PHYSICS 1502 – ENRICHED INTRODUCTORY PHYSICS II
COURSE SYLLABUS

Land Acknowledgement

We acknowledge that
Western University is situated on the traditional lands of the
Anishinaabeg, Haudenosaunee, Lūnaapéewak and Chonnonton nations,
on lands connected with the London Township and Sombra Treaties of 1796 and
the Dish with One Spoon Covenant Wampum. With this, we respect the longstanding relationships
that Indigenous Nations have to this land, as they are the original caretakers. We acknowledge
historical and ongoing injustices that Indigenous Peoples (First Nations, Métis, and Inuit) endure in
Canada, and we accept responsibility as a public institution to contribute
toward revealing and correcting miseducation,
as well as
renewing
respectful
relationships
with Indigenous communities
through our teaching, research, and community service.

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1. COURSE DESCRIPTION

Physics 1502 – Enriched Introductory Physics II (3 lecture hours, 3 laboratory hours, 0.5 course): A calculus-based laboratory course for students intending to pursue further studies in science, particularly the physical sciences. Relativity, the electromagnetic interaction, the strong and weak interactions, oscillations, and waves.

Prerequisites: One of Physics 1501A/B (preferred) or Physics 1201A/B or Physics 1401A/B, or the former Physics 1301A/B, or a minimum mark of 80% in the former Physics 1028A/B; Calculus 1000A/B or 1500A/B or Numerical and Mathematical Methods 1412A/B or the former Applied Mathematics 1412A/B.

Corequisite(s): Calculus 1501A/B (preferred) or Calculus 1301A/B, or Numerical and Mathematical Methods 1414A/B.

The former Applied Mathematics 1414A/B or the former Applied Mathematics 1413 can be used in place of Numerical and Mathematical Methods 1414A/B.

Anti-requisites: Physics 1021, Physics 1102A/B, Physics 1202A/B, Physics 1402A/B, the former Physics 1029A/B, the former Physics 1302A/B.

Unless you have either the requisites for this course or written special permission from your Dean's Designate (Department/Program Counsellors and Science Academic Advisors) to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees if you are dropped from a course for failing to meet the necessary requisites.

2. INSTRUCTIONAL TEAM

Course Instructor
Prof. Tamie Poepping
Professor, Department of Physics and Astronomy
Physics and Astronomy Building (PAB),
poepping@uwo.ca

Teaching Assistant
To be announced. The course TA will be doing most of the tutorial marking and should be first point of contact for grading issues.

Lab Instructor
Dr. Shailesh Nene, Department of Physics and Astronomy
physlab1@uwo.ca

Contact Info
1. For all **enquiries**, use your UWO e-mail account **(@uwo.ca**). We will ***not*** respond to email from addresses other than your UWO email account as we cannot ensure the legitimacy of the sender from other sources; also, emails from other sources often won't make it through the UWO spam filter.
2. Direct all lab-related questions to the lab instructor, Dr. Shailesh Nene.

3. COURSE OUTLINE

Brief Course Outline (Topic – *Textbook sections*) For a detailed description, see the attached course schedule.

1. Electric effects – *Chapters 21–26*
2. Magnetic effects – *Chapters 27–29*
3. Oscillations and waves – *Chapters 14–15*
4. Relativity – *Chapter 37*
5. Nuclear physics – *Chapter 43*

4. COURSE-LEVEL LEARNING OUTCOMES

By the end of the course, students will be expected to meet the course-level learning outcomes identified below. Also, you should review the detailed course learning outcomes provided on OWL to ensure complete coverage and understanding of the required topics or skills.

- use mathematical language at the level of integral calculus to solve analytic and quantitative problems in the general topics of electricity, magnetism, oscillations, and waves;
- extend and apply Newton's Laws of Motion and the principle of conservation of energy to electromagnetic and wave phenomena;
- develop a coherent microscopic description of electric and magnetic phenomena and use these to generate macroscopic laws;
- use periodic functions to quantify the displacement, velocity, acceleration, and energy in simple harmonic oscillations and waves;
- use Lorentz transformations to quantify relativistic effects of objects traveling close to the speed of light;
- explain nuclear stability and nuclear processes including fission and fusion;
- use a step-by-step problem-solving strategy underpinned with conceptual understanding to logically work through complex problems;
- reason through conceptual physics problems using clear, concise writing and diagrams;
- perform appropriate experimental set-up, data collection and analysis to investigate a physical relationship;
- apply research skills such as measurement taking, uncertainty propagation, graphical analysis, and written discussion of results in the lab;
- be able to continue in all physical science modules at the second-year level with a solid background.

