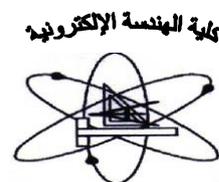


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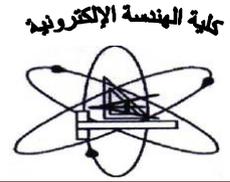
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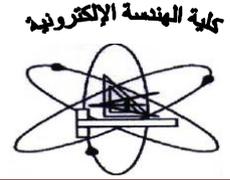
Department offering the program: Electronics and Electrical Communications
Department offering the course: Industrial Electronics and Control Engineering

Course Specification

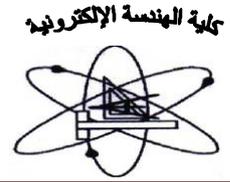
| 1- Course basic information : | |
|--|---|
| Course Code: ACE 115 Department requirement | Course Title: Electrical Engineering |
| Field: Basic Eng. Science | Academic year:2015/2016 Level (1) – Semester : 1 |
| Teaching hours: Lecture [2] Tutorial [1] Lab [1] | |
| 2- Course Objectives | <ol style="list-style-type: none"> 1. To enhance student ability to explain the Fundamentals of Electricity. 2. To introduce students to the concepts of Magnetism and Electromagnets 3. To Magneto motive force Electromagnetic induction – Electrostatics 4. To develop students skills to explain A.C fundamentals. 5. To introduce students to Poly phase Fundamentals. 6. To teach students the function and construction of transformers |
| 3- Intended Learning Outcomes: ARS | |
| Course ILOs | |
| A- Knowledge and Understanding: | <p>A.1 Explain Concepts and theories of mathematics and sciences appropriate to Electrical Engineering.</p> <p>A.3 Define characteristics of engineering materials related to the Electrical Engineering.</p> <p>A.4 Demonstrate principles of design including elements design, process and/or a system related to Electrical Engineering.</p> |
| | <p>A1.1 Explain concepts and theories of sciences appropriate to Electricity.</p> <p>A1.2 Explain concepts and theories of sciences appropriate to Magnetism and Electromagnetics.</p> <p>A1.3 Explain concepts and theories of sciences appropriate to Electromagnetic induction and Electrostatics.</p> <p>A1.4 Explain concepts and theories of mathematics and sciences appropriate to A.C.</p> <p>A1.5 Explain concepts and theories of sciences appropriate to Poly phase A.C circuits.</p> <p>A1.6 Explain concepts and theories of sciences appropriate to transformer.</p> <p>A3.1 Define characteristics of engineering materials related to Magnetism.</p> <p>A3.2 Define characteristics of straight conductor related to magnetic field.</p> <p>A3.3 Define characteristics of engineering materials related to Electrostatics.</p> <p>A4.1 Demonstrate principles of design including elements design, process and/or a system related to Poly phase A.C circuits and transformers.</p> |



