
Term Information

Effective Term Spring 2025

General Information

Course Bulletin Listing/Subject Area Physics
Fiscal Unit/Academic Org Physics - D0684
College/Academic Group Arts and Sciences
Level/Career Undergraduate
Course Number/Catalog 1249
Course Title Rotational Dynamics, Thermal Physics, and Vibrational Motion
Transcript Abbreviation Thermal Phys Waves
Course Description PHYSICS 1249 is the second course in a two-course series, for students in physical sciences, mathematics, and engineering. This course covers rotational dynamics, fluids, thermal dynamics, and vibrational motion. The physics content in relation to these topics is covered in the same depth and rigor as in PHYSICS 1250. The combination of PHYSICS 1248 + PHYSICS 1249 is equivalent to PHYSICS 1250.
Semester Credit Hours/Units Fixed: 3

Offering Information

Length Of Course 14 Week, 12 Week
Flexibly Scheduled Course Never
Does any section of this course have a distance education component? No
Grading Basis Letter Grade
Repeatable No
Course Components Laboratory, Lecture
Grade Roster Component Laboratory
Credit Available by Exam No
Admission Condition Course No
Off Campus Never
Campus of Offering Columbus, Lima, Mansfield, Marion, Newark, Wooster

Prerequisites and Exclusions

Prerequisites/Corequisites Prereq: Physics 1248
Co-req: Math 1121, 1140, 1150, or higher
Exclusions Not open to students with credit for 1250.
Electronically Enforced Yes

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code 40.0801
Subsidy Level Baccalaureate Course
Intended Rank Freshman, Sophomore

Requirement/Elective Designation

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- Students will be able to use their conceptual understanding of Newton's Laws of motion along with models of motion for extended rigid bodies to solve practical problems involving a variety of contexts including matter and its interactions.
- Students will be able to apply their conceptual understanding of fluids and the Ideal Gas Law to solve problems connected to static fluids and fluids in motion. They will also use this knowledge to interpret and evaluate thermodynamic processes.
- Students will use their understanding of thermodynamic processes and the 1st and 2nd laws of thermodynamics to solve practical problems and evaluate heat engines and heat pumps.

Content Topic List Sought Concurrence

- Rotational Dynamics, Thermal Physics, and Vibrational Motion
No

Attachments

- Course_Request_Letter_PHYSICS_1248_9.pdf: Course motivation
(Cover Letter. Owner: Gramila, Thomas J)
- NMS Feedback Response.docx.pdf: Feedback Response
(Other Supporting Documentation. Owner: Gramila, Thomas J)
- Concurrence_request_November.pdf: Concurrence Request
(Concurrence. Owner: Gramila, Thomas J)
- 1249 Syllabus_rev_3.pdf: Syllabus
(Syllabus. Owner: Gramila, Thomas J)
- Revisions_Apr.pdf: Revisions Description
(Other Supporting Documentation. Owner: Gramila, Thomas J)

Comments

- Please see Subcommittee feedback email sent 4/15/24. *(by Neff, Jennifer on 04/15/2024 09:34 AM)*
- Changes to syllabus made as requested. Changes and additional info in "NMS Feedback Response" Thanks!
PS - Concurrence request made by email and then in person last November *(by Gramila, Thomas J on 03/01/2024 08:17 PM)*
- Revisions still need to be made. *(by Humanic, Thomas John on 02/29/2024 10:32 AM)*

