

WAVES, ELECTRICITY AND MAGNETISM SPRING 2022

PHYS 122

Published Apr 30, 2022

CLASS SCHEDULE

Section	Location	Time	Instructor(s)
PHYS 122 081 [LEC]	ONLN - Online		Karen Cummings karenc@uwaterloo.ca Denis Dalidovich denis.dalidovich@uwaterloo.ca
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INSTRUCTOR / TA INFORMATION

- Instructor: Denis Dalidovich
- Office: Not in office
- Phone: Not in office
- Email: denis.dalidovich@uwaterloo.ca
- Office hours: Can be held on-line only. "Office Hours" can be arranged for most days and times.
- Contact preferences: Please use the Discussion tool of the LEARN platform, or Microsoft Teams. No questions will be answered on MasteringPhysics. I will aim to respond to questions within 24 hours during weekdays. Individual meetings (via Skype: ddalidovich) by appointment only.
- Help with LEARN and TEAMS: learnhelp@uwaterloo.ca
- Help with MasteringPhysics and e-texts: <https://support.pearson.com/getsupport/s/>
- Teaching Assistant: Jennifer Reid, jareid@uwaterloo.ca

COURSE DESCRIPTION

Calendar Description for PHYS 122

Simple harmonic motion, resonance, damped harmonic motion, complex numbers, wave motion and sound, electrostatic force and potential, electric current and power, capacitors, DC circuits, LRC circuits, introduction to magnetic fields Lorentz Force. [Offered: W, S; also offered online: S]

Prereq: One of PHYS 111 (minimum grade 70%), 115, 121, ECE 105. Coreq: One of MATH 127, 137, 147. Antireq: PHYS 112, 125

LEARNING OUTCOMES

By the end of this course students should be able to:

By the end of this course students should be able to understand each of the topics in the course schedule below.

TENTATIVE COURSE SCHEDULE

- Week 1:

Module 1: Periodic Motion

Activities and Assignments:

- Introduce yourself (see Discussion Topics)
- Assignment 0: MasteringPhysics Introduction (ungraded)
- Tutorial 1: Mathematical Preliminaries and Periodic Motion

Chapters from the Textbook: Chapter 14

- Week 2:

Module 1: Periodic Motion

Activities and Assignments:

- Assignment 1: Simple Harmonic Motion
- Tutorial 2: Periodic Motion and Pendulums

Chapters from the Textbook: Chapter 14

- Week 3:

Module 2: Wave Motion

Activities and Assignments:

- Assignment 2: Simple Harmonic Motion and Waves
- Tutorial 3: Wave Motion

Chapters from the Textbook: Chapter 15

- Week 4:

Module 3: Sound Waves

Module 4: Superposition

Module 5: Standing Waves

Activities and Assignments:

- Assignment 3: Waves, Sound and Superposition
- Tutorial 4: Waves, Sound and Superposition

Chapters from the Textbook: Chapter 16

- Week 5:

Module 6: Electric Charges and Fields

Activities and Assignments:

- Assignment 4: [Coulomb's Law and Electric Fields](https://learn.uwaterloo.ca/d2l/common/dialogs/quickLink/quickLink.d2l?ou=799599&type=content&rCode=uWaterloo-88963)
(<https://learn.uwaterloo.ca/d2l/common/dialogs/quickLink/quickLink.d2l?ou=799599&type=content&rCode=uWaterloo-88963>)
- Tutorial 5: Electric Charges and Field

Chapters from the Textbook: Chapter 21

- Week 6:

Module 7: Gauss's Law

Activities and Assignments:

- Assignment 5: [Gauss's Law](https://learn.uwaterloo.ca/d2l/common/dialogs/quickLink/quickLink.d2l?ou=799599&type=content&rCode=uWaterloo-88963) (<https://learn.uwaterloo.ca/d2l/common/dialogs/quickLink/quickLink.d2l?ou=799599&type=content&rCode=uWaterloo-88963>)
- Tutorial 6: Gauss's Law

Chapters from the Textbook: Chapter 22

- Week 7:

Module 8: The Electric Potential

Activities and Assignments:

- Assignment 6: (<https://learn.uwaterloo.ca/d2l/common/dialogs/quickLink/quickLink.d2l?ou=799599&type=content&rCode=uWaterloo-88963>) The Electric Potential
- Tutorial 7: The Electric Potential
- Midterm, Wednesday, June 15th

Chapters from the Textbook: Chapter 23

- Week 8:

Module 9: Capacitance and Dielectrics

Activities and Assignments:

- **Assignment 7:** (<https://learn.uwaterloo.ca/d2l/common/dialogs/quickLink/quickLink.d2l?ou=799599&type=content&rCode=uWaterloo-88963>) **Capacitance and Dielectrics**
- **Tutorial 8:** Capacitance and Dielectrics

Chapters from the Textbook: Chapter 24

- **Week 9:**

Module 10: Direct-Current Circuits

Activities and Assignments:

- **Assignment 8:** (<https://learn.uwaterloo.ca/d2l/common/dialogs/quickLink/quickLink.d2l?ou=799599&type=content&rCode=uWaterloo-88963>) **Currents and Resistance**
- **Tutorial 9:** Currents and Resistance