| | | |
|--------------------------------------|---|--|
| | <p>A.5 Demonstrate methodologies of solving engineering problems, data collection and interpretation.</p> | <p>A5.1 Demonstrate methodologies of solving basic Electricity problems. A5.2 Demonstrate methodologies of solving Magnetostatics problems. A5.3 Demonstrate methodologies of solving Electrostatics problems. A5.4 Demonstrate methodologies of solving A.C problems. A5.5 Demonstrate methodologies of solving Poly phase problems. A5.6 Demonstrate methodologies of solving transformer problems.</p> |
| <p>B- Intellectual Skills</p> | <p>B.2 Select appropriate solutions for engineering problems based on analytical thinking.</p> <p>B.5 Assess and evaluate the characteristics and performance of components, systems and processes.</p> | <p>B2.1 Select appropriate solution for A.C. problems based on analytical thinking. B2.2 Select appropriate solutions for Poly phase problems based on analytical thinking. B2.3 Select appropriate solutions for transformer problems based on analytical thinking.</p> <p>B5.1 Assess and evaluate the performance of magnetic components and circuits. B5.2 Assess and evaluate the performance of Electromagnetic induction. B5.3 Assess and evaluate the performance of Electrostatic systems and processes. B5.4 Assess and evaluate characteristics of components of AC circuits. B5.5 Assess and evaluate characteristics of transformers.</p> |
| <p>C- Professional Skills</p> | <p>C.1 Apply knowledge of mathematics, science, and engineering practice integrally to solve engineering problems.</p> | <p>C1.1 Apply knowledge of mathematics, science, and engineering practice integrally to solve Electricity problems. C1.2 Apply knowledge of mathematics, science, and engineering practice integrally to solve Magnetostatics problems. C1.3 Apply knowledge of mathematics, science, and engineering practice integrally to solve A.C problems. C1.4 Apply knowledge of mathematics, science, and engineering practice integrally to solve Poly phase problems. C1.5 Apply knowledge of mathematics, science, and engineering practice integrally to solve transformers problems.</p> |



| | | |
|--|--|---|
| | <p>C.5. Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results.</p> <p>C.8. Apply safe systems at work and observe the appropriate steps to manage risks.</p> | <p>C5.1 Use measuring instruments, workshops and laboratory equipment to design A.C experiments.</p> <p>C5.2 Use measuring instruments, workshops and laboratory equipment to design Poly phase experiments.</p> <p>C5.3 Use measuring instruments, workshops and laboratory equipment to design transformer experiments.</p> <p>C8.1 Apply safe systems at work and observe the appropriate steps to manage risks during electricity laboratory experiments.</p> |
| D- General Skills | <p>D.1. Collaborate effectively within multidisciplinary team.</p> <p>D.2. Work in stressful environment and within constraints.</p> <p>D.3. Communicate effectively.</p> <p>D.6. Effectively manages tasks, time, and resources.</p> <p>D.7. Search for information and engage in life-long self learning discipline.</p> | <p>D1.1 Collaborate effectively within multidisciplinary team during laboratory work.</p> <p>D2.1 Work in stressful environment and within constraints during solving problems, doing experiments and in exams.</p> <p>D3.1 Communicate effectively in tutorial and lab. times.</p> <p>D6.1 Effectively manages tasks, time, and resources during solving problems, doing experiments and in exams.</p> <p>D7.1 Search for information on topics related to Electrical Engineering.</p> |
| 4- Course Contents | Fundamentals of Electricity – Magnetism- Electromagnetics – Magnetic field due to straight conductor and circular conductor- Nature of magnetic field of long straight conductor – Magneto motive force – Electromagnetic induction – Electrostatics – A.C fundamentals – Poly phase Fundamentals – transformer. | |
| 5- Teaching and Learning Methods | <ul style="list-style-type: none"> - Lectures - Tutorials - Laboratory work - Reports | |
| 6- Teaching and Learning Methods for disable students | <ul style="list-style-type: none"> • Official low cost special classes for developing student skills, arranged by the faculty administration. • Assign a portion of the office hours for those students. • Repeat the explanation of some of the material in laboratory and tutorial times. • Assign a teaching assistance to follow up the performance of this group of students. | |
| 7- Student Assessment | | |
| a- Assessment Methods | <ul style="list-style-type: none"> - Homework exercises - Laboratory reports - Quizzes - Mid-term, and final exams | |