5. COURSE DELIVERY

Lectures: 3 lecture hours per week

6.

Online Western Learning (OWL) system at westernu.brightspace.com will be the home base and launching platform for all learning components. Students are responsible for checking the course OWL site on a regular basis. This is the primary method by which information will be disseminated to all students in the class outside of in-person lectures. Log in using your UWO username and password, then find the **PHYSICS 1502B 001 FW24** OWL site. Key buttons or tabs to explore:

- ***Launchpad***: Starting point for access to Course Outline, Course Schedule, Learning Outcomes, etc.
- ***Announcements***: important notices and reminders will be posted here. You can set your Preferences (menu beside your name in top banner) to send an email daily or for each posting.
- ***Gradebook***: Grades for all course evaluation components will be posted here.
- ***Unit Lessons***: Slides and notes posted under the corresponding Unit (Unit 1 to 5 in the sidebar).
- ***Labs***: Lab-related content, such as manuals, worksheets, and links for software downloads.

If students need assistance on technical issues in OWL, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk, which can be contacted by phone at 519-661-3800 or ext. 83800.

Laboratories: There will be four three-hour labs approximately every two weeks, alternating with tutorials; see Course Schedule for dates.

- For Physics 1502 labs, we will be using Arduino-based microcontrollers. You will need to bring your laptop
- Each lab involves completing a pre-lab quiz on OWL (via Tests & Quizzes tab), completing the lab worksheets during an in-person experiment, and submitting your completed worksheets via Gradescope.
- Direct all lab-related questions to the lab instructor, Dr. Shailesh Nene via physlab1@uwo.ca.
- Labs are located on the second floor of the Materials Science Addition (MSA) building. See Western's campus maps if needed.

Mastering Physics platform: Mastering Physics is a web-based instructional platform provided by the textbook publisher. A portion of class marks will come from completing homework assignments on Mastering Physics. Access is included with your textbook if purchased through the Western bookstore (now or last term for Physics 1501). Select the Pearson tab in OWL to access the course page in Mastering Physics.

Tutorials: Two-hour in-person workshops approximately every two weeks, alternating with the labs; see Course Schedule for dates. Location will be announced.

Drop-in Physics Help Centre: The drop-in Help Centre is in the Math & Physics Hub in the basement of the Physics and Astronomy Building. Help on course topics will be available on various days as per the schedule posted on OWL when it becomes available. We will strive to find a selection of times to enable access for everyone. The teaching assistants (TAs) in the Help Centre are physics and astronomy graduate students or volunteer undergraduate students specializing in physics (organized by PASA, the Physics & Astronomy Student Association).

Contingency plan for an in-person class pivoting to 100% online learning*:* Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously (*i.e.*, at the times indicated in the timetable) or asynchronously (*e.g.*, posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any assessments will also be conducted online as determined by the course instructor.

6. COURSE MATERIAL

The following course materials are required:

Textbook The required textbook *University Physics with Modern Physics (15th edition)*, by H.D. Young and R.A. Freedman (Pearson) is available for purchase from The Bookstore at Western as either printed hardcopy or electronic version. The textbook is a resource for assigned readings and homework problems (see Course Schedule). Your bookstore purchase will include access to the course site on Mastering Physics, which will be used for homework assignments.

Mastering Physics Access to the Mastering Physics platform is *required* for completing the online assignments. If you already purchased access for last term, you *do not* need to purchase anything further. If you transferred from Physics 1201/1202 or 1401/1402 into Physics 1501/1502, contact the Physics 1502 instructor to arrange transfer of your Mastering Physics access.

Lab Manual Lab manuals will be available in PDF format on OWL. You will be responsible for printing any hard copies.

