



COURSE SPECIFICATION

Electricity and Magnetism / 223 PHY - 2

1434/1435

Course Specification

Institution: King Khaled University
College/Department : Faculty of science/ physics department

A Course Identification and General Information

1. Course title and code: Electricity and Magnetism / 223 PHY - 2
2. Credit hours: 4
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) The Academic program at the Dept. Physics,
4. Name of faculty member responsible for the course Abd eL- Fattah Mahmoud AL- Dabbas
5. Level/year at which this course is offered : second year / fourth level
6. Pre-requisites for this course (if any) 221 physics
7. Co-requisites for this course (if any): electromagnetism physics lab.
8. Location if not on main campus: Department of physics /C building / university city/ Girigr /Abha.

B Objectives

<ol style="list-style-type: none">1- Knowing of the experimental apparatus, performing experiments and developments of Practical skills on electricity and magnetism.2- Observation and analysis of experimental phenomena and writing reports about them.3- Developments of student skills on performing experiments in the laboratory and improving His skills and knowledge to use experimental set-up and equipments.4- Confirmation of the theoretical concepts learned in lectures and verifying them experimentally.5- Application of physical concepts and driving them by fine measurement and plotting the obtained results in graphs.
<p>2. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field)</p> <ol style="list-style-type: none">1- Developments of the course to follow the modern science.2- Utilization the internet and data show to explain understanding physical experiments through virtual lab.3- Stimulating the students to use different websites to collect a lot of concepts to understand the course such as http://members.shaw.ca/ron.blond/Micrometer.APPLET/www.tutor-homework.com/Applets_Physics/ph14e/wheatstone_e.htm4- Using computer programs for plotting the measured data.

C. Course Description (Note: General description in the form to be used for the Bulletin or Handbook should be attached)

1 Topics to be Covered		
Topic	No of Weeks	Contact hours
1. Construction of Voltmeter and Ammeter (galvanometer)	1	4
2. Electric Field Mapping	2	4
3. Meter Bridge and Carey Foster's bridge	2	8
4. Kirchhoff's law	2	8

5. Horizontal Earth Magnetic Components and Biot_Savart Law	2	8
6. Alternating Current Circuit	1	4
7. De_Sati Bridge	1	4
8. RC- Circuit	1	4

2 Course components (total contact hours per semester): 48			
Lecture: 12	Tutorial: _____	Practical/Fieldwork/Internship: 48	Other: _____

3. Additional private study/learning hours expected for students per week. (This should be an average :for the semester not a specific requirement in each week)

- The program includes number of hours for tutorials 18 hrs in each term.
- Searching in the Internet and Databases.

4. Development of Learning Outcomes in Domains of Learning

For each of the domains of learning shown below indicate:

- A brief summary of the knowledge or skill the course is intended to develop;
- A description of the teaching strategies to be used in the course to develop that knowledge or skill;
- The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.

a. Knowledge

(i) Description of the knowledge to be acquired

- 1- Explanation of different phenomena and writing reports about them.
- 2- Development of the practical possibilities of the students to search and
- 3- Observe different physical phenomena.
- 4- Know the principle of some electrical appliances .
- 5- Establish the theoretical concepts in lectures and demonstrated.
- 6- Interpretation of certain physical laws through practical results.

<p>(ii) Teaching strategies to be used to develop that knowledge</p> <ol style="list-style-type: none"> 1- Brief explanation of my experimental. 2- Performance part of practical experimental for students in physics lab. 3- Each student will perform an experimental with himself. 4- Follow-up of students while performing the experimental work. 5- Evaluation of the results obtained by the students.
<p>(iii) Methods of assessment of knowledge acquired</p> <ol style="list-style-type: none"> 1- Participation in the lab. 2- Prepare a full report on the experiment (The Name of The Experiment - Purpose - Apparatus - Theory - Method - Results and Calculations). 3- Quarterly exams. 4- Final exam.
<p>b. Cognitive Skills</p>
<p>(i) Cognitive skills to be developed</p> <ol style="list-style-type: none"> 1- The experimental capabilities of students in the search for different physical Phenomena. 2- Identifying the devices and how to deal with them. 3- The ability to connect the practical results of the experiment to the theoretical laws.
<p>(ii) Teaching strategies to be used to develop these cognitive skills</p> <ol style="list-style-type: none"> 1- The ability to correlate and interpret physical scientific views. 2- Self- assessment and constructive criticism to correct the errors.

