هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	**General Physics 1 (for Engineering College)**
Course Code:	**PHY1110**
Program:	**Physics**
Department:	**Physics**
College:	**Applied Science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4 (3+1)
2. Course type **a.** University ☐ College ☑ Department ☐ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Level 1st/ 1st year
4. Pre-requisites for this course (if any)**:**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	30	50 %
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**	30 (lab)	50 %

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others**	
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description

The course will cover the principle of general physics, such as measurements, vectors, Motion in one dimensions, Newton's laws, work and energy.

2. Course Main Objective

The course is design to provide students with some basic and essential concepts in general physics. The main subjects that this course covers are listed below.
In addition to these items, the students should gain practical skills through conducting experiments in the laboratory.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and understanding**	

CLOs		Aligned PLOs
1.1	Define the concepts of the measurements, length, time, and weight.	K1
1.2	Differentiate between the vectors and the scalars	K2
1.3		
2	**Skills:**	
2.1	Apply Newton's laws of motion to calculate the position, velocity and acceleration.	S1
2.2	Explain the motion in one and two dimensions.	S2
2.3	Relate force to potential and kinetic energies	S2
3	**Values:**	
3.1	Work effectively responsibly in teamwork	V2
3.2		

C. Course Content

No	List of Topics	Contact Hours
1	Measurement Measuring Things The International System of Units Changing Units Time Mass	**3**
2	Motion Along a Straight Line Motion Position and Displacement Average Velocity and Average Speed Instantaneous Velocity and Speed Acceleration Constant Acceleration Free-Fall Acceleration	**4**
3	Vectors Vectors and Scalars Adding Vectors Geometrically Components of Vectors Unit Vectors Adding Vectors by Components Multiplying Vectors	**4**
4	Motion in Two and Three Dimensions Position and Displacement Average Velocity and Instantaneous Velocity Average Acceleration and Instantaneous Acceleration Projectile Motion Uniform Circular Motion	**5**
5	Force and Motion Newton's First Law Force Mass Newton's Second Law	**6**

	Newton's Third Law Applying Newton's Laws Friction (static and dynamic coefficients)	
6	Kinetic Energy and Work Kinetic Energy Work Work and Kinetic Energy Power	4
	Potential Energy and Conservation of Energy Potential Energy Determining Potential Energy Values Conservation of Mechanical Energy Work Done on a System by an External Force Conservation of Energy	4
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the concepts of the measurements, length, time, and weight.	1. Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: ● Board, Power point. ● Discussions ● Start each chapter by general idea and the benefit of it. 4. Perform some experiments in the Laboratory	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam. d) Practical exams.
1.2	Differentiate between the vectors and the scalars		
1.3			
2.0	**Skills**		
2.1	Apply Newton's laws of motion to calculate the position, velocity and acceleration.	1. Solve some problems in class. 2. Explain some proofs during lectures. 3. Encourage students to participate in solving problems.	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam. d) Practical exams.
2.2	Explain the motion in one and two dimensions.		
2.3	Relate force to potential and kinetic energies		
3.0	**Values**		
3.1	Work effectively responsibly in teamwork	● Organize the students as a small group in the lab to conduct experiments and prepare reports.	● Evaluate the scientific reports. ● Discussing the reports with each teamwork. ● Evaluate the reports of each student.
3.2			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	10th	20 %
2	Homework & quizzes	All weeks	10 %
3	Lab reports and final exam	End of the semester	20 %
4	Final written exam	End of the semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Each student has the chance to meet and discuss with his instructor in class and during office hours. Additionally, students can contact the coordinator of the course should they have any other issue in the course.)

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Halliday & Resnick, Jearl Walker, "Fundamentals of Physics" 10th Edition (2018)
Essential References Materials	
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• Classroom • Laboratory • Library
Technology Resources (AV, data show, Smart Board, software, etc.)	• Data show • Black Bord
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching Strategies	Students	Questionnaire

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of student assessment	Instructors of the course	Peer review of exam marking
Extent of achievement of course learning outcomes	Instructor	Course report
Quality of learning resources	Instructor	Course report

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	**General Physics 2 (for Engineering College)**
Course Code:	**PHY1111**
Program:	**Physics**
Department:	**Physics**
College:	**Applied Science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4 (3+1)
2. Course type **a.** University ☐ College ☑ Department ☐ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Level 2nd / 1st year
4. Pre-requisites for this course (if any)**:** **General Physics 1**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	30	50 %
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**	30 (lab)	50 %

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others**	
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description After completing the first general physics course (prior to this course), students will study the collisions, circular motion, rotation, equilibrium and fluids in this course.
2. Course Main Objective The course is design to provide students with some basic and essential concepts in general physics. The main subjects that this course covers are listed below. In addition to these items, the students should gain practical skills through conducting experiments in the laboratory.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and understanding**	
1.1	Explain the concepts of rotation and equilibrium	K1

CLOs		Aligned PLOs
1.2	Define center of mass and elasticity	K2
1.3		
2	**Skills:**	
2.1	Apply laws of energy conservation in rotation	S1
2.2	Relate torque and momentum to equilibrium	S2
2.3	Solve collision problems	S2
3	**Values:**	
3.1	Work effectively responsibly in teamwork	V2
3.2		