Chapters from the Textbook: Chapter 25

- **Week 10:**

Module 10: Direct-Current Circuits

Activities and Assignments:

- **Assignment 9:** (<https://learn.uwaterloo.ca/d2l/common/dialogs/quickLink/quickLink.d2l?ou=799599&type=content&rCode=uWaterloo-88963>) **Direct-Current Circuits**
- **Tutorial 10:** Direct-Current Circuits

Chapters from the Textbook: Chapter 26

- **Week 11:**

Module 11: Magnetism

Activities and Assignments:

- **Assignment 10:** (<https://learn.uwaterloo.ca/d2l/common/dialogs/quickLink/quickLink.d2l?ou=799599&type=content&rCode=uWaterloo-88963>) **Magnetism**
- **Tutorial 11:** Magnetism

Chapters from the Textbook: Chapter 27

- **Week 12:**

Module 12: Magnetic Field Sources

Activities and Assignments:

- **Assignment 11:** Magnetic Fields

- **Tutorial 12:** (<https://learn.uwaterloo.ca/d2l/common/dialogs/quickLink/quickLink.d2l?ou=799599&type=content&rCode=uWaterloo-88963>) **Magnetic Field Sources**

Chapters from the Textbook: Chapter 28

- Final Exam (Date and time to be determined later)

TEXTS / MATERIALS

Title / Name	Notes / Comments	Required
Young and R. Freedman, University Physics with Modern Physics and Mastering Physics, 15th Edition	May purchase printed text or e-text. Previous editions are fine as well.	Yes

- LEARN is the main platform for this course. Students are expected to check regularly for announcements as well as posted new material.
- Students are required to register for MasteringPhysics. Assignments will be online via this platform. Detailed instructions for registration are provided on the course website LEARN.

STUDENT ASSESSMENT

Scheme 1

Component	Value
Assignments	20%
Midterm	15%
Final Exam	65%

Scheme 2

Component	Value
Assignments	0%
Midterm	15%
Final Exam	85%

Scheme 3

Component	Value
Assignments	0%

Component	Value
Midterm	0%
Final Exam	100%

A student must get at least 40% (out of 80%) on the combined Midterm and Final Exam to pass the course using Scheme 1. Overall grade will be determined by the scheme which gives a student the highest mark.

ASSIGNMENT SCREENING

No assignment screening will be used in this course.

ADMINISTRATIVE POLICY

Territorial Acknowledgement: The University of Waterloo acknowledges that much of our work takes place on the traditional territory of the Neutral, Anishinaabeg and Haudenosaunee peoples. Our main campus is situated on the Haldimand Tract, the land granted in a legally binding treaty to the Six Nations that includes six miles on each side of the Grand River. Our active work toward reconciliation takes place across our campuses through research, learning, teaching, and community building, and is centralized within our [Indigenous Initiatives Office](https://uwaterloo.ca/indigenous) (<https://uwaterloo.ca/indigenous>) .

UNIVERSITY POLICY

Academic integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check [the Office of Academic Integrity](https://uwaterloo.ca/academic-integrity/) (<https://uwaterloo.ca/academic-integrity/>) for more information.]

Grievance: A student who believes that a decision affecting some aspect of their university life has been unfair or unreasonable may have grounds for initiating a grievance. Read [Policy 70, Student Petitions and Grievances, Section 4](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70>) . When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for their actions. [Check [the Office of Academic Integrity](https://uwaterloo.ca/academic-integrity/) (<https://uwaterloo.ca/academic-integrity/>) for more information.] A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate associate dean. For information on categories of offences and types of penalties, students should refer to [Policy 71, Student Discipline](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71>) . For typical penalties, check [Guidelines for the Assessment of Penalties](https://uwaterloo.ca/secretariat/guidelines/guidelines-assessment-penalties) (<https://uwaterloo.ca/secretariat/guidelines/guidelines-assessment-penalties>) .

Appeals: A decision made or penalty imposed under [Policy 70, Student Petitions and Grievances](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70>) (other than a petition) or [Policy 71, Student Discipline](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71>) may be appealed if

there is a ground. A student who believes they have a ground for an appeal should refer to [Policy 72, Student Appeals](https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-72) (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-72>) .

Note for students with disabilities: [AccessAbility Services](https://uwaterloo.ca/accessability-services/) (<https://uwaterloo.ca/accessability-services/>) , located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.

Turnitin.com: Text matching software (Turnitin®) may be used to screen assignments in this course. Turnitin® is used to verify that all materials and sources in assignments are documented. Students' submissions are stored on a U.S. server, therefore students must be given an alternative (e.g., scaffolded assignment or annotated bibliography), if they are concerned about their privacy and/or security. Students will be given due notice, in the first week of the term and/or at the time assignment details are provided, about arrangements and alternatives for the use of Turnitin in this course.

It is the responsibility of the student to notify the instructor if they, in the first week of term or at the time assignment details are provided, wish to submit alternate assignment.