Microcontroller You will be provided with an Arduino-based microcontroller kit. The ELEGOO UNO R3 Basic Starter kit includes an Elegoo UNO R3 microcontroller and additional required electronics components (Elegoo makes low-cost copies of Arduino products). This will be used for your four labs. You will need to bring your laptop (with USB-A port or suitable adapter to accept USB-A) to interface with the microcontroller.

7. COURSE EVALUATION

The overall course grade will be calculated from the following components:

Assignments	20%	• Best 5 of 6 counted; no make-ups; completed on Mastering Physics.
Tutorials	10%	• Best 3 of 4 counted; no make-ups; in person, alternating with labs.
Labs	10%	• 4 labs; no make-ups; in person.
Quizzes	20%	• 2 quizzes worth 10% each; no make-ups; scheduled during tutorials.
Final Examination	40%	• Date, time, and location to be announced by Registrar's Office.

See the ***Physics 1502 Course Schedule*** for details of timelines and deadlines for all components.

Assignments on Mastering Physics: Six assignments are to be completed to help you gain deeper understanding of physics concepts and problem-solving. Your best 5 of 6 scores will be counted. No make-ups will be offered.

Tutorials: Students are expected to attend and participate in the tutorials, which complement the lectures and labs and will occur in the week prior to each experimental lab; see the Course Schedule. The tutorials will focus on developing computational skills and collaborative problem solving. Your tutorial grade will be based on participation and submitting completed worksheets at the end of the tutorial. You should bring a laptop to the tutorials if you can, but you can also print out the worksheets and work with a classmate on their computer.

Laboratories: This course has a hand-on lab component to improve your skills in experimental design, programming, and data analysis.

- There are **4 independent labs**, and each lab is worth 2.5%. An incomplete or failed lab will be recorded as a zero and included in your lab average score. A lab may be missed with appropriate Academic Consideration (see below), and then the final lab mark will be the average of the other lab marks.
- **Lab worksheets:** The lab worksheets should be completed electronically or scanned/photographed for submission via the Gradescope link on OWL. Worksheets should be submitted before the end of your lab session; if necessary, you have until the end of the following Wednesday as indicated on Gradescope, but late submissions beyond that will NOT be accepted. The labs are pass/fail; a portion of each lab will be selected for grading, and a grade of ≥5/10 is needed to pass.

***Quizzes*:** Your understanding of the course content will be assessed over the term through two in-person quizzes scheduled during the tutorial/lab time slot (Wednesdays 2:30–5:30 PM). The quizzes are timed assessments to provide practice problem solving under a time constraint as applicable for the final exam. See the Course Schedule for expected quiz dates; date, time, and details are subject to change. A calculator will be allowed. Note that make-ups are not held for the quizzes: if you must miss a quiz due to a serious medical or other issue, the marks from the quiz will be transferred to the final exam.

Final examination: The final exam will be in-person. The date and time will be determined and announced by the Office of the Registrar in February. A formula sheet will be allowed (details to be provided later). A calculator will be allowed.

Grades: *All scores* will be transferred to the Gradebook on OWL. Any errors, or appeals to your scores, must be reported to your instructor (via poepping@uwo.ca) *within two weeks* of their initial posting. *Please note*: *a*) your *final exam* mark will only be posted to OWL after the end of the exam period, *b*) your *final course grade* must come officially from the Registrar's Office and will not be posted on OWL, and *c*) *final course grades* may need to be adjusted in order to conform to departmental policy.

8. MISSED COURSEWORK & ACADEMIC CONSIDERATIONS

***General information about missed* coursework** — Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs* posted on the Academic Calendar:
www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf.

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult Accessible Education.

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage: registrar.uwo.ca/academics/academic_considerations/. All requests for Academic Consideration must be made **within 48 hours** after the assessment date or submission deadline.

All Academic Consideration requests normally must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation:

- **Final Exam** – Examinations scheduled during official examination periods are except as defined by policy;
- **First of two midterm quizzes** – this first quiz is designated by the instructor of this course as the one assessment that always requires documentation when requesting Academic Consideration.

