هيئة تقويم التعليم
Education Evaluation Commission

المركز الوطني للتقويم والاعتماد الأكاديمي
National Center for Academic Accreditation and Evaluation

**ATTACHMENT 5**

# T6. COURSE SPECIFICATIONS (CS)

**Course Code: 109PHYS**
**Course Name: Principles of Physics-2**

# Course Specifications

| | |
|---|---|
| Institution: **King Khalid University** | Date: **31/01/2018** |
| College/Department: **Faculty of Science / Physics Department** | |

## A. Course Identification and General Information

| | | |
|---|---|---|
| 1. Course title and code: **109PHYS: Principles of Physics-2** | | |
| 2. Credit hours: **2 theory credits** | | |
| 3. Program(s) in which the course is offered. **Bachelors in Computer Engineering**<br>(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: Level 2 / First Year | | |
| 6. Pre-requisites for this course (if any): **108PHYS: Principles of Physics-1** | | |
| 7. Co-requisites for this course (if any): NIL | | |
| 8. Location if not on main campus: **Main Campus** | | |
| 9. Mode of Instruction (mark all that apply): | | |
| a. traditional classroom | ✓ What percentage? | 100 |
| b. blended (traditional and online) | What percentage? | |
| c. e-learning | What percentage? | |
| d. correspondence | What percentage? | |
| f. other | What percentage? | |

Comments:

The Blackboard LMS will be used for quizzes, lecture notes, announcements, etc.

## B Objectives

1. What is the main purpose for this course?

This course will introduce students to how to:

- ✓ Explain physical phenomena based on the general concepts of physics.
- ✓ Define general principles of light, electricity and magnetism.
- ✓ Solve problems in light, optics, electricity, and magnetism.

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)

This course is being regularly revised and developed by conducting meetings with the Head of the Department, Course Coordinator and course teachers

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

**Course Description:**

This course focuses on light and optics, Waves and Sound, Structure of Matter, Electric field and potential, Coulomb laws, electric field for point charges, Electric conductivity, electric current (Ohm's law) and electric energy, Magnets and Magnetism.

1. Topics to be Covered

| List of Topics | No. of Weeks | Contact hours |
|---|---|---|
| **Light and Optics**<br>Electromagnetic spectrum, specular reflection, Snell's law, optical physics and geometric optics | 3 | 6 |
| **Waves and Sound**<br>Transverse and longitudinal waves, sinusoidal waves (amplitude, wavelength), absorption, reflection, refraction, interference, polarization and Doppler Effect | 3 | 6 |
| **Structure of Matter and Temperature**<br>Calculate the number of particles (molecules or atoms) in a given mass of a pure substance and the mass of one of the components; Kelvin temperature scale, thermal expansion of solids, liquids and gases, linear and spatial extensibility, law of ideal gases | 3 | 6 |
| **The Electric Charge and Electric Fields**<br>Electric field and potential, Coulomb laws, electric field for point charges, Electric conductivity, electric current (Ohm's law) and electric energy.<br>Electric current, voltage, Ohm's law, resistance and resistivity, series and parallel electric circuits, equations for resistors in series and parallel circuits, electric power, Kirchhoff's circuit laws | 3 | 6 |
| **Magnets and Magnetism**<br>Permanent magnet, magnetic fields around electrical conductors, magnetic field lines, magnetic force acting on a charge moving in a magnetic field, magnetic torque, density of the magnetic field, mass spectrometer, Hall effect sensor (working principle) | 3 | 6 |

2. Course components (total contact hours and credits per semester):

| | | Lecture | Tutorial | Laboratory/ Studio | Practical | Other: | Total |
|---|---|---|---|---|---|---|---|
| Contact Hours | Planed | 30 | | | | | 30 |
| | Actual | 30 | | | | | 30 |
| Credit | Planed | 2 | | | | | 2 |
| | Actual | 2 | | | | | 2 |