COURSE REQUEST
1249 - Status: PENDING

Last Updated: Vankeerbergen, Bernadette
Chantal
04/18/2024

Workflow Information

| Status | User(s) | Date/Time | Step |
|--------------------|--|---------------------|------------------------|
| Submitted | Gramila, Thomas J | 12/09/2023 08:08 PM | Submitted for Approval |
| Approved | Humanic, Thomas John | 12/10/2023 08:17 AM | Unit Approval |
| Revision Requested | Vankeerbergen, Bernadette Chantal | 12/22/2023 11:50 AM | College Approval |
| Submitted | Gramila, Thomas J | 01/24/2024 12:37 PM | Submitted for Approval |
| Approved | Humanic, Thomas John | 01/24/2024 03:08 PM | Unit Approval |
| Approved | Vankeerbergen, Bernadette Chantal | 01/24/2024 03:48 PM | College Approval |
| Revision Requested | Neff, Jennifer | 02/13/2024 10:24 AM | ASCCAO Approval |
| Submitted | Humanic, Thomas John | 02/13/2024 02:57 PM | Submitted for Approval |
| Revision Requested | Humanic, Thomas John | 02/29/2024 10:32 AM | Unit Approval |
| Submitted | Gramila, Thomas J | 03/01/2024 08:17 PM | Submitted for Approval |
| Approved | Humanic, Thomas John | 03/13/2024 11:59 AM | Unit Approval |
| Approved | Vankeerbergen, Bernadette Chantal | 03/28/2024 01:21 PM | College Approval |
| Revision Requested | Neff, Jennifer | 04/15/2024 09:34 AM | ASCCAO Approval |
| Submitted | Gramila, Thomas J | 04/17/2024 05:59 PM | Submitted for Approval |
| Approved | Humanic, Thomas John | 04/17/2024 06:31 PM | Unit Approval |
| Approved | Vankeerbergen, Bernadette Chantal | 04/18/2024 08:16 AM | College Approval |
| Pending Approval | Jenkins, Mary Ellen Bigler Hanlin, Deborah Kay Hilty, Michael Neff, Jennifer Vankeerbergen, Bernadette Chantal Steele, Rachel Lea | 04/18/2024 08:16 AM | ASCCAO Approval |

Dear Committee Members,

We include in this resubmissions changes to address the one contingency and three recommendations cited in the most recent communication. All of these are addressed in the updated syllabus. This includes the inclusion of the required text on religious accommodation, a correction regarding the math prerequisites, (really appreciate that careful consideration and guidance!!), the outside of class work expectations, and finally, we note that the technology required in the course is mentioned in the syllabus, which is just access to Carmen and a scientific calculator.

Thanks for the help!

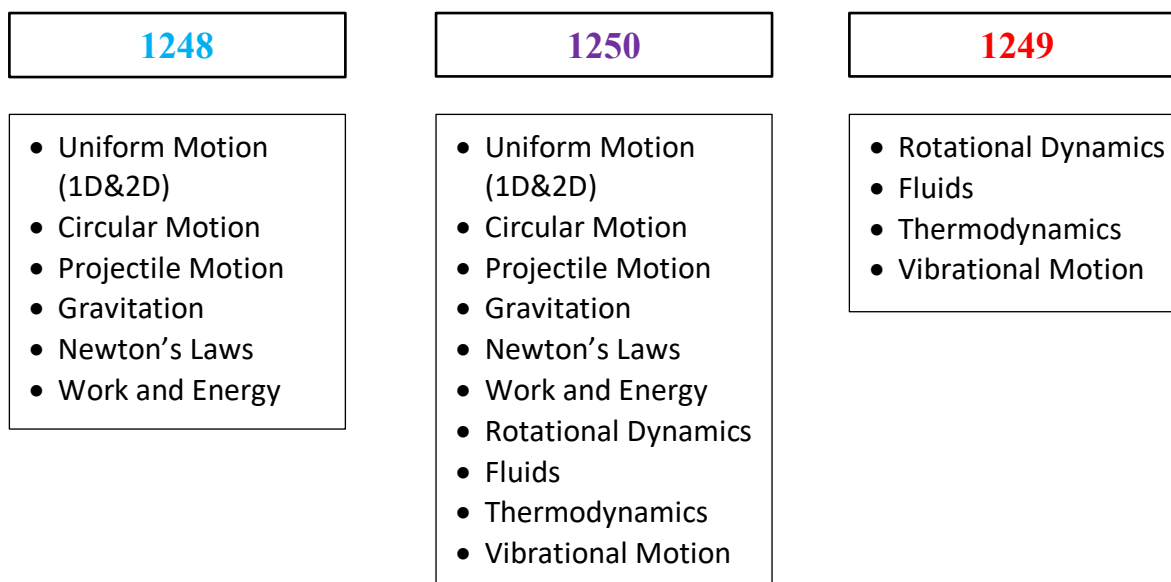
Tom Gramila and Geraldine Cochran
Physics Department



November 14, 2023

Dear Arts & Sciences Curriculum Committees,

I propose two new introductory physics courses, PHYSICS 1248 (Mechanics, Work, and Energy) and PHYSICS 1249 (Rotational Dynamics, Thermal Physics, and Vibrational Motion), as a new pathway for students who cannot immediately enroll into PHYSICS 1250 (Mechanics, Work and Energy, Thermal Physics) due to math placement and would potentially benefit from a reduced pace. The 1248 and 1249 courses combined would be equivalent in content to PHYSICS 1250 but would not require mastery or readiness for calculus. Students successful in this two-semester sequence (and 1251 math prerequisites) would subsequently be ready to take PHYSICS 1251 (E&M, Waves, Optics, Modern Physics). **Figure 1** lists the topics of the existing PHYSICS 1250 course and the proposed PHYSICS 1248 and 1249 courses.



