li>4. Providing extra opportunities for practice</li> </ol>										
<b>7- Teaching and learning methods for low capacity students</b>	<ol style="list-style-type: none"> <li>1. Assign a portion of the office hours for those students and</li> <li>2. provide them with specific tailored tasks.</li> <li>3. Repeat the explanation of some of the material and tutorials.</li> <li>4. Assign a teaching assistance to follow up their performance</li> </ol>										
<b>8- Teaching and learning methods for outstanding students</b>	<ol style="list-style-type: none"> <li>1. Assign course project tasks to those students.</li> <li>2. Give them advanced extra-curriculum topics.</li> <li>3. Encourage them to take part in a pilot research and case studies.</li> </ol>										
<b>9- Students assessment</b>											
<b>a- Assessment methods</b>	<ol style="list-style-type: none"> <li>1. Mid Term Examination (written/ online)</li> <li>2. Practical Examination</li> <li>3. Oral Examination</li> <li>4. Formative (quizzes- presentation -reports)</li> <li>5. Final Term Examination (written)</li> </ol>										
<b>b- Assessment schedule</b>	<table style="width: 100%; border: none;"> <tr> <td style="padding-left: 20px;">- Exercise sheet/ Lab assignment :</td> <td style="text-align: right;">Weekly</td> </tr> <tr> <td style="padding-left: 20px;">- Quiz-1:</td> <td style="text-align: right;">Week no. 5</td> </tr> <tr> <td style="padding-left: 20px;">- Mid-Term exam:</td> <td style="text-align: right;">Week no . 8</td> </tr> <tr> <td style="padding-left: 20px;">- Quiz-2:</td> <td style="text-align: right;">Week no. 12</td> </tr> <tr> <td style="padding-left: 20px;">- Final – term examination:</td> <td style="text-align: right;">Week no. 16</td> </tr> </table>	- Exercise sheet/ Lab assignment :	Weekly	- Quiz-1:	Week no. 5	- Mid-Term exam:	Week no . 8	- Quiz-2:	Week no. 12	- Final – term examination:	Week no. 16
- Exercise sheet/ Lab assignment :	Weekly										
- Quiz-1:	Week no. 5										
- Mid-Term exam:	Week no . 8										
- Quiz-2:	Week no. 12										
- Final – term examination:	Week no. 16										
<b>c- Weighting of assessment</b>	<table style="width: 100%; border: none;"> <tr> <td style="padding-left: 20px;">- Class tutorial and quizzes :</td> <td style="text-align: right;">10 %</td> </tr> <tr> <td style="padding-left: 20px;">- Mid-term examination:</td> <td style="text-align: right;">10 %</td> </tr> <tr> <td style="padding-left: 20px;">-Oral Exam</td> <td style="text-align: right;">20 %</td> </tr> <tr> <td style="padding-left: 20px;">- Final – term examination:</td> <td style="text-align: right;">60 %</td> </tr> <tr> <td style="text-align: right; padding-right: 20px;">Total</td> <td style="text-align: right;">100 %</td> </tr> </table>	- Class tutorial and quizzes :	10 %	- Mid-term examination:	10 %	-Oral Exam	20 %	- Final – term examination:	60 %	Total	100 %
- Class tutorial and quizzes :	10 %										
- Mid-term examination:	10 %										
-Oral Exam	20 %										
- Final – term examination:	60 %										
Total	100 %										
<b>10- List of text books and references:</b>											
<b>a- Course notes</b>	<a href="#"><u>There are lectures notes prepared in the form of a book authorized by the department.</u></a>										
<b>b- Text books/ References</b>	<p><b>[Textbook:</b></p> <p>☒ M. M. Rashid, Power Electronics, Circuits, Devices and Applications, Prentice - Hall, 2nd. Ed., 1993.</p> <p><b>References:</b></p> <p>☒ S. B. Dewan and A. Straughen, Power Semiconductor Circuits, J. Wiley &amp; Sons, 1975.</p>										



c- Periodicals, Web sites .....etc	
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11-Course contents – Course related program competencies							
	Level A			Level B			
	A.1	A.3	A.4	B.2	B.3	B.4	
Introduction to power electronics, Power Diodes, Diode Rectifier Circuits	√			√			
Thyristors (Types, Turn on, Turn off and Protection, Thyristor Commutation Techniques, GTO Thyristors),	√	√		√		√	
Power Transistors, Controlled Rectifier Circuits,		√				√	
AC Voltage Controllers, Choppers,	√	√		√		√	
Inverters, UPS, Static Switches.		√				√	