C. Course Content

No	List of Topics	Contact Hours
1	Center of Mass and Linear Momentum The Center of Mass Linear Momentum Collision and Impulse Conservation of Linear Momentum Momentum and Kinetic Energy in Collisions Inelastic Collisions in One Dimension Elastic Collisions in One Dimension	6
2	Rotation Rotational Variables Rotation with Constant Angular Acceleration Relating the Linear and Angular Variables Kinetic Energy of Rotation Torque Work and Rotational Kinetic Energy	6
3	Rolling, Torque, and Angular Momentum Rolling as Translation and Rotation Combined The Kinetic Energy of Rolling The Forces of Rolling Torque Angular Momentum Conservation of Angular Momentum	6
4	Equilibrium and Elasticity Equilibrium The Requirements of Equilibrium The Center of Gravity Some Examples of Static Equilibrium Elasticity Indeterminate Structures Elasticity	6
5	Fluids Definition of a Fluid Density and Pressure Fluids at Rest Measuring Pressure Pascal's Principle	6

	Archimedes' Principle The Equation of Continuity Bernoulli's Equation	
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Explain the concepts of rotation and equilibrium	1. Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: ● Board, Power point. ● Discussions ● Start each chapter by general idea and the benefit of it. 4. Perform some experiments in the Laboratory	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam. d) Practical exams.
1.2	Define center of mass and elasticity		
1.3			
2.0	**Skills**		
2.1	Apply laws of energy conservation in rotation	1. Solve some problems in class. 2. Explain some proofs during lectures. 3. Encourage students to participate in solving problems.	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam. d) Practical exams.
2.2	Relate torque and momentum to equilibrium		
2.3	Solve collision problems		
3.0	**Values**		
3.1	Work effectively responsibly in teamwork	● Organize the students as a small group in the lab to conduct experiments and prepare reports.	● Evaluate the scientific reports. ● Discussing the reports with each teamwork. ● Evaluate the reports of each student.
3.2			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	10th	20 %
2	Homework & quizzes	All weeks	10 %
3	Lab reports and final exam	End of the semester	20 %
4	Final written exam	End of the semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice: Each student has the chance to meet and discuss with his instructor in class and during office hours. Additionally, students can contact the coordinator of the course should they have any other issue in the course.)

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Halliday & Resnick, Jearl Walker, "Fundamentals of Physics" 10th Edition (2018)
Essential References Materials	
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• Classroom • Laboratory • Library
Technology Resources (AV, data show, Smart Board, software, etc.)	• Data show • Black Bord
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching Strategies	Students	Questionnaire
Effectiveness of student assessment	Instructors of the course	Peer review of exam marking
Extent of achievement of course learning outcomes	Instructor	Course report
Quality of learning resources	Instructor	Course report

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	**General Physics 3 (for Engineering College)**
Course Code:	**PHY1112**
Program:	**Physics**
Department:	**Physics**
College:	**Applied Science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**4 (3+1)**
2. Course type	
a.	University ☐ College ☑ Department ☐ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	Depends on the plan of each department in the college
4. Pre-requisites for this course (if any)**:**	
General Physics 2	
5. Co-requisites for this course (if any)**:**	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	20	40 %
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**	30 (lab)	60 %

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	20
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others**	
	Total	50

B. Course Objectives and Learning Outcomes

1. Course Description

After completing the first two general physics courses (prior to this course), students will study some basic concepts of electricity and magnetism in this course. This includes: Coulomb's law, electric and magnetic fields, and electric current and circuits.

2. Course Main Objective

The course is design to provide students with some basic and essential concepts in general physics. The main subjects that this course covers are listed below.
In addition to these items, the students should gain practical skills through conducting experiments in the laboratory.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and understanding**	
1.1	Describe the interaction of electric field with matter	K1
1.2	Explain magnetic field formation	K2
1.3		
2	**Skills:**	
2.1	Apply Coulomb`s law, electric field of static charge	S1
2.2	Analyze electric circuits	S2
2.3		
3	**Values:**	
3.1	Work effectively responsibly in teamwork	V2
3.2		

C. Course Content

No	List of Topics	Contact Hours
1	Coulomb's Law and Electric Field Electric Charge Coulomb's Law Charge is Quantized The Electric Field The Electric Field Due to a Point Charge A Point Charge in an Electric Field	4
2	Capacitance Capacitance Calculating the Capacitance Capacitors in Parallel and in Series Energy Stored in an Electric Field Capacitor with a Dielectric	4
3	Current and Resistance and Circuits Electric Current Electric Current Density Resistance and Resistivity Ohm's Law Resistors in parallel and in series Kirchhoff's Rules *RC* Circuits	6
4	Definition of Magnetic Fields, and Magnetic fields due to Currents The production of a Magnetic Field The Definition of *B* Magnetic Force on a Current-Carrying Wire Calculating the Magnetic Field Due to a Current Force Between Two Parallel Currents Ampere's Law Solenoids and Toroids	6
Total		20

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the interaction of electric field with matter	1. Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: ● Board, Power point. ● Discussions ● Start each chapter by general idea and the benefit of it. 4. Perform some experiments in the Laboratory	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam. d) Practical exams.
1.2	Explain magnetic field formation		
1.3			
2.0	**Skills**		
2.1	Apply Coulomb`s law, electric field of static charge	1. Solve some problems in class. 2. Explain some proofs during lectures. 3. Encourage students to participate in solving problems.	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam. d) Practical exams.
2.2	Analyze electric circuits		
2.3			
3.0	**Values**		
3.1	Work effectively responsibly in teamwork	● Organize the students as a small group in the lab to conduct experiments and prepare reports.	● Evaluate the scientific reports. ● Discussing the reports with each teamwork. ● Evaluate the reports of each student.
3.2			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	10th	20 %
2	Homework & quizzes	All weeks	10 %
3	Lab reports and final exam	End of the semester	20 %
4	Final written exam	End of the semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Each student has the chance to meet and discuss with his instructor in class and during office hours. Additionally, students can contact the coordinator of the course should they have any other issue in the course.)