The model for this course is based on a successful model (two-semester mechanics course) at Rutgers University (Extended Analytical Physics 1a and 1b, EAP). This course was transformed and taught by Suzanne White Brahmia who found it to be successful in supporting women and Black and Latinx students (referred to as Underrepresented Minorities) in terms of course completion and persistence. **Table 1** below (from White Brahmia, 2008) shows the passing rate for first-year physics students before and after the implementation of the EAP sequence.

| | All | Women | Underrepresented Minorities |
|----------------------------|----------|----------|-----------------------------|
| Before ('85 & '85) | 64% ± 1% | 55% ± 2% | 28% ± 1% |
| After ('92 & '93) | 76% ± 2% | 76% ± 3% | 59% ± 1% |
| Current ('07 & '08) | 73% ± 1% | 71% ± 1% | 64% ± 1% |



Table 2 (from White Brahmia, 2008) shows the completion of STEM degrees at Rutgers University within six years. Note the change in the percentage of students from minoritized ethnic/racial groups who completed their STEM degrees within six years after the implementation of this course.

| Table 2. Completion of STEM degree at Rutgers University within six years. | | | |
|--|----------|----------|-----------------------------|
| | All | Women | Underrepresented Minorities |
| Before ('85 & '85) | 45% ± 3% | 32% ± 4% | 8% ± 4% |
| After ('92 & '93) | 57% ± 3% | 59% ± 4% | 53% ± 4% |
| Current ('07 & '08) | 68% ± 2% | 70% ± 3% | 58% ± 3% |

I taught this two-semester sequence at Rutgers University Fall 2017 - Spring 2023. Table 3 below provides the performance for students in Analytical Physics 2a (Electricity and Magnetism) who took EAP with me and students who took AP (the traditional calculus-based sequence) in 2017 and 2018.

| Table 3. Performance in Physics 2a | EAP students' grades of C or better | EAP students' grades of D, F, or Withdraw | AP students' grades of C or better | AP student grades of D, F, or Withdraw |
|--|---|---|---------------------------------------|---|
| Fall 2017 | 79% (n = 27) | 21% (n = 7) | 89% (n = 505) | 11% (n = 64) |
| Fall 2018 | 85% (n = 40) | 15% (n = 7) | 94% (n = 580) | 6% (n = 35) |

Despite taking the EAP course prior to taking or passing calculus, students in EAP performed on par with students who took calculus with the majority of these students passing Physics 2a. While I did not publish findings on the effectiveness of this course, a t-test revealed that one cohort of students who took the extended two-semester sequence with me performed no differently in the Electricity and Magnetism course than their calculus-ready peers who took the traditional sequence.

The purpose of the proposed two-semester course is to provide an alternative pathway to accepted OSU students interested in physics and engineering that allows them to take physics their first year, likely shortening their time to degree.

A similar letter was sent to Dr. David Tomasko, Associate Dean for Undergraduate Education and Students Services in the College of Engineering.

Sincerely and respectfully,

Geraldine L. Cochran, PhD.
Associate Professor

Department of Physics
The Ohio State University
Cochran.604@osu.edu

Course Number: 1249

Course Title: Rotational Dynamics, Thermal Physics, and Vibrational Motion

Instructor: Dr. Geraldine L. Cochran

Office: Physics Research Building Room 1006

Email: cochran.604@osu.edu

Office Hours: TBD

Course Description: PHYSICS 1249 is the second course in a two-course series, for students in physical sciences, mathematics, and engineering. This course covers rotational dynamics, fluids, thermal dynamics, and vibrational motion. The physics content in relation to these topics is covered in the same depth and rigor as in PHYSICS 1250, but is about $\frac{1}{2}$ of the PHYSICS 1250 content.

Note: The first course in this sequence is PHYSICS 1248. The combination of PHYSICS 1248 + PHYSICS 1249 is equivalent to PHYSICS 1250.