When a student *mistakenly* submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

Coursework with Assessment Flexibility — By policy, instructors may deny Academic Consideration requests for the following assessments with built-in flexibility:

- ***Flexible Completion for Assignments*** — This course has 6 assignments, and the 5 assignments with the highest marks are counted towards your final grade. Should extenuating circumstances arise, students do not need to request Academic Consideration for the first missed assignment, and Academic consideration requests will be denied for the first missed

assignment. Academic Consideration requests may be granted when students miss more than one assignment, and these additional (2nd, 3rd, ...) missed assignments will be reweighted to the final exam.

- ***Flexible Completion for Tutorials*** — This course has 4 tutorials, and the 3 tutorials with the highest marks are counted towards your final grade. No make-up tutorials will be given, and absences without Academic Consideration will be recorded as a zero and included in your average score. Should extenuating circumstances arise, students do not need to request Academic Consideration for the first missed tutorial, and Academic consideration requests will be denied for the first missed tutorial. Academic Consideration requests may be granted when students miss more than one tutorial for extenuating circumstances, and these additional (2nd, 3rd, ...) missed tutorials will be reweighted to the final exam.
- ***Assignment Deadline with a No-Late-Penalty Period*** — Students are expected to submit each of the assignments by the deadline listed. Should extenuating circumstances arise, students do not need to request Academic Consideration, and they are permitted to submit their assignment up to 48 hours past the deadline without a late penalty. Should students submit their assessment beyond 48 hours past the deadline, a grade of zero will be applied. Academic Consideration requests may be granted only for extenuating circumstances that started before the deadline and lasted longer than the No-Late-Penalty Period (48 hours).

Evaluation Scheme for Missed Assessments — Missed Lab, Quizzes, and Final Exam will be handled as follows:

a) ***Labs*** – No make-up labs are offered. If a lab is missed and Academic Consideration is granted, the average from your other lab grades will be applied. In all other cases, an incomplete lab will be recorded as a zero and included in your lab average score.
b) ***Quizzes*** – Two quizzes are scheduled over the course term. In the case of an absence, if Academic Consideration is approved the corresponding grade component will be reweighted to the Final Exam. No make-up quiz will be offered.
c) ***Final Examination*** – When a student misses the Final Exam and their Academic Consideration has been granted, they will be allowed to write the Special Examination (the name given by the University to a makeup Final Exam). See the Academic Calendar for details (under Special Examinations), See the Academic Calendar for details (under Special Examinations) especially for those who miss multiple final exams within one examination period.

9. ACADEMIC POLICIES

Please refer to the UWO Academic Policies http://www.uwo.ca/univsec/academic_policies/ for further details on the policies in practice here. The website for Registrarial Services is www.registrar.uwo.ca.

In accordance with policy, www.uwo.ca/its/identity/activatenonstudent.html, the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

A. Scholastic Offences

"Success (and failure) will come and go, but integrity is forever" - Amy Rees Anderson

What is Academic Integrity? Please review this site (from the Centre for Teaching and Learning) and course OWL tab on **Academic Integrity** – your learning should matter to you! (teaching.uwo.ca/teaching/assessing/academic-integrity.html)

University Policy states that cheating, including plagiarism, is a major scholastic offence. Scholastic offences are taken seriously, and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following: www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.
The commission of a scholastic offence is attended by academic penalties that might include expulsion from the program. If you are caught cheating, there will be no second warning.

As per the UWO Academic Policies:

- Plagiarism: Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing, such as footnotes or citations.
- All required papers may be subject to submission for textual similarity review to the commercial plagiarism-detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).
- Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

***B. Online Course Conduct & Netiquette*:** Note that disruptive behaviour of any type during classes or online components, including inappropriate use of online forums or chat features, is unacceptable. Students found guilty of Zoom-bombing a session or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

Only students using their UWO credentials will be permitted to access the course elements. If, for privacy reasons, you wish to use a pseudonym, you must have the pseudonym pre-approved by the course coordinator before being allowed to participate in any online component.

If you are experiencing any online harassment or bullying through the course platforms, report the behaviour immediately to your instructor.