12-Teaching and learning methods - Course related program competencies							
	Level A			Level B			
	A.1	A.3	A.4	B.2	B.3	B.4	
Lecture (online/in class)	√						
Discussion	√	√		√	√	√	
Tutorial	√	√		√	√		
Problem solving				√	√		
Brain storming				√	√	√	
Projects				√	√	√	
Self-learning	√						
Research and Reporting						√	
Computer Simulation						√	
Teamwork	√						

13- Assessment methods - Course related program competencies							
Assessment methods	Course related program competencies						
	Level A			Level B			
	A.1	A.3	A.4	B.2	B.3	B.4	B.5
1. Mid Term Examination (written/ online)	√	√		√	√		
2. Practical Examination				√			
3. Oral Examination					√	√	
4. Formative (quizzes- presentation -reports)	√	√		√	√		
5. Final Term Examination (written	√	√		√	√	√	

**Authorized from board of the department at 11/2/2022**

**Course coordinator:**




Dr. Walid Salah Eldeen Abdellatif



## Course Specification

### 1- Basic Information

<b>Course Title</b>	<b>Computer architecture</b>	
<b>Course Code</b>	<b>CSE 324</b>	
<b>Academic Year</b>	2022-2023	
<b>Coordinator</b>	Dr. Gafary Mahmoud	
<b>Teaching Staff</b>	Dr. Gafary Mahmoud	
<b>Level</b>	Level (3)	
<b>Semester</b>	Second Term	
<b>Number of Weekly Contact Hours</b>	Lecture	2
	Tutorial	2
	Lab	0
<b>Department offering the program</b>	<ul style="list-style-type: none"><li>• Electronics and Communications Engineering,</li><li>• Computers and Systems Engineering,</li><li>• Communications and Computer Engineering</li></ul>	
<b>Department offering the course</b>	<ul style="list-style-type: none"><li>• Computers and Systems Engineering</li></ul>	

### 2- Aim of the course

1. To teach student basics of artificial intelligence, and its applications.
2. To equip students with methods of search strategies, fuzzy logics, machine learning, and neural networks.
3. To acquire students a good idea to use blind search methods.
4. To teach students the concepts and applications of rule-based systems.
5. To provide students with the design steps of intelligent control systems.

### 3- Course related program competencies

<b>Level A – General</b>	<p><b>A.1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.</b></p> <p><b>A.2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions</b></p> <p><b>A.3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.</b></p> <p><b>A.5. Practice research techniques and methods of investigation as an inherent part of learning.</b></p>		
<b>Level B - Speciality</b>			
<b>4- Course Contents</b>	<p>Search: Graph search – Constraint satisfaction - Games –  Machine Learning: Decision trees, Neural Networks: Knowledge representation and inference: Propositional and first order logic  – Rule-based systems – Fuzzy logic systems.</p>		
<b># Topic</b>	<b>Lecture</b>	<b>Tutorial/Practical</b>	<b>No of hours</b>
Von Newman and Harvard architectures	2	2	4
Computer arithmetic	2	2	4
Input / output organization Control unit	2	2	4
Bus synchronization, I/O devices	2	2	4
Design of ALU and pipelined processor	2	2	4
Memory architectures and design, RAM access	2	2	4

Connection of computer peripherals	2	2	4
Large computer systems(parallel processing, array processors, interconnect networks, multi processors	4	4	8
Basic concepts of cache memory, mapping algorithms, and write policy	2	2	4
Total sum	40	20	20
<b>5- Teaching and learning methods</b>	<ol style="list-style-type: none"> <li>1. Lecture (/in class)</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Problem solving</li> <li>5. Brain storming</li> <li>6. Projects</li> <li>7. Self-learning</li> <li>8. Research and Reporting</li> <li>9. Computer Simulation</li> <li>10. Teamwork</li> </ol>		
<b>6- Teaching and learning methods for disable students</b>	<ol style="list-style-type: none"> <li>1. Additional Tutorials</li> <li>2. Online lectures and assignments</li> <li>3. Using as many audio/visual aids as possible.</li> <li>4. Providing extra opportunities for practice</li> </ol>		
<b>7- Teaching and learning methods for low capacity students</b>	<ol style="list-style-type: none"> <li>1. Assign a portion of the office hours for those students and</li> <li>2. provide them with specific tailored tasks.</li> <li>3. Repeat the explanation of some of the material and tutorials.</li> <li>4. Assign a teaching assistance to follow up their performance</li> </ol>		
<b>8- Teaching and learning methods for outstanding students</b>	<ol style="list-style-type: none"> <li>1. Assign course project tasks to those students.</li> <li>2. Give them advanced extra-curriculum topics.</li> <li>3. Encourage them to take part in a pilot research and case studies.</li> </ol>		
<b>9- Students assessment</b>			
<b>a- Assessment methods</b>	<ol style="list-style-type: none"> <li>1. Mid Term Examination (written/ online)</li> <li>2. Practical Examination</li> <li>3. Oral Examination</li> <li>4. Formative (quizzes- presentation -reports)</li> <li>5. Final Term Examination (written)</li> </ol>		
<b>b- Assessment schedule</b>	<ul style="list-style-type: none"> <li>- Exercise sheet/ Lab assignment : Weekly</li> <li>- Quiz-1: Week no. 5</li> </ul>		

