

Course Syllabi

Course Title and Code	PHYSICS 2- PHYS115
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➤ **Course Identification and General Information:**

Department	Deanship of Educational Services	Course Level	Level 2
Contact Hours	1 theory class per week for two hours 1 practical class per week for two hours	Credit Hours	3 (2+2)
Web Address	http://www.des.qu.edu.sa		

➤ **Course Instructor/Coordinator's Name:** Dr. Haidar Howari

➤ **Textbook Title, Author, and Year:**

- Principles of Physics, Tenth Edition (2014), by Halliday & Resnick. Wiley and Sons, Inc. ISBN 978-1-118-23074-9.

➤ **Other Supplemental Materials:**

- Introduction to Physics, 9th Edition (2013), by John D. Cutnell and Kenneth W. Johnson. Wiley and Sons, Inc. ISBN 978-1-118-09243-9.
- Sears and Zemansky's University Physics with Modern Physics, Thirteenth Edition (2012), by Young Freedman, Pearson. ISBN 13: 978-0-321-76218-4; ISBN 10: 0-321-76218-5.

➤ **Specific Course Information:**

- **Catalog Description:** Principles of Physics, Tenth Edition (2014), by Halliday & Resnick.
- **Pre-requisites:** PHYS110
- **Co-Requisites:** None.
- **Required, Elective, or Selected Elective:** None.

➤ **Specific Goals for the Course:** Summary of the main learning outcomes for enrolled students.

- The aim of this course is to enhance the knowledge of students to understand the surrounding physical phenomena and also to provide students the most important laws in physics.
- This course also prepares and develops student skills at PYP in the area of physics and provides students with the required knowledge in English to qualify them to the scientific colleges.
- To enhance the thinking abilities of students in the area of physics.

➤ **Program Outcomes Addressed by the Course:**

This course provides the following outcomes with the following relationship:

Preparatory Year Program Outcome	Relationship to Course
1. The course contributes to the development of student skills in English writing, reading and conversation.	High
2. The course contributes to the development of student skills in computer and its application in learning process	Low
3. The course helps to develop the skill of the students in the learning process.	High
4. The course strengthens ties education collaborative learning (peer-to-peer and other appropriate sources).	Medium
5. The course fosters the development of student skills in creative thinking, innovative and positive.	Medium
6. The course instills the principles and positive communication within groups (enjoy the team spirit).	Medium
7. The course contributes to the development of student skills in methods of constructive dialogue.	Medium
8. The course fosters the development of student skills in making decisions.	Medium
9. The course helps to develop the skill of the students in problem solving.	high
10. The course helps to develop the skill of students on constructive criticism.	Medium
11. The course helps to develop the skill of students in compliance and accounting.	Low
12. The course helps to develop the skill of students in interaction with the University environment and for undergraduate study.	High
13. The course helps to develop the skill of students in interaction with the environment and the needs and attitudes of the community and science.	High

14. The course helps to develop the skill of students on effective interaction on student activities.	Medium
15. The course helps to develop student skills in the effective interaction in volunteer work.	Medium
16. The course helps to develop student skills in effective leadership.	Medium
17. The course helps to develop student skills in linking information to realistic applications.	High
18. The course helps to develop the skill of students on work ethic.	Medium
19. The course helps to develop student skills in estimating functional responsibility toward national growth.	Medium
20. The course helps to develop student skills in assessing the scientific career path chosen.	high

➤ **Brief List of Topics to be covered:**

- VECTORS
- MOTION IN TWO AND THREE DIMENSIONS
- FORCE AND MOTION—I
- FORCE AND MOTION—II
- KINETIC ENERGY AND WORK
- POTENTIAL ENERGY AND CONSERVATION OF ENERGY
- CENTER OF MASS AND LINEAR MOMENTUM
- ROTATION
- ROLLING, TORQUE, AND ANGULAR MOMENTUM

➤ **Outcome Assessment:**

1. Direct Assessment

- Midterm Written Exam I
- Midterm Written Exam II
- Final Written Exam
- Quizzes
- Homework
- Integrative Projects
- Students' Portfolios
- Case Study
- Oral Exams
- Written Reports
- Participation in Lecture
- Illustrative Presentations
- Use of Computer Facilities by Students
- Reading of References Related to Course Topics
- Team Work
- Practice in the Lab

2. Indirect Assessment

- Pre-Course Questionnaire
- Post-Course Questionnaire
- Group Discussions
- Students' Interviews

Course Outline:

Level Two

Science Track (Engineering)

Physics (2) (PHYS115)

COURSE SYLLABUS

Semester 391

Course Description (3 Credit Hours) (4 Contact Hours)

The Main Reference:

Principles of Physics, Tenth Edition (2014), by Halliday & Resnick. Wiley and Sons, Inc. ISBN 978-1-118-23074-9.