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Halliday & Resnick, Jearl Walker, "Fundamentals of Physics" 10th Edition (2018)
Essential References Materials	
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	● Classroom ● Laboratory ● Library
Technology Resources (AV, data show, Smart Board, software, etc.)	● Data show ● Black Bord
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching Strategies	Students	Questionnaire
Effectiveness of student assessment	Instructors of the course	Peer review of exam marking
Extent of achievement of course learning outcomes	Instructor	Course report
Quality of learning resources	Instructor	Course report

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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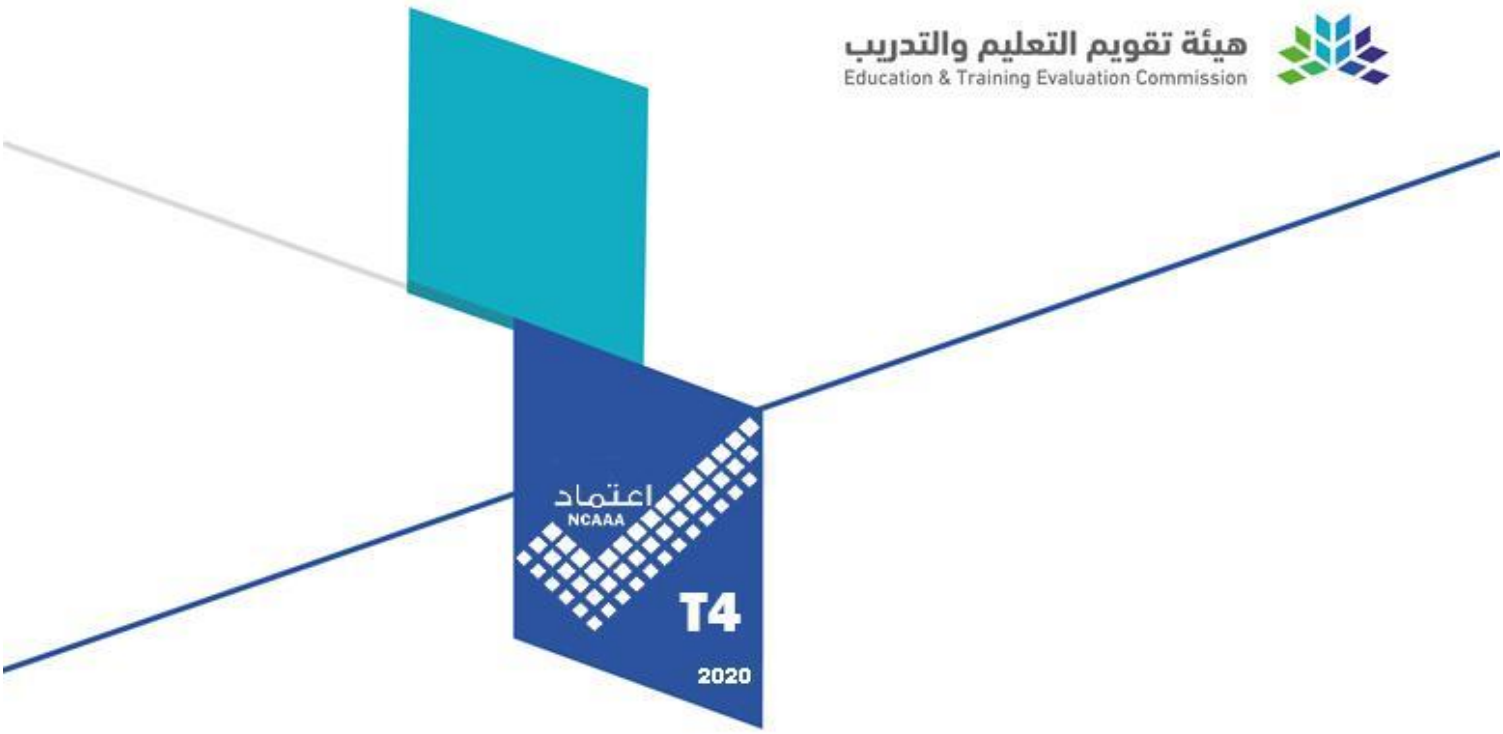
Education & Training Evaluation Commission



Course Specifications

Course Title:	Physics for Architects
Course Code:	PHY1115
Program:	Bachelor of Architecture and Planning
Department:	Islamic Architecture
College:	College of Engineering and Islamic Architecture
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours: 2
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Year 1 Level 3
4. Pre-requisites for this course (if any)**:**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	2	100%
2	**Blended**	0	0%
3	**E-learning**	0	0%
4	**Distance learning**	0	0%
5	**Other**	0	0%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	20
2	**Practical**	0
3	**Studio**	0
4	**Research**	0
5	**Training**	0
	Total	20

B. Course Objectives and Learning Outcomes

1. Course Description

The course will cover some principles of general physics, such as measurements, motion in one dimension, Newton's laws, work and energy.