	- Mid-Term exam:	Week no . 8
	- Quiz-2:	Week no. 12
	- Final – term examination:	Week no. 16
<b>c- Weighting of assessment</b>	- Class tutorial and quizzes :	10 %
	- Mid-term examination:	20 %
	- Final – term examination:	70 %
	Total	100 %
<b>10- List of text books and references:</b>		
<b>a- Course notes</b>	There are lectures notes prepared in the form of a pdf.	
<b>b- Text books/ References</b>	V. Rajarman and T. Radhakrishnan, Computer Organization & Architecture PHI Learning Private Limited, New Delhi 2007	
<b>c- Periodicals, Web sites .....etc</b>	Web Sites related to Computer architecture engineering as: <a href="http://www.Computer architecture.hmc.edu">www. Computer architecture.hmc.edu</a> , www.tutorial. Computer architecture.edu, www.web.mit.edu	

11-Course contents – Course related program competencies	Level A				Level B			
	A.1	A.2	A.3	A.5	B.1	B.2	B.3	B.5
Solving problems by searching	√	√	√		√	√	√	
Inference in First Order Logic	√	√	√		√	√	√	
Fuzzy logic control	√	√	√	√	√	√	√	√
Intelligent Agen	√	√	√		√	√	√	
Learning in Neural and Belief Networ	√	√	√		√	√	√	

	<b>Level A</b>	
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12-Teaching and learning methods - Course related program competencies	A.1	A.2	A.3	A.5	B.1	B.2	B.3	B.5
Lecture (online/in class)		√	√	√	√	√	√	
Discussion		√	√	√	√	√	√	
Tutorial	√	√	√	√	√	√	√	√
Problem solving	√	√	√	√	√	√	√	
Brain storming	√	√	√	√	√	√	√	
Projects	√	√	√	√	B.1	B.2	B.3	B.5
Self-learning		√			√	√	√	
Research and Reporting			√		√	√	√	
Computer Simulation					√	√	√	√
Teamwork					√	√	√	

