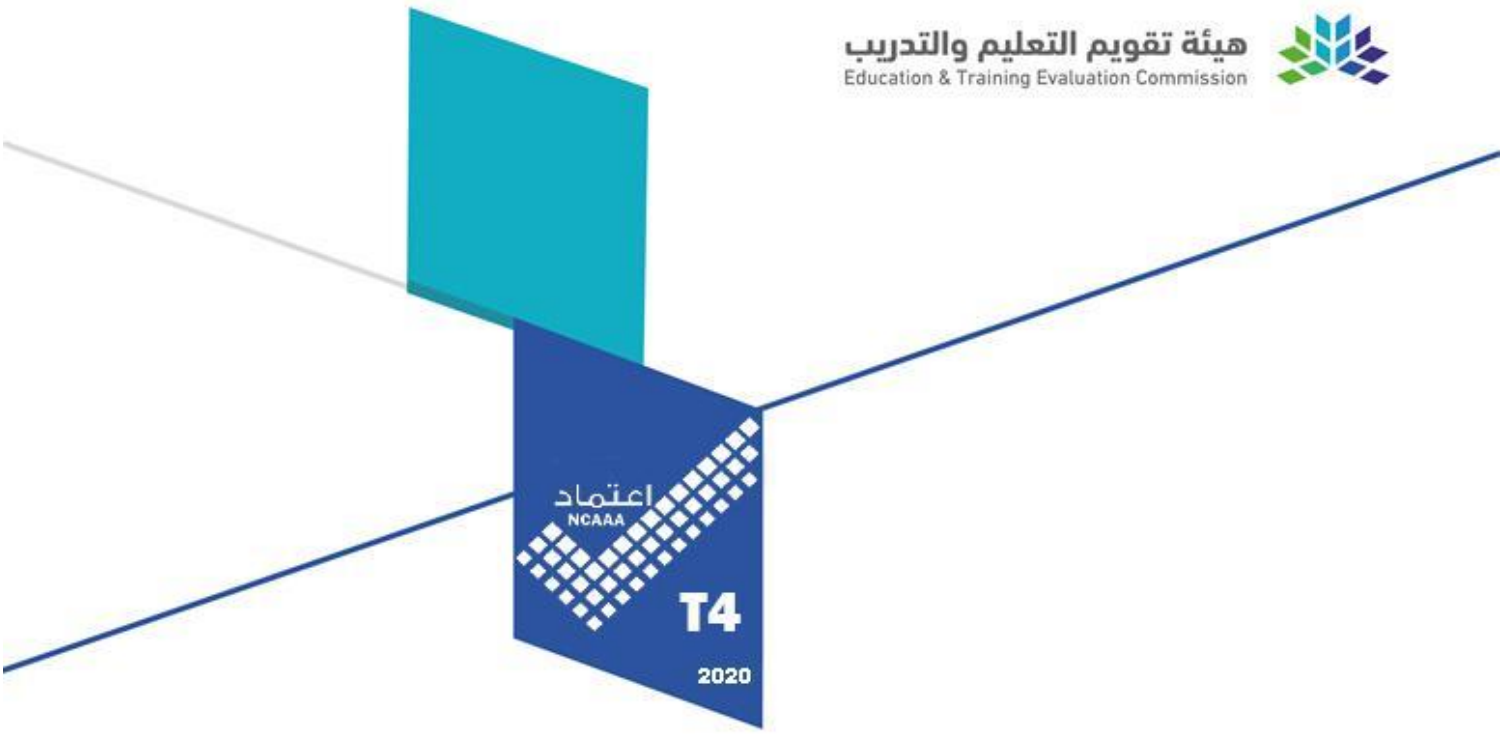
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Physics (2)
Course Code:	203207-4
Program:	**Bachelor in information technology**
Department:	Department of Physics
College:	**College of Science**
Institution:	**Taif 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: 5/2
4. Pre-requisites for this course (if any)**:** Physics (1) (203206-4)
5. Co-requisites for this course (if any)**: NON**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	8	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**	50
2	**Laboratory/Studio**	30
3	**Tutorial**	0
4	**Others** (specify)	0
	Total	80

B. Course Objectives and Learning Outcomes

1. Course Description

This course covers important parts in electricity and magnetism. Students will study electric fields, electric flux, Gauss`s law and its applications. Magnetic fields and magnetic forces. Sources of the magnetic field. Finally, Faraday's law, Lenz's law, electromotive force and some different types of AC circuits will be studied.

2. Course Main Objective

- Establishes a foundation in electricity and magnetism.
- Introduces main topics such as electric field and flux, magnetic fields and the magnetic forces, Faraday's law and AC circuits, electromagnetism, and its applications.
- Recognizes the connection between electricity and magnetism and its applications. Gives an overview and understanding of basic physics, with moderate use of mathematical formalism.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Understand the fundamental principles of electricity and magnetism.	K1
1.2	Understand fundamentals equations (Laws) and linking them to corresponding phenomena.	K1
1.3	Identify the basic concepts and theories of electric fields, magnetic fields, source of magnetic fields, and alternating current circuits.	K1
2	**Skills :**	
2.1	Apply the main fundamental laws and theories to solve the problems of electric fields, magnetic fields, source of magnetic fields, and alternating current circuits.	S1
2.2	Develop a skill versatility in solving problems in electric fields, magnetic fields, source of magnetic fields, and alternating current circuits.	S1
2.3	Analyze qualitatively and quantitatively experimental data of electricity and magnetism.	S1
3	**Values:**	
3.1	Work effectively and responsibly even in teamwork in performing activities and experiments.	V2
3.2	Act responsibly and ethically in conducting their work.	V1