2. Course Main Objective

After completing this course student should be able to:

1. Define the concepts of the measurements, length, time, and weight.
2. Define the concepts of force and gravity.
3. Apply Newton's laws of motion to calculate the position, velocity and acceleration.
4. Differentiate between Work, Energy, and power.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and understanding**	
1.1	Define the physical quantities related to the measurement, motion in one dimension, Newton's law of motion, work and energy .	K1
1.2	Describe the concepts and physical laws related to the measurement, motion in one dimension, Newton's law of motion, work and energy using the mathematical formula.	K2
1.3		
2	**Skills:**	
2.1	Apply physics laws to solve problems associated with the built environment.	S1
2.2		
2.3		
3	**Values:**	
3.1	Demonstrate self-discipline and punctuality.	V1
3.2		

C. Course Content

No	List of Topics	Contact Hours
1	**Measurements** ● The international system of units. ● Changing units	**2**
	Vectors ● Vectors and Scalars ● Adding Vectors Geometrically ● Components of Vectors ● Unit Vectors ● Adding Vectors by Components ● Multiplying Vectors	**4**
2	**Motion a straight line** ● Motion ● Position and displacement ● Average velocity and average speed. ● Instantaneous velocity and speed. ● Acceleration ● Free fall acceleration	**4**
3	**Force and Motion** ● Newton's First Law ● Force ● Mass ● Newton's Second Law ● Newton's Third Law ● Applying Newton's Laws ● Friction (static and dynamic coefficients)	**6**
4	**Kinetic energy and work** ● Kinetic Energy ● Work and Kinetic Energy ● Work done by gravitational force	**4**

	● Power	
Total		20

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the physical quantities related to the measurement, motion in one dimension, Newton's law of motion, work and energy .	1. Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: ● Board, Power point. ● Discussions ● Brain storming ● Start each chapter by general idea and the benefit of it.	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam.
1.2	Describe the concepts and physical laws related to the measurement, motion in one dimension, Newton's law of motion, work and energy using the mathematical formula.		
1.3			
2.0	**Skills**		
2.1	Apply physics laws to solve complicated problems associated with the built environment.	1. Solve some problems in physics during lectures. 2. Following some proofs during lectures. 3. Encourage students to participate in solving problems.	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam.
2.2			
2.3			
3.0	**Values**		
3.1	Demonstrate self-discipline and punctuality.	● Give students tasks of duties.	● Evaluate the efforts of each student in his performance in these tasks via reports or homework … etc.
3.2			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam	midterm	30 %
2	HomeWorks & Quizzes	All weeks	20 %
3	Final Exam	End of the semester	50%
4			

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Each student will be supervised by academic adviser in Physics Department and the time table for academic advice were given to the student each semester. (4 hrs per week)

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Halliday & Resnick, Jearl Walker, "Fundamentals of Physics" 10th Edition (2018)
Essential References Materials	
Electronic Materials	1. Physics is Beautiful | Free, interactive physics lessons 2. Khan Academy Physics | Physics videos 3. The Feynman Lectures on Physics 4. PhET Simulations | Online physics simulations
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	● Classroom ● Library
Technology Resources (AV, data show, Smart Board, software, etc.)	● Data show ● whiteboard
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching Strategies	Students	Questionnaire
Effectiveness of student assessment	Instructor	Exams
Extent of achievement of course learning outcomes	Instructor	Course report
Quality of learning resources	Instructor	Course report

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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Education & Training Evaluation Commission

Course Specifications

Course Title:	Introduction to Medical Physics
Course Code:	PHY1116
Program:	Year 1
Department:	Physical Therapy
College:	Applied Medical Sciences
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours:	**2 CH**							
2. Course type								
a.	University ☐		College ☒		Department ☐		Others ☐	
b.		Required ☒		Elective ☐				
3. Level/year at which this course is offered:	Level-3/1st year							
4. Pre-requisites for this course (if any)**:** NA								
5. Co-requisites for this course (if any)**:** NA								

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	20	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	20
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others** (specify)	
	Total	20

B. Course Objectives and Learning Outcomes

1. Course Description

This Medical Physics course uses the languages of math and computation in seeking to describe physical properties of waves, rays, waves, and its importance in medical prospective. Medical Physics uses the fundamental concepts, instrumentation, and computational models of physics to understand living things. In this course, the topics will help to better understanding the nature of the fluid, mechanics, sound waves, and its physical effects on the living tissue.

2. Course Main Objective

This course is designed to provide the student with a clear and logical presentation of the basic concepts and principles of medical physics, and to strengthen an understanding of the concepts and principles through a broad range of interesting applications to the real world by illustrating the basic knowledge of the nature of the fluid, mechanics, sound waves, thermodynamics, and their physical effects to the living tissue.

3. Course Learning Outcomes

	CLOs	Aligned-PLOs
1	**Knowledge and understanding**	
1.1	Describe the fundamental concepts of different waves and/or currents and its interaction with living tissues.	K1
1.2	Recognize the physical properties of the sound waves, mechanics, fluid, and process of the thermodynamics.	K1
2	**Skills:**	

CLOs		Aligned-PLOs
2.1	Integrate between the physical concepts of different waves and/or currents and clinical uses on living things.	S1
2.2	Reorganize the principles and laws governing the transmission of different waves in different mediums of the living tissue.	S1
2.3	Develop skills in critical thinking and problem-solving solutions using laws of physics calculating mechanics, fluid, and wave transmission through different mediums.	S6
3	**Values:**	
3.1	Choose an item. Click or tap here to enter text.	Choose an item.