### 13- Assessment methods - Course related program competencies

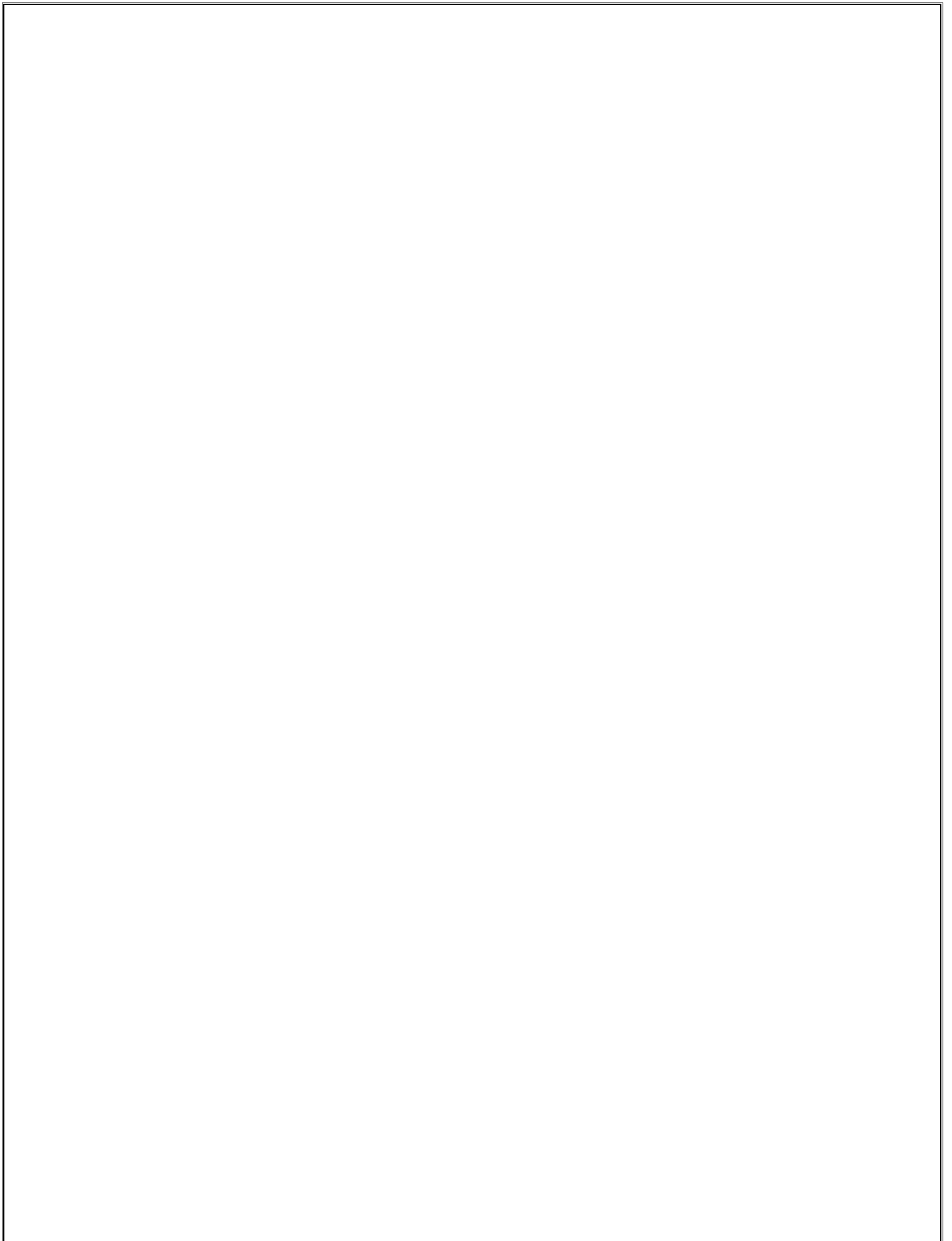
Assessment methods	Course related program competencies							
	Level A				Level B			
	A.1	A.2	A.3	A.5	B.1	B.2	B.3	B.5
1. Mid Term Examination (written/ online)	√	√	√	√	√	√	√	√
2. Practical Examination	√	√	√		√	√	√	√
3. Oral Examination	√	√	√		√	√	√	√
4. Formative (quizzes- presentation -reports)	√	√	√	√	√	√	√	√
5. Final Term Examination (written)	√	√	√	√	√	√	√	√

Authorized from board of the department at 4/2/2023

Course coordinator:




Dr. Gafary Mahmoud







## Course Specification

### 1- Basic Information

<b>Course Title</b>	<b>Professional Ethics</b>	
<b>Course Code</b>	<b>HUM 351</b>	
<b>Academic Year</b>	2022-2023	
<b>Coordinator</b>	Dr. Somaia Ahmed Desoky	
<b>Teaching Staff</b>	Dr. Somaia Ahmed Desoky	
<b>Level</b>	Level (3)	
<b>Semester</b>	Second Term	
<b>Number of Weekly Contact Hours</b>	Lecture	1
	Tutorial	0
	Lab	0
<b>Department offering the program</b>	<ul style="list-style-type: none"> <li>• Electronics and Communications Engineering,</li> <li>• Computers and Systems Engineering,</li> <li>• Communications and Computer Engineering</li> </ul>	
<b>Department offering the course</b>	Basic Science	

### 2- Aim of the course

1. To inculcate the sense of social responsibility.
2. To develop a firm ethical base
3. To make the students realize the significance of ethics in professional environment..