C. Course Content

No	List of Topics	Contact Hours
1	Unit 1: **Electric fields** ▪ Electric field of a continuous charge distribution ▪ Electric field lines ▪ Motion of charged particles in a uniform electric field ▪ Gauss's law ▪ Applications of Gauss's law to various charge distributions	**10**
2	Unit 2: **Magnetic fields** ▪ Magnetic fields and forces ▪ Magnetic force acting on a current-carrying conductor ▪ Torque on a current loop in a uniform magnetic field ▪ Motion of a charged particle in a uniform magnetic field ▪ Applications involving charged particles moving in a magnetic field ▪ Velocity selector ▪ Mass spectrometer	**10**
3	Unit 3: **Sources of the Magnetic field:** ▪ The Biot-Savart Law ▪ The magnetic force between two parallel conductors ▪ Amperes Law ▪ The magnetic field of a solenoid ▪ Magnetic flux ▪ Gauss's Law in magnetism	**10**
4	Unit 4: **Induced electromotive force** ▪ Faraday's law of induction	**10**

	▪ Some applications of faradays law ▪ Lenz's law	
5	Unit 5: **Alternating current circuits** ▪ AC sources ▪ Resistors in an AC circuits ▪ Inductors in an AC circuits ▪ Capacitor in an AC circuits ▪ The RLC series circuit ▪ Power in an AC circuit ▪ Resonance in a series RLC circuit	**10**
	Part 2	
1	Introduction	**3**
2	**Experiment 1:** Kirchhoff's Laws	**3**
3	**Experiment 2:** Voltage transformation with a transformer	**3**
4	**Experiment 3:** Determination of self-inductance of an inductive coil in a series RL AC circuit	**3**
5	**Experiment 4:** Determination of the capacitance of a capacitor in a series RC AC circuit	**3**
6	**Experiment 5:** Charging and discharging of capacitor	**3**
7	**Experiment 6:** Use of Oscilloscope in measurement of AC Voltage and Frequency	**3**
8	**Experiment 7:** Relationship between V_{pp}, V_m and V_{rms} in the calibration of Oscilloscope and/or potentiometer	**3**
9	**Experiment 8:** Tangent galvanometer	**3**
10	**Experiment 9:** Resonance RLC AC circuit	**3**
Total		**80**

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	Understand the fundamental principles of electricity and magnetism.	Lecture Discussion	Written Exams Quizzes Assignments
1.2	Understand fundamentals equations (Laws) and linking them to corresponding phenomena.	Lecture Discussion	Written Exams Quizzes Assignments
1.3	Identify the basic concepts and theories of electric fields, magnetic	Lecture Discussion	Written Exams Quizzes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	fields, source of magnetic fields, and alternating current circuits.		Assignments
2.0	**Skills**		
2.1	Apply the main fundamental laws and theories to solve the problems of electric fields, magnetic fields, source of magnetic fields, and alternating current circuits.	Problem solving	Written exam Activities
2.2	Develop a skill versatility in solving problems in electric fields, magnetic fields, source of magnetic fields, and alternating current circuits.	Problem solving	Written exam Activities
2.3	Analyze qualitatively and quantitatively experimental data of electricity and magnetism.	Practical	Lab reports Lab exam
3.0	**Values**		
3.1	Work effectively and responsibly even in teamwork in performing activities and experiments.	Practical	Lab reports Lab exam Activities
3.2	Act responsibly and ethically in conducting their work.	Practical Discussion	Indirect evaluation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm exam I	5th	20%
2	Activities (Quiz)	Periodically	20%
3	Lab reports	Weekly	15%
4	Final Lab Exam	11th	5%
5	Final exam	12th	40%
6	Total	-	100%

***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 :

Academic advising and counseling of students is an important component of teaching; student academic advising is a mandatory requirement of College of Computers and Information Technology (CCIT). Appropriate student advising provides support needed for the student during times of difficulty. In addition, it helps the student to build a close relationship with his/her advisor and to provide student motivation and involvement with the institution.

In addition, since faculty are usually the first to recognize that a student is having difficulty, faculty members play a key role in developing solutions for the students or referring them to appropriate services. Faculty members also participate in the formal student-mentoring program.

Additional counseling is provided by course directors, who provide students with academic reinforcement and assistance and refer “at risk” students to the Vice Dean for Academic Affairs and the Vice Dean for female section.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Instructors Notes Raymond A. Serway and John W. Jewett, Jr., Physics for Scientists and Engineers with Modern Physics, 9th Edition, Publisher: Brooks/Cole, Print ISBN-13: ISBN: 978-1133954057, (2014).
Essential References Materials	Raymond A. Serway, Chris Vuille, College Physics, 10th Edition, Publisher: Cengage Learning, 978-1285761954, (2014).
Electronic Materials	Interactive simulations for science and math: https://phet.colorado.edu/
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• A Lecture room appropriate for maximum 25 students with a personal computer, a data show and a smart board. • A Lab room appropriate for maximum 15 students with a personal computer, a data show and a smart board.
Technology Resources (AV, data show, Smart Board, software, etc.)	• Lab materials and required software
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
Student Feedback on Effectiveness of Teaching	Students	Indirect
Evaluation of Teaching	• Pear reviewer • Program coordinator • Departmental council Faculty council	Indirect
Improvement of Teaching	• Program coordinator • Relevant committee	Direct
Quality of learning resources	• Students • Instructor	Indirect

Evaluation Areas/Issues	Evaluators	Evaluation Methods
	Faculty	
Extent of achievement of course learning outcomes,	• Program coordinator • Instructor	Direct
Course effectiveness and planning for improvement	• Program coordinator Instructor	Indirect

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	IT Department Council/ Executive program committee
Reference No.	11
Date	23/10/21443