C. Course Content

No	List of Topics	Contact Hours
1.	Mechanics: Kinematics	2
2.	Force and Newton's Laws of Motion	2
3.	Static Forces (Equilibrium, Torque, Moments)	2
4.	Elasticity and Strength of Materials	2
5.	Energy (Kinetic, Potential, Work, Power)	2
6.	Fluids: The Motion of Fluids, fluid dynamics (poiseuille and Fick's laws).	2
7.	Simple Harmonic Motion: (Hooke's Law)	2
8.	Waves and Sound	2
9.	Thermodynamics: Thermal equilibrium	2
10.	Thermodynamics: Ideal Gases, Dalton's and Boyle's laws	2
Total		20

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**		
1.1	Describe the fundamental concepts of different waves and/or currents and its interaction with living tissues.	Regular lecture	In-Class Tests Assignment Closed-Book Examination
1.2	Recognize the physical properties of the sound waves, mechanics, fluid, and process of the thermodynamics.	Regular lecture	In-Class Tests Assignment Closed-Book Examination
2.0	**Skills**		
2.1	Integrate between the physical concepts of different waves and/or currents and clinical uses on living things.	Regular lecture Problem-based teaching	In-Class Tests Closed-Book Examination
2.2	Reorganize the principles and laws governing the transmission of	Regular lecture Problem-based teaching	Group Presentation In-Class Tests

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	different waves in different mediums of the living tissue.		Closed-Book Examination
2.3	Develop skills in critical thinking and problem-solving solutions using laws of physics calculating mechanics, fluid, and wave transmission through different mediums	Problem-based teaching	Group Presentation In-Class Tests Closed-Book Examination
3.0	Values		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	Week7	30%
2	Assignments.	Week 8	20%
3	Class Activity	Week 2-10	10%
4	Final written exam	Week 12	40%
Total			

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Student can arrange meeting (onsite or online) with course instructor for any individual consultations and academic advice

Course instructor contact information can be accessed at:

https://uqu.edu.sa/dpt/App/Instructors

Course instructor office hours can be accessed at:

https://uqu.edu.sa/dpt/110573

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Kirsten Franklin, Paul Muir, Terry Scott, Lara Wilcocks, Paul Yates - Introduction to Biological Physics for the Health and Life Sciences-John Wiley & Sons (2019)
Essential References Materials	Paul Peter_ Roger Hinrichs - College Physics (Spring 2020 Corrected Edition)-OpenStax (2020)
Electronic Materials	Journal of Biophysics-Springer
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture rooms large enough to accommodate 25 students.
Technology Resources (AV, data show, Smart Board, software, etc.)	-Laptop, computer -Projector system - Data show -Smart board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	-Audio-video show devices and internet connection.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students, Course instructor Program leader Curricula & Study Plans committee	Course evaluation survey Course report Periodical Students-faculty meetings. Committee recommendations
Extent of achievement of course learning outcomes,	Course instructors	Course report Exams and assignments
Quality of learning resources	Students, Course instructor	Course evaluation survey Average of beneficiaries' satisfaction rate with adequacy and diversity of learning resources.

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Physical Therapy Department Council	**Course Coordinator CV Barcode**
Reference No.	Select Council (Year) – Ref#:	
Date	Click or tap to enter a date.	
Course Coordinator	Dr. Mohamed Alayat	
Signature		

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

Course Specifications

Course Title:	**Physics For Medicine and Health Science**
Course Code:	**PHY1114**
Program:	**Bachelor's Degree in Medicine and Surgery / Dentistry**
Department:	**Physics**
College:	**Applied Science**
Institution:	**Umm Al Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4
2. Course type **a.** University ☐ College ■ Department ☐ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered:
4. Pre-requisites for this course (if any)**: None**
5. Co-requisites for this course (if any)**: None**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	30	50%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**	Lab 30	50%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others** (specify)	
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description

This course aims to provide students in medicine and health science with the basic theoretical and practical concepts of classical and modern physics. The course covers a wide range of topics related to physics such as the laws of motion, the application of the laws of fluid mechanics to the circulatory system, the calculation of forces on muscles and joints, the calculation of mechanical advantage in human body levers, the study of imaging systems, the application of lenses to correct the human eye defects. Concepts of nuclear physics, radioactive decay and ionizing radiation will be also investigated.

2. Course Main Objective

- Realize the connection between physics and medicine.
- Recognize the role of physics in diagnosis and therapy through the investigation of some techniques such as X-rays, MRI, endoscopes, ...
- Understand how work some parts of the human body systems.
- Apply physics modeling to some parts of the human body

- Solve physics problems.
- Develop problem-solving and critical-thinking skills.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Define physics quantities and units.	K1
1.2	Relate physics to medicine	K1
1.3	Describe motion from the kinematic point of view	K1
1.4	Calculate static forces on different parts of the human body (muscles, joints,…)	K1
1.5	Identify the different types of radioactive decay	K1
1.6	Calculate the effective half-life of a radionuclide in the body	K1
1.7	Estimate the biological equivalent absorbed dose caused by radiations	K1
2	**Skills:**	
2.1	Apply physics approaches to the modeling of some parts of the human body systems	S1
2.2	Perform a complete experimental procedure	S1
3	**Values:**	
3.1	Appreciate the role of physics in medicine	V4
3.2	Build self-confidence through education	V4