### 3- Course related program competencies

<b>Level A – General</b>	<p>A.1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.</p> <p>A.5. Practice research techniques and methods of investigation as an inherent part of learning</p> <p>A.7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams</p> <p>A.8 Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary</p>
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Level B - Speciality			
4- Course Contents	<p>نظرة عامة على علم الهندسة ومهنة المهندس : علم الهندسة قاطرة الحضارة للأمم منذ فجر التاريخ- مهنة المهندس من أرقى وأسمى المهن عموما – (تستند إلى الإبداع والابتكار والتطوير الذي يضيفه كل مهندس من فكرة الخاصّ تخدم البشرية كلها وتسعى إلى الجودة في حياة الإنسان عموماً) مسؤوليات المهندس دولياً ومحلياً : الدور الهام للمهندس طبقاً للعقود الدولية (فيديك FIDIC)(-)مسئولية المهندس وفقاً للقوانين المصرية . أخلاقيات وأداب المهنة : نظرة شاملة على قانون نقابة المهندسين رقم 66 لسنة 1974 – التأكيد على أهداف النقابة وواجبات أعضائها كما وردت بالقانون –وضع ميثاق شرف يجمع مايجب أن يتحلى به المهندس من أخلاق وصفات وأداب.</p>		
# Topic	Lecture	Tutorial/Practical	No of hours
التعريف بالمقرر ومفرداته ومصادره مقدمة عن العمل والأخلاق وأهميتها للحياة البشرية	2		2
مفهوم أخلاقيات المهنة وأهميتها مسؤوليات المهندس دولياً ومحلياً : الدور الهام للمهندس طبقاً للعقود الدولية (فيديك)	4		4
مسئولية المهندس وفقاً للقوانين المصرية . أخلاقيات وأداب المهنة : نظرة شاملة على قانون نقابة المهندسين رقم 66 لسنة 1974 – التأكيد على أهداف النقابة وواجبات أعضائها كما وردت بالقانون	4		4
التأكيد على أهداف النقابة وواجبات أعضائها كما وردت ( – بالقانون وضع ميثاق شرف يجمع مايجب أن يتحلى به المهندس من أخلاق وصفات وأداب	4		4
Total sum	14		14
5- Teaching and learning methods	<p>–.</p> <ol style="list-style-type: none"> <li>1. Lecture (online/in class)</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Problem solving</li> <li>5. Brain storming</li> <li>6. Projects</li> <li>7. Self-learning</li> <li>8. Research and Reporting</li> <li>9. Computer Simulation</li> <li>10. Teamwork</li> </ol>		

<b>6- Teaching and learning methods for disable students</b>	<ol style="list-style-type: none"> <li>1. Additional Tutorials</li> <li>2. Online lectures and assignments</li> <li>3. Using as many audio/visual aids as possible.</li> <li>4. Providing extra opportunities for practice</li> </ol>										
<b>7- Teaching and learning methods for low capacity students</b>	<ol style="list-style-type: none"> <li>1. Assign a portion of the office hours for those students and</li> <li>2. provide them with specific tailored tasks.</li> <li>3. Repeat the explanation of some of the material and tutorials.</li> <li>4. Assign a teaching assistance to follow up their performance</li> </ol>										
<b>8- Teaching and learning methods for outstanding students</b>	<ol style="list-style-type: none"> <li>1. Assign course project tasks to those students.</li> <li>2. Give them advanced extra-curriculum topics.</li> <li>3. Encourage them to take part in a pilot research and case studies.</li> </ol>										
<b>9- Students assessment</b>											
<b>a- Assessment methods</b>	<ol style="list-style-type: none"> <li>1. Mid Term Examination (written/ online)</li> <li>2. Practical Examination</li> <li>3. Oral Examination</li> <li>4. Formative (quizzes- presentation -reports)</li> <li>5. Final Term Examination (written)</li> </ol>										
<b>b- Assessment schedule</b>	<table border="0"> <tr> <td>- Exercise sheet/ Lab assignment :</td> <td>Weekly</td> </tr> <tr> <td>- Quiz-1:</td> <td>Week no. 5</td> </tr> <tr> <td>- Mid-Term exam:</td> <td>Week no . 8</td> </tr> <tr> <td>- Quiz-2:</td> <td>Week no. 12</td> </tr> <tr> <td>- Final – term examination:</td> <td>Week no. 16</td> </tr> </table>	- Exercise sheet/ Lab assignment :	Weekly	- Quiz-1:	Week no. 5	- Mid-Term exam:	Week no . 8	- Quiz-2:	Week no. 12	- Final – term examination:	Week no. 16
- Exercise sheet/ Lab assignment :	Weekly										
- Quiz-1:	Week no. 5										
- Mid-Term exam:	Week no . 8										
- Quiz-2:	Week no. 12										
- Final – term examination:	Week no. 16										
<b>c- Weighting of assessment</b>	<table border="0"> <tr> <td>- Class tutorial and quizzes :</td> <td>5 %</td> </tr> <tr> <td>- Mid-term examination:</td> <td>10 %</td> </tr> <tr> <td>- Final – term examination:</td> <td>35%</td> </tr> <tr> <td style="text-align: right;">Total</td> <td>100 %</td> </tr> </table>	- Class tutorial and quizzes :	5 %	- Mid-term examination:	10 %	- Final – term examination:	35%	Total	100 %		
- Class tutorial and quizzes :	5 %										
- Mid-term examination:	10 %										
- Final – term examination:	35%										
Total	100 %										
<b>10- List of text books and references:</b>											
<b>a- Course notes</b>	<p><a href="#">There are lectures notes prepared in the form of a book authorized by the department.</a></p>										
<b>b- Text books/ References</b>	<p>▪ المهنة وأخلاقيها، د. سعد الدين هلال، مجلس النشر العلمي، جامعة الكويت، ط1، 2006م. قانون نقابة مهن المهندسين ولائحته التنفيذية .</p>										

