PHY 1042 – PHYSICS II **FALL 2022**

I. Logistics

Lecture Time:	TR 2:00 PM – 3:15 PM (Blair Park 402)
Lab Time:	M 1:00 – 3:50 PM (Blair Park 407)
Instructor:	Ross Lieblappen (Ross.Lieblappen@vtc.edu) (he/him)
Office:	Clarke 220 (Randolph) & Blair Park 417 (Williston)
Office Hours:	M 12:00 – 1:00 PM, by appointment, or serendipity.
Zoom Meeting ID:	https://vsc.zoom.us/j/85608061530 for remote participation
Course Materials:	***Openstax* College Physics** by Urone and Hinrichs (free online PDF!) Scientific calculator
Catalog Description:	This course is a continuation of Physics I and emphasizes basic physical concepts that relate both to practical situations and to subsequent technical courses. The fundamental structure of the course provides the student with a firm foundation for understanding semiconductor physics. Topics include thermodynamics; wave motion; electrical and magnetic field theory; light; and solid-state physics. Prerequisite: Complete PHY 1041 Corequisite: MAT 1420 Credits: 4

II. Course Policies

Grading:

- **Class work (10%)** – includes attendance, class participation, and group work
- **Quizzes (15%)** – will be given about once a week (most Thursdays). These will be short and painless if you are keeping up with the material. The lowest quiz will be dropped, but there will be no makeup quizzes allowed.
- **Homework (15%) –** will be assigned at the start of each week and due the following Tuesday electronically on Canvas by 11:59 pm. You are encouraged to work together on homeworks but each person much turn in their own work. Please write the names of your peers that you have worked with on the top of the assignment. These problems will be graded primarily on effort and partially on accuracy as I will provide final answers beforehand. Simply writing the final answer will thus receive no credit. The lowest homework grade will be dropped if you submit all homeworks.
- **Midterm Exam 1 (10%)** – September 22
- **Midterm Exam 2 (10%)** – November 3
- **Final Exam (10%)** – December 15
- **Labs and mini-lab reports (15%) –** There will be lab every week, and you will be graded both on your participation and your lab report. You will have 1 week to write up each mini-lab report and submit electronically on Canvas prior to the start of the next lab. The lowest mini-lab grade will be dropped if you complete each lab.
- **Full labs reports (15%) –** Over the course of the semester, there will be 3 scientific paper style comprehensive lab reports. The 1st is your choice from labs 1-5, the 2nd from labs 6-9, and the 3rd from labs 10-13. You also can do unlimited rewrites, earning up to half of the points lost on the first draft. **First drafts are due Sep 29, Nov 10, and Dec 8 (or earlier). All rewrites are due Dec 1.**
- "Resurrection points:" Any points you miss on a particular midterm exam can be "resurrected," or made up, on the final. For example, if you got a 75% on midterm 2, but score 85% in section 2 of the final, your midterm 2 score will be reset to 85%. No midterm grades will be lowered by the final.

Workload Expectations: Being a college student is equivalent to a full time job (perhaps more demanding). Since this is a 4 credit course, expect to spend between 12-15 hours a week on this class alone. Each week you will have 2 lectures, a lab experiment and report, a homework assignment, textbook reading, and a quiz/exam.

Class Expectations: Students are expected to act in accordance to the rules outlined in the College Policies. In addition to these rules, you shall respect the thoughts and ideas of both the instructor and other students. Please turn off cell-phones during class. If attending remotely via Zoom, you are expected to have your camera turned on. https://www.vtc.edu/my-vermont-tech/my-vtc-home/policies-procedures

Title IX Policy: The Vermont State College System is committed to ensuring our campuses are safe places for students and employees. Faculty and staff are considered mandated reporters when it comes to experiences of interpersonal violence (sexual assault, sexual harassment, dating/domestic violence, and stalking). Disclosures of interpersonal violence will be reported to the Title IX Coordinator, who can help provide support and academic accommodations for students who have been impacted.

Academic Honesty Policy: As in all of your classes, you will be held to the standard for academic integrity at VTC outlined in the College Polices. Vermont Tech expects high standards of truthfulness and honesty in all academic work. Any student who is found guilty of academic dishonesty will face disciplinary action, up to and including dismissal from the college. Cheating refers to plagiarizing or using unauthorized aids or copying another person's work on exams, quizzes, or assignments. This also includes posting any course material online without the instructor's permission. Those caught in violation of this policy will fail this course. For further information, please see Policy T107.

Communication: Course-related communication will be via your official college email address. You are responsible for regularly reviewing email as important course information may be delivered this way. You can expect a response from emails to me within 24 hours. Note that if class is to be canceled (due to snow?), I will send an email that morning.

Course Materials and Submissions: All course related material will be posted on Canvas organized in weekly modules. All grades will be posted in the Canvas grade book. All work submitted for the course (outside of quizzes and exams) should be uploaded to Canvas as a PDF file. If Canvas is giving you an error message for some reason, you can email PDF of your work as a backup. Please contact me in the first week of the semester if you need help converting documents into PDF files.

Attendance: Students are expected to be present at all class meetings to contribute to the class discussion. Attendance will be used in assessing the 'Class Participation' score.

