



COURSE SPECIFICATIONS (CS)

Electromagnetism-1

PHYS 221

June 2018

Course Specifications

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| Institution: King Saud University | Date: 6/12/2017 |
| College/Department: Sciences / Physics and Astronomy | |

A. Course Identification and General Information

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| 1. Course title and code: Electromagnetism-1 (PHYS 221) | |
| 2. Credit hours 3(3+0+0) | |
| 3. Program(s) in which the course is offered. Bachelor of Science in Physics (If general elective available in many programs indicate this rather than list programs) | |
| 4. Name of faculty member responsible for the course | |
| 5. Level/year at which this course is offered fourth level (4th level) | |
| 6. Pre-requisites for this course (if any) PHYS 111 | |
| 7. Co-requisites for this course (if any) | |
| 8. Location if not on main campus | |
| 9. Mode of Instruction (mark all that apply) | |
| a. traditional classroom | <input checked="" type="checkbox"/> What percentage? <input type="text" value="80"/> |
| b. blended (traditional and online) | <input checked="" type="checkbox"/> What percentage? <input type="text" value="10"/> |
| c. e-learning | <input checked="" type="checkbox"/> What percentage? <input type="text" value="10"/> |
| d. correspondence | <input type="checkbox"/> What percentage? <input type="text"/> |
| f. other | <input type="checkbox"/> What percentage? <input type="text"/> |
| Comments: | |

B Objectives

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| <p>1. What is the main purpose for this course?</p> <ul style="list-style-type: none"> Describe Physical Phenomena related to Electricity and Magnetism Calculate physical quantities related to Electricity and Magnetism Utilize what they have learned from the course in Electromagnetism Lab Explain how to use electricity and magnetism in practical applications |
| <p>2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)</p> <p>Utilizing e-Learning platforms such as Blackboard</p> |

C. Course Description (Note: General description in the form used in Bulletin or handbook)

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| <p>Course Description:</p> <p>Electrostatics, Gauss Law and its application, Capacitors, the magnetic field of conductors with different shapes, Ampere's law and its applications. Induced electromotive force, Faraday's law. Lenz's law, magnetic properties of matter, analysis of AC circuits, resonance in series and parallel circuits</p> |
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| 1. Topics to be Covered | | |
|---|--------------|---------------|
| List of Topics | No. of Weeks | Contact hours |
| Vector Analysis and Static Electricity | 2 | 6 |
| Gauss' Law and the Electric Potential | 2 | 6 |
| Conductors and Insulators, and Capacitors | 2 | 6 |
| Electric Current and Kirchhoff's law | 1 | 3 |
| Magnetic field, Ampere's law and magnetic force | 3 | 9 |
| Magnetic induction, and connecting foils | 2 | 6 |
| Faraday's law and Lenz law | 2 | 6 |
| Electric circuits | 1 | 3 |

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|--|---------|----------|----------------------|-----------|--------|-------|
| 2. Course components (total contact hours and credits per semester): | | | | | | |
| | Lecture | Tutorial | Laboratory or Studio | Practical | Other: | Total |

| | | | | | | |
|---------------|----------|--|--|--|--|----------|
| Contact Hours | 45 hours | | | | | 45 hours |
| Credit | 45 hours | | | | | 45 hours |

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| 3. Additional private study/learning hours expected for students per week. | 2 |
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

| Code # | NQF Learning Domains And Course Learning Outcomes | Course Teaching Strategies | Course Assessment Methods |
|------------|--|-----------------------------|---------------------------|
| 1.0 | Knowledge | | |
| 1.1 | Recognize the basics of electricity and magnetism | Lecture | Homework and Exam |
| 1.2 | | Lecture | Howework and Exam |
| 2.0 | Cognitive Skills | | |
| 2.1 | Interpret the problem related to the electricity and magnetism | Lecture Group discussion | Discussion |
| 2.2 | | | Discussion |
| 3.0 | Interpersonal Skills & Responsibility | | |
| 3.1 | | | |
| 3.2 | | | |
| 4.0 | Communication, Information Technology, Numerical | | |
| 4.1 | Demonstrate the basic of electricity and magnetism | Group discussion | Presentation quizzes |
| 4.2 | | | |
| 5.0 | Psychomotor | | |
| 5.1 | | | |
| 5.2 | | | |

| 6. Schedule of Assessment Tasks for Students During the Semester | | | |
|--|---|------------------|--------------------------------|
| | Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| 1 | Midterm 1 | 6 | 15% |
| 2 | Midterm 2 | 12 | 15% |
| 3 | Homework | Every week | 15% |
| 4 | Quiz | Every other week | 5% |
| 5 | In-class discussion | Every other week | 10% |
| 6 | Final Exam | Week 16 | 40% |
| 7 | | | |
| 8 | | | |

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

2 hours per week

E Learning Resources

1. List Required Textbooks

Electricity and Magnetism by Prof. Mohammad Al-Esa 4th edition- 1428

Physics for scientists and engineering 9th edition, Serway, Brooks/Cole Cengage Learning (2014)

Fundamentals of Physics, 10th Edition, David Halliday, Robert Resnick, Jearl Walker, John Wiley & Sons, (2014)

2. List Essential References Materials (Journals, Reports, etc.)

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

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| 4. List Electronic Materials, Web Sites, Facebook, Twitter, etc. MIT Open Course |
| 5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. |

F. Facilities Required

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| Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.) |
| 1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Lecture hall for 30 students |
| 2. Computing resources (AV, data show, Smart Board, software, etc.) Computer lab with 30 computers |
| 3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) Department Library |

G Course Evaluation and Improvement Processes

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| 1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching Feedback is taken from students at the end of each lecture |
| 2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department Peer Consultation |
| 3 Processes for Improvement of Teaching |

Feedback and Peer consultation

4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)

Double-checking by independent staff

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

Creating a course table where the achievement of goals is assessed and the feedback and peer consultation results are taken into account when preparing the next plan.

Name of Instructor: _____

Signature: _____ Date Report Completed: _____

Name of Field Experience Teaching Staff _____

Program Coordinator: _____

Signature: _____ Date Received: _____