	▪ أخلاقيات المهنة جامعة الملك سعود قسم الدراسات الإسلامية
c- Periodicals, Web sites .....etc	Professions", www.encyclopedia.com, Retrieved 5 - 8-2018. Edited,

11-Course contents – Course related program competencies				
	Level A			
	A.1	A.5	A.7	A.8
التعريف بالمقرر ومفرداته ومصادره مقدمة عن العمل والأخلاق وأهميتها للحياة البشرية	√	√		
مفهوم أخلاقيات المهنة وأهميتها لمسئوليات المهندس دوليا ومحليا : الدور الهام للمهندس طبقا للعقود الدولية (فيديك)	√	√		
مسئولية المهندس وفقا للقوانين المصرية . أخلاقيات وأداب المهنة : نظرة شاملة على قانون نقابة المهندسين رقم 66 لسنة 1974 – التأكد على أهداف النقابة وواجبات أعضائها كما وردت بالقانون		√	√	√
( –التأكيد على أهداف النقابة وواجبات أعضائها كما وردت بالقانون وضع ميثاق شرف يجمع مايجب أن يتحلى به المهندس من أخلاق وصفات وأداب		√	√	√

12-Teaching and learning methods - Course related program competencies				
	Level A			
	A.1	A.5	A.7	A.8
Lecture (online/in class)	√	√	√	
Discussion	√	√		
Tutorial	√	√		√
Problem solving	√	√		
Brain storming	√			√
Projects		√	√	√

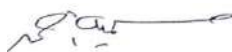
Self-learning	√			
Research and Reporting			√	
Computer Simulation				
Teamwork				

13- Assessment methods - Course related program competencies				
Assessment methods	Course related program competencies			
	Level A			
	A.1	A.5	A.7	A.8
1. Mid Term Examination (written/ online)	√	√		
2. Practical Examination				
3. Oral Examination			√	
4. Formative (quizzes- presentation -reports)	√	√		√
5. Final Term Examination (written	√	√		

**Authorized from board of the department at /2023**

**Course coordinator:**

Dr. Somaia Desouky






## Course Specification

### 1- Basic Information

<b>Course Title</b>	<b>English Languages 2</b>	
<b>Course Code</b>	HUM X13	
<b>Academic Year</b>	2022-2023	
<b>Coordinator</b>	Assoc. Prof. Walid Salah Eldeen Abdellatif	
<b>Teaching Staff</b>	Assoc. Prof. Walid Salah Eldeen Abdellatif	
<b>Level</b>	Level (3)	
<b>Semester</b>	First Term	
<b>Number of Weekly Contact Hours</b>	Lecture	1
	Tutorial	2
	Lab	0
<b>Department offering the program</b>	<ul style="list-style-type: none"> <li>• Electronics and Communications Engineering,</li> <li>• Computers and Systems Engineering,</li> <li>• Communications and Computer Engineering</li> </ul>	
<b>Department offering the course</b>	Electronics and Communications Engineering	
<b>2- Aim of the course</b>		
<ol style="list-style-type: none"> <li>1. Develop a basic knowledge of English Languages.</li> <li>2. Acquire the main principles of Question tags (check information)</li> <li>3. Provide knowledge about basis of time expressions - (write a short story) if structures - (write a dairy entry)</li> <li>4. Help the students to write a formal letter of application.</li> <li>5. Help the students to write a report of survey findings - Relative clauses - (write an article).</li> </ol>		
<b>3- Course related program competencies</b>		