Pre-req / Co-req: Math 1121, 1140, 1150, or higher

Pre-req: Physics 1248 is required

Course Format (3 credits): This course follows a weekly cycle of in-person components and electronic homework that should be submitted anytime before the due date.

- ❖ **Tuesday (Lecture 1, 55 min):** Interactive lectures will introduce course topics and offer an opportunity test your understanding of lecture topics without penalty.
- ❖ **Wednesday (Lab, 125 min):** During labs students work together in the same assigned discussion groups as in recitation.
- ❖ **Thursday (Lecture 2, 55 min):** Interactive lecture
- ❖ **Friday (Homework 1):** Focuses on conceptual understanding, shorter (~30 minutes)
- ❖ **Monday (Homework 2):** Focuses on problem solving, longer (~90 minutes)

Note: Exams are given on Wednesday during lab times. Exam duration is 120 minutes.

Note: For this 3 credit hour course, out-of-class work is approximately 5 hours each week.

Carmen Canvas carmen.osu.edu: Carmen is the Learning Management System (LMS) used at Ohio State. It is the central hub from which your course will be conducted. Course **announcements** will be made on Canvas. Course resources (e.g. practice exams) will be uploaded to Canvas. Please check Canvas **several times a week** to stay up-to-date.

Required Textbook, Homework System, and Lab Manual:

- ✓ *College Physics: Explore and Apply, 2e by Etkina, Planinsic, and Van Heuvelen. You do not need to buy the entire textbook. You should purchase a modified version of the textbook that only covers mechanics. You can purchase the e-text combined with Mastering Physics access from Pearson or the bookstore. Mastering Physics is required for homework.*
- ✓ *A lab manual is required.* Please contact the Barnes & Noble bookstore on High Street. *Students must bring the lab manual to labs that involve experiments.*
- ✓ *A scientific calculator is required.*

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To ensure you purchase access to the correct Mastering Physics textbook version and homework system, please, use Carmen Canvas to access Pearson and use the course key: MPCochranXXXXXX.

Your course grade is determined by the following:

Unit 1 Exam: 20% This is a 120-minute, closed book exam on **February 5.**

Unit 2 Exam: 20% This is a 120-minute, closed book exam on **March 5.**

Unit 3 Exam: 20% This is a 120-minute, closed book exam on **April 10.**

***Makeup exams are offered one week after the regularly scheduled exam. Exams that are not made up within two weeks will receive a grade of 0.**

Online Homework: 20% Online homework is due Fridays and Mondays* by 11:59 pm and through Mastering Physics. LATE HOMEWORK IS PENALIZED AUTOMATICALLY THROUGH MASTERING PHYSICS. You lose 1% for each day it is late. So, you can still submit homework late and earn partial credit. On **Sunday January 19**, homework will be due on Sunday at 11:59 pm. This will be a shorter (~30 minutes) homework assignment.

Labs: 20% Each numbered Experiment has a numbered Prelab. Prelabs are due the Sunday prior to the lab at 11:59pm. Labs should be completed in-person during lab time. Credit will not be given to labs that are not completed in-person.

Course Surveys: 2% Course presurveys are graded based on completion and not accuracy. Course surveys are administered during Lab. The surveys are counted as extra credit toward your overall grade. Pre-course surveys are held on **January 8.** Post-course surveys are held on **April 16.**

Lecture Participation – Participation in lecture as evidenced by responses to Learning Catalytics questions will be extra credit (up to 2%). The points will be tracked via Mastering Physics and Canvas throughout the semester. However, the extra credit will be finalized and added at the end of the semester. Learning Catalytics points will be administered as 0.7 for participation and 0.3 for the correct answer. So, an incorrect answer is 0.7 point. The correct answer is 1 point.