3. Additional private study/learning hours expected for students per week. 4

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 | Describe light, electricity, and magnetism physical concepts. | Lectures | Quizzes, Exams, Assignments |
| **2.0** | **Cognitive Skills** | | |
| 2.1 | Solve application problems related to electricity and magnetism. | Lectures | Quizzes, Exams, Assignments |
| **3.0** | **Interpersonal Skills & Responsibility** | | |
| 3.1 | Demonstrate to work in a professional manner within a group. | Group discussions | Quizzes, Exams, Assignments |
| **4.0** | **Communication, Information Technology, Numerical** | | |
| 4.1 | Illustrate skills in technical writing and oral presentations. | Discussions Demonstrations | Presentations Group report |
| **5.0** | **Psychomotor** | | |
| 5.1 | NA | | |

5. Map course LOs with the program LOs. (Place course LO #s in the left column and program LO #s across the top.)

| Course LOs # | Program Learning Outcomes (Use Program LO Code #s provided in the Program Specifications) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | a1 | a2 | b1 | b2 | b3 | b4 | c1 | c2 | c3 | d1 | d2 |
| 1.1 | ✓ | | | | | | | | | | |
| 2.1 | | | ✓ | | | | | | | | |
| 3.1 | | | | | | | ✓ | ✓ | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4.1** | | | | | | | | | | ✓ | ✓ |

| 6. Schedule of Assessment Tasks for Students During the Semester | | | |
|---|---|---|---|
| | Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.) | Week Due | Proportion of Total Assessment |
| 1 | Assignments<br>* Choose best one from two Quizzes and Assignments | Throughout the semester | 5% |
| 2 | Quizzes<br>* Choose best one from two Quizzes and Assignments | | 5% |
| 3 | Midterm-1 Exam - Theory | Week 6 / 7 | 20% |
| 4 | Midterm-2 Exam - Theory | Week 11 / 12 | 20% |
| 5 | Final Exam -Theory | Week 16 / 17 | 50% |

## 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)

- 10 office hours by faculty in a weekly schedule

## E Learning Resources

1. List Required Textbooks

Fundamentals of Physics Extended, 10th Edition, David Halliday, Robert Resnick, Jearl Walker, 2013, WILEY Publication. ISBN: 978-1-118-23072-5

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

- University Physics: Models and Applications, William P. Crummett, Arthur B. Western, William C Brown Pub, 1994. ISBN-10: 0697111997 ISBN-13: 978-0697111999
- Physics, Volume 1, Robert Resnick, David Halliday, Kenneth S. Krane, 5th Edition, Wiley; 2001. ISBN-13: 978-0471320579, ISBN-10: 0471320579

3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

- www.lms.kku.edu.sa to access lecture notes, text book, lab manual, announcements related to the course etc.
- www.ieee.org and www.acm.org to search latest research in relevant field.

4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

None

## F. Facilities Required

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.)

- One lecture rooms with 40 seats

2. Technology resources (AV, data show, Smart Board, software, etc.)

- Data Show (Projectors) in lecture room.

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|---|
| 3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)<br>None |

## G Course Evaluation and Improvement Processes

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|---|
| 1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching<br>At the end of semester written feedback is taken from students about course content, teaching methodology and their understanding of the course. |
| 2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department<br>• Departmental evaluation from students about teacher.<br>• Course evaluation report from the course coordinator after the exam. |
| 3. Processes for Improvement of Teaching<br>• Observations made from the course evaluation report by the course coordinator<br>• Head of department observations, suggestions, instructions etc. |
| 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)<br>• The course coordinator verify the standards of the student achievements |
| 5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.<br>The subjects are reviewed periodically by the Subject committee and the head of the department for review and improvement. Subject committee comprising of all theory and lab staff of the course, conduct meetings to review the progress of the course. |

Name of Course Instructor: _____

Signature: _____ Date Specification Completed: _____

Program Coordinator: _____

Signature: _____ Date Received:_____