<b>Level A – General</b>	<p>A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.</p> <p>A.3 Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.</p>		
<b>Level B - Speciality</b>	<p>B.5 Adopt suitable national and international standards and codes to design, build, operate, inspect, and maintain electrical/electronic/digital equipment, systems, and services.</p>		
<b>4- Course Contents</b>	<p>Question tags (check information) - futures overview - verb phrase about work (talk about future plans &amp; make predictions) - narrative tenses - time expressions - (write a short story) if structures (1) - (write a dairy entry) - used to/get used to/would - appearance (describe appearance) - present perfect simple &amp; continuous -adjectives with ed &amp; ing endings - (write an informal email) - countable &amp; uncountable nouns - food &amp; cooking - (describe how to prepare &amp; cook a dish) - it's time/I'd rather/ I'd better - describing personality(describe different types of people) - sequencing devices e.g. after + ing - vocabulary: law &amp; insurance (tell a funny story) - reflexive pronouns - (ask about &amp; give your own beliefs &amp; opinions). present/future modals of possibility - noises) make speculations( - in case - write a formal letter of application - adjectives &amp; adverbs - verb phrases with take - (give a presentation about a place - present/future modals of possibility - noises – (make speculations - in case - (write a formal letter of application – adjectives &amp; adverbs -verb phrases with take - (give a presentation about a place) - emphasis -phrasal verbs with out - (compare &amp; contrast photographs) – although, but, however, nevertheless -feelings - (talk about books - making comparisons - verb phrases about moving/ travelling - (make comparisons about places &amp; people - have/get something else -animal expression - (talk about services - hard and hardly - (write a report of survey findings - Relative clauses - (write an article) - if Structure (2) - speaking - (talk about your regrets &amp; resolutions).</p>		
<b># Topic</b>	<b>Lecture</b>	<b>Tutorial/Practical</b>	<b>No of hours</b>
Question tags (check information)	2	4	6
futures overview - verb phrase about work (talk about future plans & make predictions) -	3	6	9
Time expressions - (write a	3	6	9

short story) if structures - .(write a dairy entry			
Write a formal letter of .application	3	6	9
Write a report of survey findings - Relative clauses - (write an article).	3	6	9
Total sum	14	28	42
<b>5- Teaching and learning methods</b>	<ol style="list-style-type: none"> <li>1. Lecture (online/in class)</li> <li>2. Discussion</li> <li>3. Tutorial</li> <li>4. Problem solving</li> <li>5. Brain storming</li> <li>6. Projects</li> <li>7. Self-learning</li> <li>8. Research and Reporting</li> <li>9. Computer Simulation</li> <li>10. Teamwork</li> </ol>		
<b>6- Teaching and learning methods for disable students</b>	<ol style="list-style-type: none"> <li>1. Additional Tutorials</li> <li>2. Online lectures and assignments</li> <li>3. Using as many audio/visual aids as possible.</li> <li>4. Providing extra opportunities for practice</li> </ol>		
<b>7- Teaching and learning methods for low capacity students</b>	<ol style="list-style-type: none"> <li>1. Assign a portion of the office hours for those students and</li> <li>2. provide them with specific tailored tasks.</li> <li>3. Repeat the explanation of some of the material and tutorials.</li> <li>4. Assign a teaching assistance to follow up their performance</li> </ol>		
<b>8- Teaching and learning methods for outstanding students</b>	<ol style="list-style-type: none"> <li>1. Assign course project tasks to those students.</li> <li>2. Give them advanced extra-curriculum topics.</li> <li>3. Encourage them to take part in a pilot research and case studies.</li> </ol>		
<b>9- Students assessment</b>			
<b>a- Assessment methods</b>	<ol style="list-style-type: none"> <li>1. Mid Term Examination (written/ online)</li> <li>2. Practical Examination</li> <li>3. Oral Examination</li> <li>4. Formative (quizzes- presentation -reports)</li> <li>5. Final Term Examination (written)</li> </ol>		
<b>b- Assessment schedule</b>	<p>- Exercise sheet/ Lab assignment :            Weekly</p> <p>- Quizz-1:    Week no. 5</p> <p>- Mid-Term exam:                                      Week no . 8</p>		



	- Quizz-2: Week no. 12
	- Final – term examination: Week no. 16
<b>c- Weighting of assessment</b>	- Class tutorial and quizzes : 15 % - Mid-term examination: 15 % - Final – term examination: 70 % Total 100 % _____
<b>10- List of text books and references:</b>	
<b>a- Course notes</b>	<a href="#">There are lectures notes prepared in the form of a book authorized by the department.</a>
<b>b- Text books/ References</b>	<b>Textbook:</b> ☑ Richard Acklam, Total English - Upper - Intermediate Level, Pearson Education Limited - Longman, Last Edition
<b>c- Periodicals, Web sites .....etc</b>	

<b>11-Course contents – Course related program competencies</b>							
	Level A			Level B			
	A.1	A.3					B.5
Question tags (check information)	√						
futures overview - verb phrase about work (talk about future plans & make predictions) -	√	√					√
Time expressions - (write a short story) if structures - (write a dairy entry.(		√					√
Write a formal letter of application.	√	√					√
Write a report of survey findings - Relative clauses - (write an article).		√					

<b>12-Teaching and learning methods - Course related program competencies</b>							
	Level A			Level B			
	A.1	A.3					B.5
Lecture (online/in class)	√						

Discussion	√	√					√
Tutorial	√						
Problem solving		√					
Brain storming		√					√
Projects		√					√
Self-learning							√
Research and Reporting		√					
Computer Simulation		√					√
Teamwork	√	√					