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Table of Course Weights

| | |
|----------------------------|-------------|
| Unit 1 Exam | 20% |
| Unit 2 Exam | 20% |
| Unit 3 Exam | 20% |
| Mastering Physics Homework | 20% |
| Labs | 20% |
| Total | 100% |

Course Letter Grade Assignment: Once your overall point total (final score) has been calculated using the weighting scheme shown above, your letter grade will be assigned based on the following scale:

| Total Score (%) | Letter Grade |
|--------------------------|---------------------|
| >92 | A |
| 88 ≤ score <92 | A- |
| 84 ≤ score <88 | B+ |
| 80 ≤ score <84 | B |
| 76 ≤ score <80 | B- |
| 72 ≤ score <76 | C+ |
| 67 ≤ score <72 | C |
| 62 ≤ score <67 | C- |
| 56 ≤ score <62 | D+ |
| 50 ≤ score <56 | D |
| <50 | E |

Additional Important Information:

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ACADEMIC MISCONDUCT

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

DISABILITY SERVICES

The university strives to maintain a healthy and accessible environment to support student learning in and out of the classroom. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

If you are isolating while waiting for a COVID-19 test result, please let me know immediately. Those testing positive for COVID-19 should refer to the Safe and Healthy Buckeyes site for resources. Beyond five days of the required COVID-19 isolation period, I may rely on Student Life Disability Services to establish further reasonable accommodations. You can connect with them at slds@osu.edu; 614-292-3307; or slds.osu.edu.

RELIGIOUS ACCOMMODATIONS

Ohio State has had a longstanding practice of making reasonable academic accommodations for students' religious beliefs and practices in accordance with applicable law. In 2023, Ohio State updated its practice to align with new state legislation. Under this new provision, students must be in early communication with their instructors regarding any known accommodation requests for religious beliefs and practices, providing notice of specific dates for which they request alternative accommodations within 14 days after the first instructional day of the course. Instructors in turn shall not question the sincerity of a student's religious or spiritual belief system in reviewing such requests and shall keep requests for accommodations confidential.

With sufficient notice, instructors will provide students with reasonable alternative accommodations with regard to examinations and other academic requirements with respect to students' sincerely held religious beliefs and practices by allowing up to three absences each semester for the student to attend or participate in religious activities. Examples of religious accommodations can include, but are not limited to, rescheduling an exam, altering the time of a student's presentation, allowing make-up assignments to substitute for missed class work, or flexibility in due dates or research responsibilities. If

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concerns arise about a requested accommodation, instructors are to consult their tenure initiating unit head for assistance.

A student's request for time off shall be provided if the student's sincerely held religious belief or practice severely affects the student's ability to take an exam or meet an academic requirement and the student has notified their instructor, in writing during the first 14 days after the course begins, of the date of each absence. Although students are required to provide notice within the first 14 days after a course begins, instructors are strongly encouraged to work with the student to provide a reasonable accommodation if a request is made outside the notice period. A student may not be penalized for an absence approved under this policy.

If students have questions or disputes related to academic accommodations, they should contact their course instructor, and then their department or college office. For questions or to report discrimination or harassment based on religion, individuals should contact the Office of Institutional Equity.

Policy: [Religious Holidays, Holy Days and Observances](https://oaa.osu.edu/religious-holidays-holy-days-and-observances):
<https://oaa.osu.edu/religious-holidays-holy-days-and-observances>

MENTAL HEALTH

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available 24/7 by dialing 988 to reach the Suicide and Crisis Lifeline.

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| Week | Day (Date) | Activity | Relevant Textbook Sections |
|-------------|-------------------|---|---|
| 1 | Sun (1/5) | | |
| | Mon (1/6) | | |
| | Tues (1/7) | Lecture 1: Introduction and Review | |
| | Wed (1/8) | Lab: 1248a Review & Pre-surveys | |
| | Thurs (1/9) | Lecture 2: Torque | 8.1 - 8.2 Extended Bodies at Rest and Torque |
| | Fri (1/10) | Homework 1 Due at 11:59 pm | 8.1 - 8.2 Extended Bodies at Rest and Torque |
| 2 | Sun (1/12) | | |
| | Mon (1/13) | Homework 2a Due at 11:59 pm | 8.1 - 8.2 Extended Bodies at Rest and Torque |
| | Tues (1/14) | Lecture 1: Static Equilibrium & Center of Mass | 8.3 - 8.4 Conditions of Equilibrium; Center of Mass |
| | Wed (1/15) | Lab: Calculating Center of Mass and Understanding Static Equilibrium | 8.3 - 8.4 Conditions of Equilibrium; Center of Mass |
| | Thurs (1/16) | Lecture 2: Equilibrium continued | 8.3 - 8.4 Conditions of Equilibrium; Center of Mass |
| | Fri (1/17) | Homework 2b Due at 11:59 pm | Chapter 8 |
| 3 | Sun (1/19) | Homework 3a Due at 11:59 pm | Chapter 8 |
| | Mon (1/20) | No Classes | |
| | Tues (1/21) | Lecture 1: Rotational Kinematics | 9.1 Rotational Kinematics |
| | Wed (1/22) | Lab: Rotational Kinematics & Dynamics | 9.1 - 9.2 Physical Quantities Affecting Rotational Acceleration |
| | Thurs (1/23) | Lecture 2: Newton's Laws for Rotational Motion | 9.3 Newton's Second Law for Rotational Motion |
| | Fri (1/24) | Homework 3b Due at 11:59 pm | 9.1 - 9.3 |