C. Course Content

No	List of Topics- Theoretical Part (3hours per week)	Contact Hours

1	**Measurements**
	• Measuring things
	• The International System of Units
	• Changing units
	  • Length
	  • Time
	  • Mass
	• Vectors
	  • Adding vectors
	  • Components of vectors
		3

2	**Kinematics – motion in one and two dimensions** • Distance and displacement • Speed and velocity • Acceleration • Average velocity or speed • Change in displacement under constant acceleration • The Acceleration due to gravity • Independence of motion in two dimensions	3
3	**Force and Newton's laws of motion** • The concept of force	3

	• Newton's first law • Newton's second law • Weight and mass • Forces are vectors • Newton's third law • Kinds of force • Fundamental Forces • Derived Forces • Tension • The normal force and friction • Drag forces • Newtonian gravity	
4	**Statics** • Equilibrium • Torque • Principle of Moments • Centre of gravity/ centre of mass • Stability	3
5	**Mechanics of non-viscous fluids** • Pressure • Density • Pascal's principle • Measurement of pressure • Pressure and human body • The buoyant force • Archimedes' principle • Surface tension • Capillarity • Definitions of some key terms • The equation of continuity • Volume flow rate • Continuity of flow • Bernoulli's equation • Application of Bernoulli's equation	6
6	**Fluid dynamics of viscous fluids** • Viscosity • Poiseuille's law • Blood viscosity • Turbulence	2
7	**Optics and imaging system** • Electromagnetic wave • Reflection • Refraction • Dispersion • Ray diagrams	4

	• Plane mirrors • Spherical mirrors • Magnification • Lenses	
8	**Nuclear physics** • Parts of the atom • Structure and prophéties of nucleus • Nuclear decay and stability • Radioactivity • Radiation therapy • Medical imaging	3
9	**Production of ionizing radiation** • The interaction of radiation with matter • The radiation units • Measurement of radiation (Dosimetry) • Exposer and absorbed doses • Detection of radiation • Radiation protection	3
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	• Define physics quantities and units. • Relate physics to medicine • Describe motion from the kinematic point of view • Calculate static forces on different parts of the human body (muscles, joints,...) • Identify the different types of radioactive decay • Calculate the effective half-life of a radionuclide in the body • Estimate the biological equivalent absorbed dose caused by radiations	Lecturing Starting with the topic outlines. Demonstrate the basic principles. Solve problem Interactive teaching	a) Midterm exam. b) Final exam. c) Homework. d) Oral Questions.
2.0	**Skills**		
2.1	Apply physics approaches to the modeling of some parts of the human body systems	Lecturing, discussion, and problem-solving. Assist practical work	Lab reports Lab Exams

2.2	Perform a complete experimental procedure		
3.0	**Values**		
3.1	Appreciate the role of physics in medicine	Discussion, and problem-solving.	Lab reports
3.2	Build self-confidence through education		
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments	End of each chapter	10%
2	Midterm Exam	6th	20%
3	Lab (reports and exam)	Every week	20%
4	Final Exam	End of the semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:
-Students can contact instructors by e-mail and arrange appointments via official online means (blackboard- webex..)
- Students can visit during the office hours.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	[1]-Introduction to Biological Physics for Health and Life Sciences by Kristen Franklin, 2nd Edition (Wiley 2019)
Essential References Materials	[1]-General Physics, 2nd Edition, Morton M. Sternheim, and Joseph W. Kane, Wiley, (1991). [2]-Physics for Scientists & Engineers with Modern Physics 4th Edition by Douglas Giancoli, 4th Edition (2014). [3]-Halliday & Resnick, Jearl Walker, "Fundamentals of Physics" 10th Edition (2018). [4]-Physics for biology and medicine, Paul Davidovits, Third Edition, Elsevier Academic Press.

Electronic Materials	https://phet.colorado.edu/ https://www.myphysicslab.com/ https://onlinelabs.in/physics https://www.omnicalculator.com/physics
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms Laboratories equipped with experimental equipment
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show provided in each classroom Whiteboards
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