13- Assessment methods - Course related program competencies							
Assessment methods	Course related program competencies						
	Level A			Level B			
	A.1	A.3					B.5
1. Mid Term Examination (written/ online)	√	√					
2. Practical Examination		√					√
3. Oral Examination		√					
4. Formative (quizzes- presentation -reports)	√	√					√
5. Final Term Examination (written	√						√

Authorized from board of the department at 11/2/2023

Course coordinator:




Dr. Walid Salah Eldeen Abdellatif



**Department offering the program:** Electronics and Communications Engineering,  
 Computers and Systems Engineering,  
 Communications and Computer Engineering

**Department offering the course:** General

## Course Specification

1. Course Basic Information:			
Course Code: 391	Course Title: Field Training 2 تدريب ميداني 2	Academic years: 2021/2022 Level (3) – Semester : 2 <sup>nd</sup>	
Institute Requirement	Teaching hours:		
	Lecture : 0	Tutorial: 0	Lab : 6

2. Course Objectives
قضى الطالب تدريباً ميدانياً بعد استكمالاً لمقررات المستوى الثاني بالمعهد العالي للهندسة الإلكترونية لمدة أربعة أسابيع وقد أظهر المهارات المهنية والعملية التي اكتسبها خلال المناقشة بعد تسليم تقرير مفصل على مدى الاستفادة

3. Intended Learning Outcomes: ARS		Course ILOs
A. Knowledge and Understanding:	A.1. تم التعرف على احد البرامج الهامه في مجال الكهرياء وهو برنامج الماتلاب	A.1-1 Explain concepts of Fundamentals of MATLAB
B. Intellectual Skills		
C. Professional Skills	C.1. التدريب العملي على دوائر القوى الكهريه وكذلك الالات الكهريه.	C.1-1. التدريب على دوائر المحول من التيار المتر الى التيار المتغير والعكس



<b>D. General Skills</b>	التفاعل داخل العمل الجامعي اثناء التدريب D.3.	قام الطلاب بتقديم تقرير مفصل على الاجزاء التي D.3- استعددها منها وتم المناقشة في التقدير من اللجنة
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#### 4. Course Contents

**Syllabus:** Students should spend 4 weeks in field training, after completing the third level, in any Engineering Institution or Engineering Firms. Students should demonstrate the professional and practical skills they acquired during discussion with their assigned tutors.

يقضى الطالب تدريبا ميدانيا بعد استكمالها لمقررات المستوى الثالث باحد المؤسسات الهندسية او المعاهد الهندسية ولمدة اربعة اسابيع. وعلى الطلاب اظهار المهارات المهنية والعملية التي اكتسبها خلال المناقشة مع المشرف الاكاديمي.

#### 5. Teaching and Learning Methods

- Lectures
- Power point
- Research assignments

#### 6. Teaching and Learning Methods for disable students

كان التدريب من خال الاتي  
التدريب على اهم اوامر برنامج الماتلاب وكيفية العمل وتنفيذ الدوائر الكهربيه والعمليات الرياضية عليه  
التدريب على معمل الكترونيات القدرة  
التدريب على اهم قواعد البرمجه في نظم الحاسبات

#### 7. Student Assessment

<b>a. Assessment Methods</b>	اعمال السنه + المناقشة والتقارير
<b>b. Assessment Schedule</b>	التقرير + المناقشة
<b>c. Weighting of Assessment</b>	اعمال السنه 50 %
	التقرير والمناقشة 50 %
	Total 100 %

#### 8. List of text books and references

<b>a. Course notes</b>	التدريب العملي وعرض البور بونت
<b>b. Text books</b>	التدريب العملي
<b>c. Recommended books</b>	
<b>d. Periodicals, Web sites</b>	



...etc
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### Course contents - ILOs Matrix

Content Topics	Week	A- Knowledge & Understanding	B- Intellectual Skills	C- Professional and Practical Skills	D- General and Transferable Skills
برنامج المتلاب	1	A.1		C.1	D3
الالكترونيات القدرة	2			C.1	D.3
الات كهريبيه	3			C.1	D.3
برمجة الحاسب	4			C.1	D.3

### Teaching and Learning Methods - ILOs Matrix

Teaching and Learning Methods	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Lectures				
tutorials				
Labs	A.1		C.1	D.3
Research assignments				

### Assessment Methods - ILOs Matrix

Assessment Methods	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Weekly sheet exercises				
Labs	A.1		C.1	D.3
Quizzes				
Midterm exams				

### Course coordinator:

Dr Saad Awad M. Abdelwahab

