



Kingdom of Saudi Arabia  
The National Commission for Academic Accreditation &  
Assessment

T6. Course Specifications (CS)

Course title: General Physics (3)

Course code: 23062103-3

## Course Specifications

Institution: <b>Umm AL – Qura University</b>	Date : <b>18/1/1439</b>
College/Department : <b>College of Applied Science – Department of Physics</b>	

### A. Course Identification and General Information

1. Course title and code: <b>General Physics (3) (code: 23062103-3)</b>			
2. Credit hours: <b>2 Hrs</b>			
3. Program(s) in which the course is offered. <b>BSc Physics.</b> (If general elective available in many programs indicate this rather than list programs)			
4. Name of faculty member responsible for the course <b>One of the academic staff member</b>			
5. Level/year at which this course is offered : <b>2<sup>nd</sup> Year / Level 4</b>			
6. Pre-requisites for this course (if any) : <b>Electricity and magnetism (4032121-4 )</b>			
7. Co-requisites for this course (if any) : ---			
8. Location if not on main campus: <b>Main campus</b>			
9. Mode of Instruction (mark all that apply)			
a. traditional classroom	<input checked="" type="checkbox"/>	What percentage?	<input type="text" value="100%"/>
b. blended (traditional and online)	<input type="checkbox"/>	What percentage?	<input type="text"/>
c. e-learning	<input type="checkbox"/>	What percentage?	<input type="text"/>
d. correspondence	<input type="checkbox"/>	What percentage?	<input type="text"/>
f. other	<input type="checkbox"/>	What percentage?	<input type="text"/>
Comments:			

## B Objectives

1. What is the main purpose for this course?
  1. Define the main properties of an alternating current
  2. Use the complex number
  3. Understand the principle of basic components in AC circuit
  4. Understand the concept of the electric power
  5. Understand the theory of RC, RL, RLC circuits
  6. Understand different types of filters ( Low pass filter, High pass filter,...)

Understand the theory of the resonant circuit.
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)
  - 1- Outlines of the physical laws, principles and the associated proofs.
  2. Highlighting the day life applications whenever exist.
  3. Encourage the students to see more details in the international web sites and reference books in the library.
  - 4- Encourage the student to build an example of different experiments related to course
  - 5- Frequently check for the latest discovery in science

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

Course Description:  
The course will cover the principle of physics, such as measurements, work and energy, Newton's laws, heat, fluid mechanics, and light. This course will provide a conceptual and experimental background in physics sufficient to enable students to take courses that are more advanced in related fields.

### 1 Topics to be Covered

Topics	No of Weeks	Contact hours
❖ <b>Principles of alternating current:</b> AC waveforms, frequency, Angular frequency, Period, Instantaneous value of the voltage, Maximum or peak value of the voltage, Initial phase, Root-Mean- Square (RMS) Values of Current and Voltage	1	2
❖ <b>Complex number:</b>	2	4

Introduction, Vectors and AC waveforms, Simple vector addition, Complex vector addition, Polar and rectangular notation, Complex number arithmetic.		
❖ <b>Passive components in AC circuit:</b> purely R, C ,L, Voltage, Current, Current leads Voltage	2	4
❖ <b>Power in AC circuit:</b> Power in resistive and reactive AC circuits, True, Reactive, and Apparent power, Calculating power factor	1	2
❖ <b>AC circuit analysis:</b> Reactance and impedance, RC circuit, RL circuit and series-parallel RLC circuits .	2	4
❖ <b>Filters:</b> Filter function , Low-pass filters, High-pass filters, Band-pass filters, Band-stop filters, Decibel, Bode plot,	2	4
❖ <b>Resonant circuits:</b> LC circuit, series- parallel RLC circuit, Quality factor,	2	4
❖ <b>AC bridges :</b> Maxwell's inductance bridge, Maxwell-Wien Bridge, Anderson Bridge, Hay's Bridge, Owen Bridge, De Sauty Bridge Shering bridge, Wien Series Bridge.	3	6
	<b>15 weeks</b>	<b>30hrs</b>

**Practical part:**

1. Wave AC form
2. Passive components in AC circuit (R, L, C)
3. RL circuit
4. RC circuit
5. RLC circuit
6. RC filter (low and high pass filter)
7. Resonant RLC circuit

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	30	12		14	5	71
Credit	2			2		

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

1

#### 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
<b>1.0</b>	<b>Knowledge</b>		
1.1	Define the physical quantities, physical phenomena, and basic principles.	1- Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: Board, Power point.	Solve some example during the lecture. Discussions during the lectures Exams: a) Quizzes (E-learning) b) Short exams (mid- term exams) c) Long exams (final) d) Oral exams
1.2	Describe the physical laws and quantities using mathematics	4. Discussions 5. Brain storming 6. Start each chapter by general idea and the benefit of it.	.
1.3	Determine the physical quantities at the Lab.	1. Doing team research or team project. 2. Doing team work to perform some experiments 3. Perform the experiments correctly. 4. Demonstrate the results correctly. 5. Write the reports about the experiment. 6. Discussion with the student about the results	Writing scientific Reports. Lab assignments Exam.