| | | |
|---|--|--|
| b- Assessment Schedule | - Exercise sheet/ Lab assignment : - Quizz-1: - Mid-Term exam: - Quizz-2: - Oral and practical exams - Final – term examination: | Weekly Week no 5 Week no 8 Week no 12 Week no 15 Week no 16 |
| c- Weighting of Assessment | - Semester work and quizzes : - Oral and practical exam: - Final – term examination: | 20 % 20 % <u>60 %</u> Total 100 % |
| 8- List of text books and references: | | |
| a- Course notes | There are lectures notes prepared in the form of a book authorized by the department. | |
| b- Text books | [1] Hammond S.b. , “Electrical Engineering”, McGraw-Hill Book Company: New York, 2009 | |
| c- Recommended books | [1] Kasatkin A S and Nemtsov M V , “Electrical Engineering”, Mir Publishers: Moscow, 2008. [2] Yankovsky G, “Basic Electrical Engineering”, Mir Publishers: Moscow, 2009. | |
| d- Periodicals, Web sitesetc | http://www.electronic-circuits-diagrams.com/tutorials.shtml http://www.electronics-tutorials.com/basics/basic-electronics.htm | |

Course contents - ILOs Matrix

| Content Topics | Week | A- Knowledge & Understanding | B- Intellectual skills | C- Professional and practical skills | D- General and transferable skills |
|--|-------|------------------------------|------------------------|--------------------------------------|------------------------------------|
| Fundamentals of Electricity | 1-2 | A1.1, A5.1 | | C1.1, C8.1 | D1.1,D2.1,D3.1, D6.1, D7.1 |
| Magnetism- Electromagnetics | 3-4 | A1.2, A3.1, A5.2 | B5.1 | C8.1 | D1.1,D2.1,D3.1, D6.1, D7.1 |
| Magnetic field due to straight conductor and circular conductor- Nature of magnetic field of long straight conductor | 5 | A3.2 | B5.1 | C8.1 | D1.1,D2.1,D3.1, D6.1, D7.1 |
| Magneto motive force – Electromagnetic induction – Electrostatics | 6-7 | A1.3, A3.3, A5.3 | B5.2, B5.3 | C8.1 | D1.1,D2.1,D3.1, D6.1, D7.1 |
| A.C fundamentals | 9-11 | A1.4, A4.1, A5.4 | B2.1, B5.4 | C1.3, C5.1, C8.1 | D1.1,D2.1,D3.1, D6.1, D7.1 |
| Poly phase Fundamentals | 12-13 | A1.5, A5.5 | B2.2, B5.4 | C1.4, C5.2, C8.1 | D1.1,D2.1,D3.1, D6.1, D7.1 |
| Transformers. | 14 | A1.6, A4.1, A5.6 | B2.3, B5.5 | C1.5, C5.3, C8.1 | D1.1,D2.1,D3.1, D6.1, D7.1 |



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 | A.1, A.3, A.5 | B.2, B.5 | C.1 | D.3 |
| - Tutorials | A.1, A.3, A.5 | B.2, B.5 | C.1 | D.1,D.2,D.3, D.6 |
| - Laboratory work | A.1, A.3, A.5 | B.2, B.5 | C.1, C.5, C.8 | D.1,D.2,D.3, D.6 |
| - Reports | A.1, A.3, A.5 | B.2, B.5 | C.1, C.5 | D.2,D.6,D.7 |

Assessment Methods - ILOs Matrix

| Assessment Methods | A- Knowledge & Understanding | B- Intellectual skills | C- Professional and practical skills | D- General and transferable skills |
|---------------------------------|------------------------------|------------------------|--------------------------------------|------------------------------------|
| Homework exercises | A.1, A.3, A.5 | B.2, B.5 | C.1, | D.2,D.6,D.7 |
| Laboratory reports/ Lab exam | A.1, A.3, A.5 | B.2, B.5 | C.1, C.5, C.8 | D.1,D.2,D.3, D.6,D.7 |
| Quizzes | A.1, A.3, A.5 | B.2, B.5 | C.1 | D.2, D.6 |
| Mid-term, and final exams | A.1, A.3, A.5 | B.2, B.5 | C.1 | D.2, D.6 |

Authorized from department board at 15/05/2016

Authorized from college board at 05/06/2016

Course coordinator:

Dr. Mohamed Hamdy M. Elsayed

Head of Department:

Prof. Fathi El-Sayed Abd El-Samie