General considerations of "netiquette":

- Use your computer and/or laptop if possible (as opposed to a cell phone or tablet).
- Keep in mind the different cultural and linguistic backgrounds of the students in the course.
- Be courteous toward the instructor, your colleagues, and authors whose work you are discussing.
- Be respectful of the diversity of viewpoints that you will encounter in the class and in your readings. The exchange of diverse ideas and opinions is part of the scholarly environment. "Flaming" is never appropriate.
- Be professional and scholarly in all online postings. Use proper grammar and spelling. Cite the ideas of others appropriately.

***C. Remote Proctoring Software*:** In the event of a health-related lock-down, tests and examinations in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide personal information (including some biometric data) and the session will be recorded. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring site: remoteproctoring.uwo.ca/.

D. Complaints and Suggestions: If you have a concern about something, please let us know. We rely on your feedback. Please contact initially the person most directly concerned – this will usually be your instructor. If that is not satisfactory, or if there is something more general bothering you, talk it over with the Physics & Astronomy Department Chair or the Associate Chair of Undergraduate Affairs (for contact information see http://www.physics.uwo.ca).

10. ACCOMMODATION AND ACCESSIBILITY

A. Accommodation Policies — Students with disabilities are encouraged to contact Western's Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:
www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Accommodation_disabilities.pdf.

B. Religious Accommodation — When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing of the examination (or one week prior to the writing of the test). Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays at the following: www.edi.uwo.ca.

11. SUPPORT SERVICES

Accessibility — Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at academicsupport.uwo.ca/accessible_education if you have any questions regarding accommodations.
Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: www.uwo.ca/se/digital/.

Counseling — Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on add/drop courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: https://www.uwo.ca/sci/counselling/.

Learning Skills — Learning-skills counsellors at the Learning Development and Success (learning.uwo.ca) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Mental Health — Students who are in emotional/mental distress should refer to Mental Health @Western (www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at www.uwo.ca/health/student_support/survivor_support/get-help. To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Science Student Donation Fund — This course gratefully acknowledges support from the Science Student Donation Fund. If you are a BSc or BMSc student registered in the Faculty of Science or Schulich School of Medicine and Dentistry, you contribute to the Science Student Donation Fund, which is administered by the Science Students' Council (SSC). One or more grants from the Fund have allowed for the purchase of lab equipment integral to teaching this course. However, you may opt out of the Fee by the end of September of each academic year by completing the online form linked from the Faculty of Science's Academic Counselling site. For further information on the process of awarding grants from the Fund or how these grants have benefitted undergraduate education in this course, consult the chair of the department or email the Science Students' Council at ssc@uwo.ca. In the front pages of your lab manual, you will find examples of some the lab equipment partially funded through the Science Student Donation Fund.

Student Council services — Additional student-run support services are offered by the USC, westernusc.ca/your-services/#studentservices.

COURSE SCHEDULE (Jan - Apr)