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|----------|--------------|---|---|
| 4 | Sun (1/26) | Prelab Due at 11:59 pm | 9.1 - 9.3 |
| | Mon (1/27) | Homework 4a Due at 11:59 pm | 9.1 - 9.3 |
| | Tues (1/28) | Lecture 1: Rotational Momentum and Energy | 9.4 - 9.5 Rotational Momentum and Rotational Kinetic Energy |
| | Wed (1/29) | Lab: Experiment IX - Rotational Dynamics | Chapter 9 |
| | Thurs (1/30) | Lecture 2: Unit 1 Exam Review Part A | Chapter 8 & 9 |
| | Fri (1/31) | Homework 4b Due at 11:59 pm | Chapter 8 & 9 |
| 5 | Sun (2/2) | | |
| | Mon (2/3) | Homework 5a Due at 11:59 pm | Chapter 8 & 9 |
| | Tues (2/4) | Lecture 1: Unit 1 Exam Review Part B | Chapter 8 & 9 |
| | Wed (2/5) | Lab: Exam 1 | Chapter 8 & 9 |
| | Thurs (2/6) | Lecture 2: Gases | 12.1 - 12.2 Structure of Matter |
| | Fri (2/7) | No Homework Due: | |
| 6 | Sun (2/9) | | |
| | Mon (2/10) | Homework 6a Due | 12.1 - 12.2 Structure of Matter |
| | Tues (2/11) | Lecture 1: Exam 1 Discussion & Gases continued | 12.3 - 12.6 Quantitative Analysis of Ideal Gas |
| | Wed (2/12) | Lab: Experiment XII: A - Ideal Gas | Chapter 12 |
| | Thurs (2/13) | Lecture 2: Static Fluids | 13.1 - 13.2 Density, pressure in fluids |
| | Fri (2/14) | Homework 6b Due at 11:59 pm | |
| 7 | Sun (2/16) | Prelab Due at 11:59 pm | |
| | Mon (2/17) | Homework 7a Due at 11:59 pm | |

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|-----------|--------------|---|--|
| | Tues (2/18) | Lecture 1: Static Fluids Continued | 13.3 - 13.5 Pressure Variation w Depth, Buoyancy |
| | Wed (2/19) | Lab: Experiment XI - Fluids | Chapter 13 |
| | Thurs (2/20) | Lecture 2: Fluids in Motion | 14.1 - 14.2 Flow rate and Fluid Speed |
| | Fri (2/21) | Homework 7b Due at 11:59 pm | 14.1 - 14.2 |
| 8 | Sun (2/23) | | |
| | Mon (2/24) | Homework 8a Due at 11:59 pm | Chapter 13 & 14.1 - 14.2 |
| | Tues (2/25) | Lecture 1: Fluids in Motion Continued | 14.4 - 14.5 Bernoulli's Equation |
| | Wed (2/26) | Lab: Fluids in Motion | Chapter 14 |
| | Thurs (2/27) | Lecture 2: Unit 2 Exam Review Part 1 | Chapters 13 & 14 |
| | Fri (2/28) | Homework 8b Due at 11:59 pm | Chapters 13 & 14 |
| 9 | Sun (3/2) | | |
| | Mon (3/3) | Homework Due at 11:59 pm | Chapters 13 & 14 |
| | Tues (3/4) | Lecture 1: Unit 2 Exam Review Part 2 | Chapters 13 & 14 |
| | Wed (3/5) | Unit 2 Exam | Chapters 13 & 14 |
| | Thurs (3/6) | No Physics Lecture Today | |
| | Fri (3/7) | No Homework Due | |
| 10 | Sun (3/9) | No Homework Due | |
| | Mon (3/10) | No Classes - Spring Break | |
| | Tues (3/11) | No Classes - Spring Break | |
| | Wed (3/12) | No Classes - Spring Break | |
| | Thurs (3/13) | No Classes - Spring Break | |
| | Fri (3/14) | No Classes - Spring Break | |
| 11 | Sun (3/16) | | |
| | Mon (3/17) | No Homework Due | |
| | Tues (3/18) | Lecture 1: Exam 2 Discussion & Thermodynamic Processes | 15.1 - 15.2 Internal Energy & Energy Changes |
| | Wed (3/19) | Lab: Thermodynamic Processes | |
| | Thurs (3/20) | Lecture 2: 1st Law of Thermodynamics Part 1 | 15.3 - 15.4 1st Law of Thermodynamics |
| | Fri (3/21) | Homework 11 Due at 11:59 pm | 15.1 - 15.4 |

