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| Shoubra Faculty of Engineering | Model No.12Course Specifications : Principles of Electromagnetic |   |
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| **1-  Course Aim**  |
| For students undertaking this course, the aims are to: |
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| 2.1- List the broad classifications of Electromagnetic Fields.  |
| 2.2- Demonstrate Faraday’s laws and Poisson’s equation. Understand continuity equation and Maxwell’s equations of Electric & magnetic fields  |
| 2.3- Demonstrate the analogy between Electric & Magnetic Fields.  |

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| **2- Intended Learning Outcomes of Course (ILOS)**  |
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| **a-  Knowledge and Understanding**  |
| On completing this course, students will be able to: |
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| a.1 - Define concepts and theories of electric and magnetic fields.(a.1) a.2 - Define concepts and theories of sciences, for Faraday's laws and Poisson's equation.(a.2) |
| a.3 - Demonstrate methodologies of data collection interpretation and solving engineering problems.(a.6) |
| a.4 - Define current engineering technologies for electric and magnetic fields. (a.9) |

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| **b-  Intellectual Skills**  |  |
| At the end of this course, the students will be able to: |  |
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| b.1 - Select appropriate mathematical for modeling.(b.1)  |
| b.2 - Select appropriate solutions for engineering problems based on analytical thinking.(b.3)  |
| b.3 - Think in a creative and innovative way in problem solving and design.(b.4)  |
| b.4 - Assess and evaluate the characteristics and performance of components, systems and processes.(b.6)  |
| b.5 - Solve engineering problems, often on the basis of limited and possibly contradicting information.(b.8)  |

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| **c-  Professional Skills** |  |
| On completing this course, the students are expected to be able to: |  |
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| c.1 - Apply knowledge of mathematics, science, information technology, design, business context and engineering practice to solve engineering problems. (c.1) |
| c.2 - Professionally merge the engineering knowledge, understanding, and feedback to improve design, product and/or services.(c.2)  |
| c.3 - Use appropriate mathematical methods or IT tools. (c.13) |

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| **d-  General Skills**  |  |
| At the end of this course, the students will be able to: |  |
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| d.1 - Collaborate effectively within classifications of Electromagnetic Fields.  |
| d.2 - Work in stressful environment and within constraints.  |
| d.3 - Communicate effectively  |

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