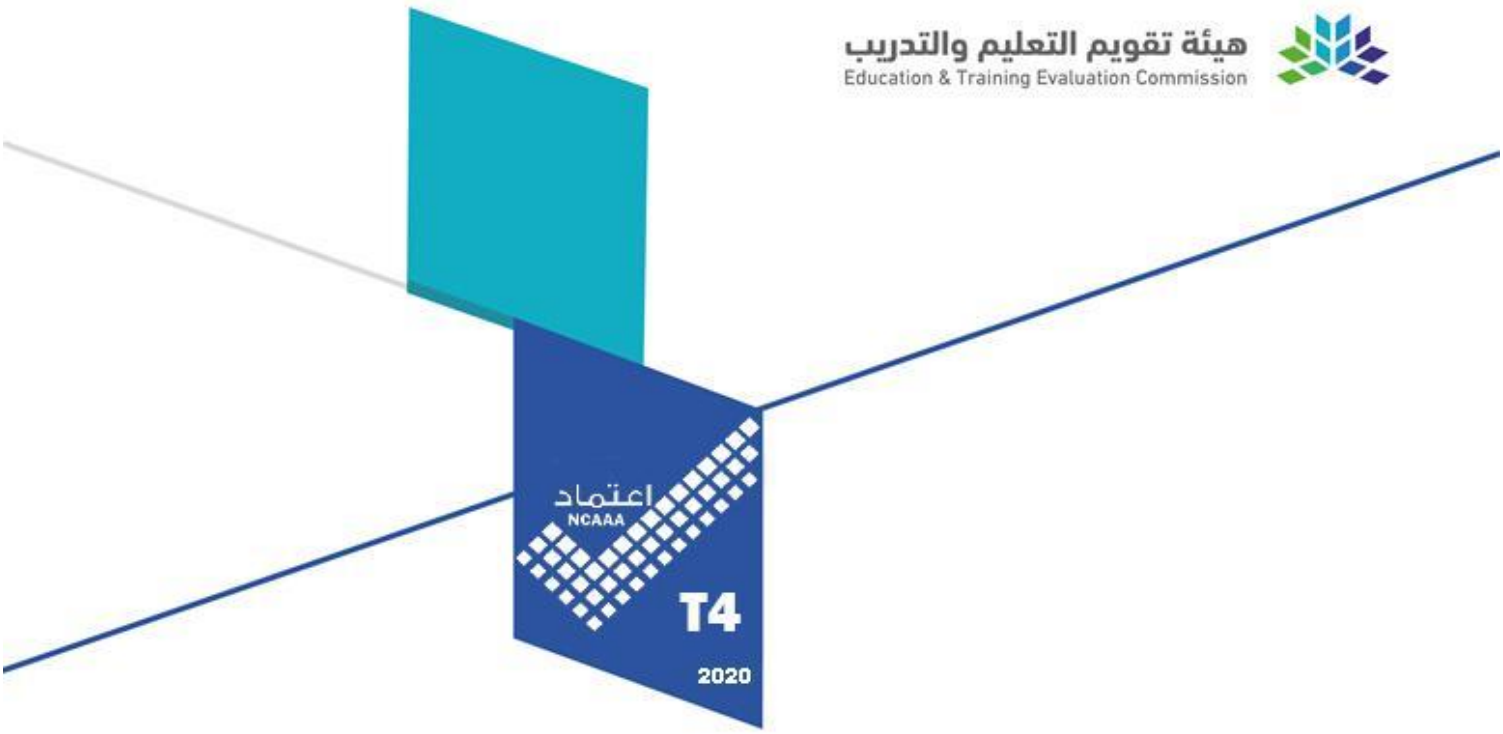
Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching Strategies	Students	Questionnaire
Effectiveness of student assessment	Instructor	Exams
Extent of achievement of course learning outcomes	Instructor	Course report
Quality of learning resources	Instructor	Course report

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**General Physics 1 (for Engineering College)**
Course Code:	**PHY1118**
Program:	**Physics**
Department:	**Physics**
College:	**Applied Science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours: 4 (3+1)
2. Course type **a.** University ☐ College ☑ Department ☐ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Level 1st/ 1st year
4. Pre-requisites for this course (if any)**:**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	30	50 %
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**	30 (lab)	50 %

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others**	
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description

The course will cover the principle of general physics, such as measurements, vectors, Motion in one dimensions, Newton's laws, work and energy.

2. Course Main Objective

The course is design to provide students with some basic and essential concepts in general physics. The main subjects that this course covers are listed below.
In addition to these items, the students should gain practical skills through conducting experiments in the laboratory.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and understanding**	

CLOs		Aligned PLOs
1.1	Define the concepts of the measurements, length, time, and weight.	K1
1.2	Differentiate between the vectors and the scalars	K2
1.3		
2	**Skills:**	
2.1	Apply Newton's laws of motion to calculate the position, velocity and acceleration.	S1
2.2	Explain the motion in one and two dimensions.	S2
2.3	Relate force to potential and kinetic energies	S2
3	**Values:**	
3.1	Work effectively responsibly in teamwork	V2
3.2		

C. Course Content

No	List of Topics	Contact Hours
1	Measurement Measuring Things The International System of Units Changing Units Time Mass	**3**
2	Motion Along a Straight Line Motion Position and Displacement Average Velocity and Average Speed Instantaneous Velocity and Speed Acceleration Constant Acceleration Free-Fall Acceleration	**4**
3	Vectors Vectors and Scalars Adding Vectors Geometrically Components of Vectors Unit Vectors Adding Vectors by Components Multiplying Vectors	**4**
4	Motion in Two and Three Dimensions Position and Displacement Average Velocity and Instantaneous Velocity Average Acceleration and Instantaneous Acceleration Projectile Motion Uniform Circular Motion	**5**
5	Force and Motion Newton's First Law Force Mass Newton's Second Law	**6**

	Newton's Third Law Applying Newton's Laws Friction (static and dynamic coefficients)	
6	Kinetic Energy and Work Kinetic Energy Work Work and Kinetic Energy Power	4
	Potential Energy and Conservation of Energy Potential Energy Determining Potential Energy Values Conservation of Mechanical Energy Work Done on a System by an External Force Conservation of Energy	4
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the concepts of the measurements, length, time, and weight.	1. Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: ● Board, Power point. ● Discussions ● Start each chapter by general idea and the benefit of it. 4. Perform some experiments in the Laboratory	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam. d) Practical exams.
1.2	Differentiate between the vectors and the scalars		
1.3			
2.0	**Skills**		
2.1	Apply Newton's laws of motion to calculate the position, velocity and acceleration.	1. Solve some problems in class. 2. Explain some proofs during lectures. 3. Encourage students to participate in solving problems.	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam. d) Practical exams.
2.2	Explain the motion in one and two dimensions.		
2.3	Relate force to potential and kinetic energies		
3.0	**Values**		
3.1	Work effectively responsibly in teamwork	● Organize the students as a small group in the lab to conduct experiments and prepare reports.	● Evaluate the scientific reports. ● Discussing the reports with each teamwork. ● Evaluate the reports of each student.
3.2			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	10th	20 %
2	Homework & quizzes	All weeks	10 %
3	Lab reports and final exam	End of the semester	20 %
4	Final written exam	End of the semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Each student has the chance to meet and discuss with his instructor in class and during office hours. Additionally, students can contact the coordinator of the course should they have any other issue in the course.)