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Course Title: Rotational Dynamics, Thermal Physics, and Vibrational Motion

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|-----------|--------------|---|-----------------------------|
| 12 | Sun (3/23) | Prelab Due at 11:59 pm | 15.5 Specific Heat |
| | Mon (3/24) | Homework 12a Due at 11:59 pm | 15.1 - 15.4 |
| | Tues (3/25) | Lecture 1: 1st Law of Thermodynamics Part 2 | 15.5 - 15.7 Phase Change |
| | Wed (3/26) | Lab: Experiment XII:A - Specific Heat | 15.5 Specific Heat |
| | Thurs (3/27) | Lecture 2: 2nd Law of Thermodynamics Part 1 | 16.1 Irreversible Processes |
| | Fri (3/28) | Homework 12b Due at 11:59 pm | 16.1 Irreversible Processes |
| 13 | Sun (3/30) | | |
| | Mon (3/31) | Homework 13a Due | Chapter 15 and 16.1 |
| | Tues (4/1) | Lecture 1: 2nd Law of Thermodynamics Part 2 | 16.1 - 16.3 Entropy |
| | Wed (4/2) | Lab: Heating and the Microscopic Model | 16.1 - 16.3 Entropy |
| | Thurs (4/3) | Lecture 2: Heat Engines and Pumps Part 1 | 16.4 Engines & Pumps |
| | Fri (4/4) | Homework 13b Due at 11:59 pm | Chapter 16 |
| 14 | Sun (4/6) | Prelab Due at 11:59 pm | 16.4 Engines & Pumps |
| | Mon (4/7) | Homework 14a Due at 11:59 pm | Chapter 16 |
| | Tues (4/8) | Lecture 1: Heat Engines and Pumps Part 2 | 16.4 Engines & Pumps |
| | Wed (4/9) | Lab: Experiment XII: C - Heat Engines | 16.4 Engines & Pumps |
| | Thurs (4/10) | Lecture 2: Unit 3 Exam Review Part 1 | Chapters 15 & 16 |
| | Fri (4/11) | Homework 14b Due at 11:59 pm | Chapters 15 & 16 |
| 15 | Sun (4/13) | | |
| | Mon (4/14) | Homework 15a Due at 11:59 pm | Chapters 15 & 16 |
| | Tues (4/15) | Lecture 1: Unit 3 Exam Review Part 2 | Chapters 15 & 16 |
| | Wed (4/16) | Lab: Unit 3 Exam | Chapters 15 & 16 |
| | Thurs (4/17) | Lecture 2: Vibrational Motion & Mechanical Waves | Chapter 10 |
| | Fri (4/18) | Homework 15b Due at 11:59 pm | Chapter 10 |
| 16 | Sun (4/20) | | |
| | Mon (4/21) | (Last Day of Classes) | |
| | Tues (4/22) | | |
| | Wed (4/23) | First Day of Final Exams | |
| | Thurs (4/24) | | |
| | Fri (4/25) | | |

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Fw: Introductions

Cochran, Geraldine <cochran.604@osu.edu>

Wed 2/28/2024 5:28 PM

To: Gramila, Thomas <gramila.1@osu.edu>

📎 3 attachments (834 KB)

1250a Syllabus (1).pdf; 1250b Syllabus.pdf; Course_Request_Letter.pdf;

FYI

gC

Geraldine L. Cochran, Ph.D.
(she/her/hers)

Associate Professor
Department of Physics
The Ohio State University

[PEARL - The Cochran Research Group](#)