Late Work/Absences: Missed quizzes can not be retaken, but rather count as the dropped quiz for the semester. If an emergency arises and you are forced to miss class, please email me beforehand or stop by my office. If you are going to miss an exam, you must get permission one full class period in advance to schedule a makeup. Late work may only be turned in with prior instructor permission and will be penalized 2% per day late.

Extra Help: If you feel you need extra help, please talk to me sooner rather than later. Students receiving a grade of 70 or lower on any assignment are required to schedule a help session to review together. Failure to do so may result in dismal from the course.

Class Recordings: Students should be aware that class will be recorded and these recordings will be posted on Canvas for students to access, usually within one day. Students' voices and/or faces may appear on these videos. These videos are for course use only, and should never be shared, posted to social media, or other internet platform without the express permission of the instructor.

Face-to-Face + (F2F+): This course is part of the Vermont State University (VTSU) pilot project to explore and establish best practices for engaging remote and in-person students in the same class. Ultimately, our goal within VTSU is to allow students to get affordable, quality education, that is accessible and flexible. As a F2F+ course, you can elect to attend class in person or via Zoom at the designated class times. If attending on Zoom, you will be expected to participate fully. Please ensure that you have adequate internet connectivity to engage in the course.

Diversity, Equity, Inclusion, and Accessibility: The college has a continuing commitment to provide reasonable accommodations for students with documented disabilities. Eligible students should contact me at the beginning of the semester to discuss the support that may be needed. Students with disabilities who may need some accommodation in order to fully participate in this class are urged to contact the Disability Services Office, as soon as possible, to explore what arrangements need to be made to assure access. The Disability Services office can be reached by contacting Robin Goodall, Coordinator of Disability Services at 802-728-1278 or rgoodall@vtc.edu. I recognize the importance of diversity within our institution, and strive to create a welcoming and equitable environment for all. Please let me know how you would like to be addressed, what pronouns you prefer to use, or anything else that will make sure all students are welcomed in this class. If you feel something in this course is not accessible to you, feels inequitable, or does not adequately address your needs, please share your concerns with me or contact Kathleen Mason, DEI Coordinator for VTC at kfm09260@vtc.edu

III. Course Outcomes

The successful student will be able to:

- Demonstrate mastery of knowledge, techniques, skills, and modern tools
- Apply current knowledge and adapt to emerging applications
- Conduct, analyze, and interpret experiments and apply experimental results (EPO 2, EPO 3)
- Communicate effectively (EPO 1)
- Commit to quality, timeliness, and continuous improvement
- Predict temperature effects on material properties (EPO 3)
- Use calorimetry to predict temperature change of isolated systems (EPO 3)
- Analyze vacuum systems utilizing the ideal gas laws (EPO 3)
- Determine the experimental value of the ideal gas constant (EPO 3)
- Calculate the position, velocity, and acceleration of periodic and harmonic motion (EPO 3)
- Determine resonance frequency of sound waves, the Doppler effect, and sine waves (EPO 3)
- Determine the static charge of bodies and the relative field strength of those charges (EPO 3)
- Understand magnetic fields and their application (EPO 3)
- Investigate wave and particle properties of light (EPO 3)

IV. Lecture Schedule (Tentative)

Tuesday	Thursday	Lab Experiment (after 9/5, lab is following Monday)
08/23 – Intro, Sec. 13.1 & 13.2	08/25 – Sec. 13.2 & 13.3	Thermal Expansion
08/30 – Sec. 13.4 & 13.5	09/01 – Sec. 14.1 & 14.2	How to Write a Lab Report
09/06 – Sec. 14.3 & 14.4	09/08 – Sec. 14.5 & 14.6	Specific Heat Capacity
09/13 – Sec. 14.7 & 15.1	09/15 – Sec. 15.2, 15.3 & 15.6	Latent Heat
09/20 – Review Day	09/22 – **Exam 1**	Thermal Conduction
09/27 – Sec. 16.1, 16.2 & 16.3	09/29 – Sec. 16.4 & 16.5	Simple Harmonic Oscillation
10/04 – NO CLASS!	10/06 – NO CLASS!	
10/11 – Sec 16.6, 16.8 & 16.9	10/13 – Sec 16.10	Standing Wave
10/18 – Sec. 17.1 & 17.2	10/20 – Sec. 17.3 & 17.4	Speed of Sound in Air
10/25 – Sec. 17.5 & 18.1	10/27 – Sec. 18.2 & 18.3	Charge of an Electron
11/01 – Sec. 18.4 & 18.5	11/03 – **Exam 2**	Ohm's Law
11/08 – Sec 19.1, 19.2 & 19.3	11/10 – Ch. 20 & Ch. 21	Resistors in Series and Parallel
11/15 – Sec 22.1, 22.3 & 22.4	11/17 – Sec 22.5, 22.7 & 22.9	Electron e/m Ratio
11/22 – NO CLASS!	11/24 – NO CLASS!	
11/29 – Sec. 23.1 & 23.2	12/01 – Sec. 24.1, 25.1 & 25.2	Faraday's Law
12/06 – Sec. 25.3 & 25.5	12/08 – Sec. 25.6 & 25.7	Snell's Law/Refraction
12/13 – NO CLASS!	12/15 – **Final Exam**	

Important Dates:
09/06 – Last day to add/drop classes
09/24 – Early warnings posted
10/28 – Last day to withdraw from class
12/15 – Final Exam