2.0 Cognitive Skills			
2.1	Apply the laws of physics to calculate some quantities.	<ol style="list-style-type: none"> <li>1. Preparing main outlines for teaching.</li> <li>2. Following some proofs.</li> <li>3. Define duties for each chapter</li> <li>4. Encourage the student to look for the information in different references.</li> <li>5. Ask the student to attend lectures for practice solving problem.</li> </ol>	<ol style="list-style-type: none"> <li>1. Exams (Midterm, final, quizzes)</li> <li>2. Asking about physical laws previously taught</li> <li>3. Writing reports on selected parts of the course.</li> <li>4. Discussions of how to simplify or analyze some phenomena.</li> </ol>
2.2	Solve problems in physics by using suitable mathematics.		
2.3	Analyse and interpret quantitative results.		
2.4	Apply physical principle on day life phenomena.		
2.5	Derive the physical laws and formulas.		
3.0 Interpersonal Skills & Responsibility			
3.1	Show responsibility for self-learning to be aware with recent developments in physics	<ul style="list-style-type: none"> <li>• Search through the internet and the library.</li> <li>• Small group discussion.</li> <li>• Enhance self-learning skills.</li> <li>• Develop their interest in Science through : (lab work, visits to scientific and research institutes).</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate the efforts of each student in preparing the report.</li> <li>• Evaluate the scientific reports.</li> <li>• Evaluate the team work in lab and small groups.</li> <li>• Evaluation of students presentations.</li> </ul>
3.2	Work effectively in groups and exercise leadership when appropriate.		
4.0 Communication, Information Technology, Numerical			
4.1	Communicate effectively in oral and written form.	<ul style="list-style-type: none"> <li>• Incorporating the use and utilization of computer, software, network and multimedia through courses</li> <li>• preparing a report on some topics related to the course depending on web sites</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating the scientific reports.</li> <li>• Evaluating activities and homework</li> </ul>
4.2	Collect and classify the material for the course.		
4.3	Use basic physics terminology in English.		
4.4	Acquire the skills to use the internet communicates tools.		
5.0 Psychomotor			
5.1	Use experimental tools safely and correctly.	Follow up the students in lab and during carryout all experimental work.	<ul style="list-style-type: none"> <li>• Practical exam.</li> <li>• Giving additional marks for the results with high and good accuracy</li> </ul>
5.2	Determine the physical quantity correctly at the Lab.		

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)															
	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	3.1	3.2	4.1	4.2	4.3	4.4	5.1	5.2
1.1	✓															
1.2		✓														
1.3			✓													
2.1				✓												
2.2					✓											
2.3						✓										
2.4							✓									
2.5								✓								
3.1									✓							
3.2										✓						
4.1											✓					
4.2												✓				
4.3													✓			
4.4														✓		
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	Exercises & Home works	All weeks	5 %
2	Participation in activities lectures and labs	All weeks	5 %
3	Midterm Exam (theoretical)	8 <sup>th</sup> week	30%
4	Lab. Reports (Practical)	11 <sup>th</sup> week	5%
5	Final Exam (Practical)	15 <sup>th</sup> week	15%
6	Final Exam (theoretical)	16 <sup>th</sup> week	40%

## 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)

Each student will supervise by academic adviser in physics Department and the time table for academic advice were given to the student each semester. (6hrs per week)

## E Learning Resources

1. List Required Textbooks

Lessons In Electric Circuits, Volume II – AC. By Tony R. Kuphaldt.6 th Edition, 2007  
Fundamental of Physics by Halliday & Resnick

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

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

Lessons In Electric Circuits, Volume II – AC. By Tony R. Kuphaldt.6 th Edition, 2007  
Fundamental of Physics by Halliday & Resnick

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

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

## 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.)

- Class room is already provided with data show
- The area of class room is suitable concerning the number of enrolled students (68) and air conditioned.

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

- Providing class rooms with computers and labs with data show.

3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

Each Class room and laboratories require a TV screen at least 65 inch-and smart, and double layer white board.

## G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching

- Questionaries
- Open discussion in the class room at the end of the lectures

2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department

- Revision of student answer paper by another staff member.
- Analysis the grades of students.

3 Processes for Improvement of Teaching

- Preparing the course as PPT.
- Using scientific movies.
- Coupling the theoretical part with laboratory part
- Periodical revision of course content.

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)

- After the agreement of Department and Faculty administrations

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

1- The following points may help to get the course effectiveness

- Student evaluation
- Course report
- Program report
- Program Self study

2- According to point 1 the plan of improvement should be given.

3- Contact the college to evaluate the course and the benefit it add to other courses.

4- Add some subject and cut off others depending on the new discoveries in physics.

Name of Instructor: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Report Completed: \_\_\_\_\_

Name of Field Experience Teaching Staff \_\_\_\_\_

Program Coordinator: \_\_\_\_\_

Signature: \_\_\_\_\_ Date Received: \_\_\_\_\_