<p>(iii) Methods of assessment of students cognitive skills</p> <ol style="list-style-type: none"> 1- Participation in the lab. 2- Prepare a full report on the experiment. 3- Quarterly/Final exams. 4- short exams.
<p>c. Interpersonal Skills and Responsibility</p>
<p>(i) Description of the interpersonal skills and capacity to carry responsibility to be developed</p> <ol style="list-style-type: none"> 1- Encourage students to try to make the most of the information available on the web. 2- Encourage students to try to identify the specialized sites and the use of specialists in the computer lab on the information contained in these sites.
<p>(ii) Teaching strategies to be used to develop these skills and abilities</p> <ol style="list-style-type: none"> 1- Self – learning 2- group learning 3- Use internet and computer program such as Origen and maple.
<p>(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility</p> <ol style="list-style-type: none"> 1- Corrected weekly reports and test 2- Follow-up of students during an experimental
<p>d. Communication, Information Technology and Numerical Skills</p>
<p>(i) Description of the skills to be developed in this domain.</p> <p>- Submitting reports or essays and exchanging information between the students through the conventional ways.</p>

<p>- Or by using the databases and the electronic mail.</p>
<p>(ii) Teaching strategies to be used to develop these skills</p> <ul style="list-style-type: none"> - Using computers. - Using special educational packages.
<p>(iii) Methods of assessment of students numerical and communication skills</p> <ul style="list-style-type: none"> - Preliminary evaluation is required. - Final evaluation is subjected to various skills e.g. student communication until the final tests.
<p>e. Psychomotor Skills (if applicable)</p>
<p>(i) Description of the psychomotor skills to be developed and the level of performance required</p> <ul style="list-style-type: none"> - None
<p>(ii) Teaching strategies to be used to develop these skills</p> <ol style="list-style-type: none"> a. Encourage students to try to make the most of the information available on the web. b. Encourage students to try to identify the specialized sites and the use of specialists in the computer lab on the information contained in these sites. c. Require the use of PowerPoint program for presentations.
<p>(iii) Methods of assessment of students psychomotor skills</p> <ol style="list-style-type: none"> a. Giving degrees for the use of the information available on the web. b. Distribution of the instructions paper at the beginning of the work for the student to know focus points which will covered in the evaluation process.

5. Schedule of Assessment Tasks for Students During the Semester			
Assess	Assessment task (eg. essay, test, group	Week due	Proportio

ment	project, examination etc.)		n of Final Assessment
1	The first quarterly exam	Sixth week	15%
3	Participation	Continuously throughout the season	10%
4	Reports	Continuously throughout the season	10%
5	Second quarterly exam	Week XIII	15%
6	Final exam	Week XVI	50%

D. Student Support

<p>1. Arrangements for availability of faculty for individual student consultations and academic advice. (include amount of time faculty are available each week) 10 hours per week</p>
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E Learning Resources

<p>1. Required Text(s): 1- Serway for Scientists and Engineers 2 - Electronic materials and Internet sites</p>
<p>2. Essential References</p>
<p>3- Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)</p>
<p>4-.Electronic Materials, Web Sites etc Springer , sciencedirect</p>
<p>5- Other learning material such as computer-based programs/CD, professional standards/regulations -None</p>

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)
A Computer Lab. With 20 PCs for 20 students.
1. Accommodation (Lecture rooms, laboratories, etc.)
2. Computing resources 20 computer sets are needed for network connection.
3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list) Providing educational facilities and models in the lecture.

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching The student should evaluate the course together with the instructor. - An academic evaluation is required continuously. - Renewing the course contents periodically.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department - Evaluating the whole educational system through R & D mechanism. - Evaluating the course at the departmental levels. - Evaluating the course outside the department.
3 Processes for Improvement of Teaching - A comparison of the course level should be made with similar courses at foreign universities. - Publishing an article related to health physics education.
4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution) a. Returns quarterly research papers for students and provide them with answers typical in this regard. b. The student can refer to the sources to which he read to compare answers of the information contained. c. In the event that a student not satisfies on his degree, he can compare his paper with those who got better grades.
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. - Comparing the description and course specification to those that exist in other

universities (including available on the network).

- Comparing the objectives of course with the degree of students benefit.
- Trying to connect with members at other universities teaching similar courses and exchange views with them about what can be done to develop the course.