Marks Distribution for PHYS115

- 1) 2.5 marks for Quiz 1-Before Midterm Exam - Chapters 3 & 4
- 2) 2.5 marks for Quiz 2-After Midterm Exam - Chapters 7 & 8
- 3) 35 marks for Midterm Exam
- 4) 60 marks for Final Exam

Required Topics:

Week	Chapter	Sections	Topics	Pages
1 22- 26/12/1439	Revision			
2 29/12/1439- 3/01/1440	Chapter 3 VECTORS	Section 3.1 Section 3.2 Section 3.3	Vectors and Their Components Unit Vectors , Adding Vectors by Components Multiplying Vectors	From: 34 to 52
3 6- 10/01/1440	Chapter 4 MOTION IN TWO AND THREE DIMENSIONS	Section 4.1 Section 4.2 Section 4.3 Section 4.4 Section 4.5 Section 4.6	Position and Displacement Average Velocity and Instantaneous Velocity Average Acceleration and Instantaneous Acceleration Projectile Motion Uniform Circular Motion Relative Motion in One Dimension	From: 53 to 79
4 13- 17/01/1440	Chapter 5 FORCE AND MOTION—I	Section 5.1 Section 5.2 Section 5.3	Newton's First and second Laws Some Particular Forces Applying Newton's Laws	From: 80 to 105
5 20- 24/01/1440	Chapter 6 FORCE AND MOTION—II	Section 6.1 Section 6.2 Section 6.3	Friction The Drag Force and Terminal Speed Uniform Circular Motion	From:106 to 126

<p>6 27/01-2/02 /1440</p>	<p>Chapter 7 KINETIC ENERGY AND WORK</p>	<p>Section 7.1 Section 7.2 Section 7.3 Section 7.4 Section 7.6</p>	<p>Kinetic Energy Work and Kinetic Energy Work Done by the Gravitational Force Work Done by a Spring Force Power</p>	<p>From:127 to 150</p>
<p>7 5-9/02/1440</p>	<p>Chapter 8 POTENTIAL ENERGY AND CONSERVATION OF ENERGY</p>	<p>Section 8.1 Section 8.2 Section 8.4 Section 8.5</p>	<p>Potential Energy Conservation of Mechanical Energy Work Done on a System by an External Force Conservation of Energy</p>	<p>From:151 to 181</p>
<p>8 12- 16/02/1440</p>	<p>اختبار منتصف الفصل - Mid-Term Exam</p>			
<p>9 19- 23/02/1440</p>	<p>Chapter 9 CENTER OF MASS AND LINEAR MOMENTUM</p>	<p>Section 9.1 Section 9.3 Section 9.4 Section 9.5</p>	<p>The Center of Mass Linear Momentum Collision and Impulse Conservation of Linear Momentum</p>	<p>From:182 to 220</p>
<p>10 26- 30/02/1440</p>	<p>Chapter 9 CENTER OF MASS AND LINEAR</p>	<p>Section 9.6 Section 9.7 Section 9.8</p>	<p>Momentum and Kinetic Energy in Collisions Elastic Collisions in One</p>	<p>From:198 to 220</p>

	MOMENTUM	Section 9.9	Dimension Collisions in Two Dimensions Systems with Varying Mass: A Rocket	
11 3-7/03/1440	Chapter 10 ROTATION	Section 10.1 Section 10.2 Section 10.3 Section 10.4 Section 10.5	Rotational Variables Rotation with Constant Angular Acceleration Relating the Linear and Angular Variables Kinetic Energy of Rotation Calculating the Rotational Inertia	From:221 to 254
12 10- 14/03/1440	Chapter 10 ROTATION	Section 10.6 Section 10.7 Section 10.8	Torque Newton's Second Law for Rotation Work and Rotational Kinetic Energy	From:221 to 254
13 17- 21/03/1440	Chapter 11 ROLLING, TORQUE, AND ANGULAR MOMENTUM	Section 11.1 Section 11.2 Section 11.4	Rolling as Translation and Rotation Combined Forces and The Kinetic Energy of Rolling Torque Revisited	From:255 to 284

<p>14 24- 28/03/1440</p>	<p>Chapter 11 ROLLING, TORQUE, AND ANGULAR MOMENTUM</p>	<p>Section 11.5 Section 11.6 Section 11.7 Section 11.8</p>	<p>Angular Momentum Newton's Second Law in Angular Form The Angular Momentum of a Rigid Body Conservation of Angular Momentum</p>	<p>From:265 to 284</p>
<p>15 2-6/04/1440</p>	<p>Revision</p>			
<p>16 9- 13/04/1440</p>	<p>Final Exam- الاختبار النهائي</p>			
<p>17 16- 20/04/1440</p>	<p>Final Exam- الاختبار النهائي</p>			