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Halliday & Resnick, Jearl Walker, "Fundamentals of Physics" 10th Edition (2018)
Essential References Materials	
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• Classroom • Laboratory • Library
Technology Resources (AV, data show, Smart Board, software, etc.)	• Data show • Black Bord
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching Strategies	Students	Questionnaire

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of student assessment	Instructors of the course	Peer review of exam marking
Extent of achievement of course learning outcomes	Instructor	Course report
Quality of learning resources	Instructor	Course report

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	**General Physics for Engineering**
Course Code:	**PHY1119**
Program:	**Physics**
Department:	**Physics**
College:	**Applied Science**
Institution:	**Umm Al-Qura University**

Table of Contents

A. Course Identification

1. Credit hours:	**4 (3+1)**
2. Course type	
a.	University ☐ College ☑ Department ☐ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	Depends on the plan of each department in the college
4. Pre-requisites for this course (if any)**:**	
General Physics 1	
5. Co-requisites for this course (if any)**:**	

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	30	50 %
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**	30 (lab)	50 %

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	
4	**Others**	
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description

After completing the first general physics course (prior to this course), students will study some basic concepts of electricity and magnetism in this course. This includes: Coulomb's law, Gauss's law, electric and magnetic fields, and electric current and circuits.

2. Course Main Objective

The course is design to provide students with some basic and essential concepts in general physics. The main subjects that this course covers are listed below.
In addition to these items, the students should gain practical skills through conducting experiments in the laboratory.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and understanding**	
1.1	Describe the interaction of electric field with matter	K1
1.2	Explain magnetic field formation	K2
1.3		
2	**Skills:**	
2.1	Apply Coulomb`s law, electric field of static charge	S1
2.2	Analyze electric circuits	S2
2.3		
3	**Values:**	
3.1	Work effectively responsibly in teamwork	V2
3.2		

C. Course Content

No	List of Topics	Contact Hours
1	Coulomb's Law and Electric Field Electric Charge Conductors and Insulators Coulomb's Law Charge is Quantized The Electric Field The Electric Field Lines The Electric Field Due to a Point Charge A Point Charge in an Electric Field	5
2	Gauss' Law Electric Flux Gauss' Law Applying Gauss' Law: Planar Symmetry	3
3	Electric Potential Electric Potential and Electric Potential Energy Calculating the Potential from the Field Potential Due to a Charged Particle Potential Due to a Group of Charged Particles Calculating the Field from the Potential Electric Potential Energy of a System of Charged Particles	4
4	Capacitance Capacitance Calculating the Capacitance Capacitors in Parallel and in Series Energy Stored in an Electric Field Capacitor with a Dielectric	4
5	Current and Resistance and Circuits Electric Current Electric Current Density Resistance and Resistivity Ohm's Law	7

	Power in Electric Circuits EMF Resistors in parallel and in series Kirchhoff's Rules *RC* Circuits	
6	Definition of Magnetic Fields, and Magnetic fields due to Currents The production of a Magnetic Field The Definition of *B* Magnetic Force on a Current-Carrying Wire Calculating the Magnetic Field Due to a Current Ampere's Law Solenoids and Toroids	7
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the interaction of electric field with matter	1. Demonstrating the basic principles through lectures. 2. Discussing phenomena with illustrating pictures and diagrams. 3. Lecturing method: ● Board, Power point. ● Discussions ● Start each chapter by general idea and the benefit of it. 4. Perform some experiments in the Laboratory	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam. d) Practical exams.
1.2	Explain magnetic field formation		
1.3			
2.0	**Skills**		
2.1	Apply Coulomb`s law, electric field of static charge	1. Solve some problems in class. 2. Explain some proofs during lectures. 3. Encourage students to participate in solving problems.	1. Solve some examples during the lecture. 2. Discussions during the lectures 3. Exams: a) Quizzes. b) Midterm exams. c) Final exam. d) Practical exams.
2.2	Analyze electric circuits		
2.3			
3.0	**Values**		
3.1	Work effectively responsibly in teamwork	● Organize the students as a small group in the lab to conduct experiments and prepare reports.	● Evaluate the scientific reports. ● Discussing the reports with each teamwork. ● Evaluate the reports of each student.
3.2			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam	10th	20 %
2	Homework & quizzes	All weeks	10 %
3	Lab reports and final exam	End of the semester	20 %
4	Final written exam	End of the semester	50%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Each student has the chance to meet and discuss with his instructor in class and during office hours. Additionally, students can contact the coordinator of the course should they have any other issue in the course.)

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Halliday & Resnick, Jearl Walker, "Fundamentals of Physics" 10th Edition (2018)
Essential References Materials	
Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• Classroom • Laboratory • Library
Technology Resources (AV, data show, Smart Board, software, etc.)	• Data show • Black Bord
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching Strategies	Students	Questionnaire

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of student assessment	Instructors of the course	Peer review of exam marking
Extent of achievement of course learning outcomes	Instructor	Course report
Quality of learning resources	Instructor	Course report

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	