	Week	DATE	OWL Unit	TOPIC	READING (weekly reading; due before Monday class)	SUGGESTED PRACTICE PROBLEMS (Answers to odd-numbered exercises are at the back of the book)	ASSIGNMENTS (Best 5 of 6 worth 20%; on Mastering Physics, due Friday 11:59 PM)	TUTORIALS Wednesdays 2:30-4:30 PM in PAB117; alternating weeks with Lab.	LABS (in MSA) Lab reports due Wed. 11:55 PM on Gradescope)
Electricity	1	January 6, 2025	1	Intro Electric charge & induction Electric force & Coulomb's Law	*Course outline+* 21	 Q21.1, Q21.5 Q21.10, Q21.15, Ex21.13, 21.57	**Assignment 1** Electric Charge & Electric Field **due Fri. Jan. 17, 11:59 PM**	Team Tackle - Best 3 of 4 worth 10%; Quizzes (2) - worth 20% total	Labs worth 10% total Must pass labs to pass course. Labs are in Material Science Addition
	2	January 13, 2025		Electric fields Electric dipoles Electric potential from field	21.6 21.7 23	Q21.7, Q21.19, Ex21.27, 21.63, 21.67, 21.83, 21.90 Q23.2, Q23.6, Q23.12, Q23.16, Q23.19, Ex23.7, 23.55, 23.71	**Assignment 2** Electric Potential, Electric Flux Current, Resistance, EMF, Circuits	**Tutorial 1 - Intro to Arduino**	
	3	January 20, 2025	2	Electric field from potential Electric flux, charge on a conductor Current, resistivity, conductivity, EMF	 22 25	 Q22.7, Ex22.3 Q25.4, Q25.6, Q25.12, Q25.14, 25.7, 25.31, 25.68, 25.78	**due Fri. Feb. 7, 11:59 PM**		Pre-lab Quiz on OWL **Lab 1 - Electric Circuits I** Lab report due Wed. Jan. 29
	4	January 27, 2025		Resistors in series and parallel Direct-current circuits Kirchoff's rules	26.1 26.2-26.3	26.5, 26.21, 26.29	**Assignment 3** Circuits & Capacitance	**Tutorial 2 - Team Tackle (Elec. Pot. & Ohm's)**	
	5	February 3, 2025		Capacitors R-C circuits, power systems Power systems	24.1-24.4 26.4 26.5	24.11, 24.17, 24.25, 24.27, 24.31 26.41, 26.51, 26.74, 26.87	**due Fri. Feb. 28, 11:59 PM**		Pre-lab Quiz on OWL **Lab 2 - Electric Circuits II** Lab report due Wed. Feb. 12
Magnetism	6	February 10, 2025	3	Magnetic field and force Motion of charged particles Hall effect	27	Q27.6, Q27.10, Q27.12, Q27.17 27.31, 27.33, 27.45, 27.50, 27.54, 27.55, 27.67, 27.75	**Assignment 4** Magnetic Fields & Forces, Electromagnetic Induction	**Midterm Quiz #1 (Feb. 12) on Assign. 1 & 2**	
		February 17, 2025		*SPRING READING WEEK (no classes)*					
	7	February 24, 2025		Sources of magnetic fields (currents)	28.1-28.5	Q28.4, Q28.12, Q28.14 28.9, 28.22, 28.23, 28.24, 28.55, 28.57(repl), 28.60			Pre-lab Quiz on OWL **Lab 3 - Magnetic Force** Lab report due Wed. Mar. 5
	8	March 3, 2025		Electromagnetic Induction Faraday's law, Lenz's law	29.1-29.5, 29.8	Q29.5, Q29.6, Q29.9, Q29.15 29.13, 29.33	**due Fri. Mar. 14, 11:59 PM**	**Tutorial 3 - Team Tackle (Magn. Ind.)**	
SHM & Waves	9	March 10, 2025	4	Periodic motion & simple harmonic motion Vertical SHM, SHM energy Pendulums	14.1-14.2 14.3-14.4 14.4-14.6	Q14.4, Q14.7, 14.1, 14.7, 14.11 *14.69, 14.71,* 14.75, 14.79, 14.80 Q14.11, Q14.12, 14.43, 14.73 torsion, 14.55 damping, 14.59 reson	**Assignment 5** Periodic Motion & Waves		Pre-lab Quiz on OWL **Lab 4 - Simple Harmonic Motion** Lab report due Wed. Mar. 19
	10	March 17, 2025		Mechanical waves Wave speed, energy, interference Standing waves	15.1-15.3 15.4-15.6 15.7-15.8	Q15.11, 15.7, 15.17, 15.25, 15.30, 15.46, 15.47, 15.54 15.41, 15.55	**due Fri. Mar. 28, 11:59 PM**	**Midterm Quiz #2 (Mar. 19) on Assign. 3 & 4**	
Modern Physics	11	March 24, 2025	5	Relativity	37	Q37.4 37.41, 37.43, 37.53, 37.54	**Assignment 6** Relativity & Nuclear Physics	**Tutorial 4 - Team Tackle (SHM)**	
	12	March 31, 2025		Nuclear physics Nuclear structure Radioactivity	43	Q43.9, Q.43.13, Q43.14, Q43.20 43.13, 43.17, 43.22, 43.24	**due *Fri.* Apr. 4, 11:59 PM**	**Tutorial 5 - Lab tour**	
		April 5-6, 2025 *April 7-30, 2025*		*Study Days (no classes / no exams)* *Exam period* (Final exam date TBA)					