From: Cochran, Geraldine <cochran.604@osu.edu>

Sent: Thursday, November 16, 2023 1:50 PM

To: Grzybowski, Deborah <grzybowski.3@osu.edu>; Tomasko, David <tomasko.1@osu.edu>; Sampson, Winnie <sampson.38@osu.edu>; Barclay, Lisa <barclay.4@osu.edu>

Subject: Re: Introductions

Hi Deb,

I have attached a draft of both syllabi and an updated course requester letter. I listed on the syllabus for the 1250a course the math requirement would be Math Placement Level, M (pre-calc), N (college algebra), or R (intermediate algebra). This is similar to the requirement for the course that I am basing the proposed 1250a on. For that course, students were required to place into pre-calculus and could also enroll if placed into college algebra with special permission.

Best,

gC

Geraldine L. Cochran, Ph.D.
(she/her/hers)

Associate Professor
Department of Physics
The Ohio State University

[PEARL - The Cochran Research Group](#)

From: Grzybowski, Deborah <grzybowski.3@osu.edu>
Sent: Thursday, November 16, 2023 11:47 AM
To: Cochran, Geraldine <cochran.604@osu.edu>; Tomasko, David <tomasko.1@osu.edu>; Sampson, Winnie <sampson.38@osu.edu>; Barclay, Lisa <barclay.4@osu.edu>
Subject: RE: Introductions

Geraldine,

Thank you so much for sending over the information. My big question is exactly what level of math prep do students need to be able to enter your 1250a sequence? I am cc'ing Asst Dean Lisa Barclay on this because she data on the learning opportunity that our current and future engineering students have regarding math placement.

Warmly,
Deb

From: Cochran, Geraldine <cochran.604@osu.edu>
Sent: Tuesday, November 14, 2023 2:58 PM
To: Tomasko, David <tomasko.1@osu.edu>; Sampson, Winnie <sampson.38@osu.edu>; Grzybowski, Deborah <grzybowski.3@osu.edu>
Subject: Re: Introductions

Hi All,

I've been in back-to-back meetings and finally had one that ended 5 minutes early. Attached is my draft request letter and a draft syllabus for 1250a.

Best,

gC

Geraldine L. Cochran, Ph.D.
(she/her/hers)

Associate Professor
Department of Physics
The Ohio State University

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From: Cochran, Geraldine <cochran.604@osu.edu>
Sent: Tuesday, November 14, 2023 10:30 AM
To: Tomasko, David <tomasko.1@osu.edu>; Sampson, Winnie <sampson.38@osu.edu>; Grzybowski, Deborah <grzybowski.3@osu.edu>
Subject: Re: Introductions

Sure! That works for me.

gC

Geraldine L. Cochran, Ph.D.
(she/her/hers)

Associate Professor
Department of Physics
The Ohio State University

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From: Tomasko, David <tomasko.1@osu.edu>
Sent: Tuesday, November 14, 2023 10:29 AM
To: Cochran, Geraldine <cochran.604@osu.edu>; Sampson, Winnie <sampson.38@osu.edu>; Grzybowski, Deborah <grzybowski.3@osu.edu>
Subject: Re: Introductions

No problem, it was a late request. How about you send us the documentation and we can create a plan quickly at 4pm. I'll just bug out when we're done.

Thanks,
David

David L. Tomasko
Associate Dean for Academic Programs & Student Services
Professor of Chemical & Biomolecular Engineering
The Ohio State University
If you have a zoom meeting scheduled with me: <https://osu.zoom.us/my/davidtomasko>

Executive Assistant: Winnie Sampson
sampson.38@osu.edu
614-688-4602

If one accepts that without deeply understanding and being a part of society then one cannot develop meaningful solutions to the problems it presents, then current demographic trends in engineering are an actual threat to the profession.

From: Cochran, Geraldine <cochran.604@osu.edu>
Sent: Tuesday, November 14, 2023 10:22 AM
To: Tomasko, David <tomasko.1@osu.edu>; Sampson, Winnie <sampson.38@osu.edu>; Grzybowski, Deborah <grzybowski.3@osu.edu>
Subject: Re: Introductions

I have another meeting at 3:30pm.

I understand from Tom Gramila that I should send you a copy of the syllabi and the letter explaining the courses. If it would be more helpful to work on this asynchronously, via email I can do that as well. Please, let me know what you prefer.

Best,

gC

Geraldine L. Cochran, Ph.D.
(she/her/hers)

Associate Professor
Department of Physics

The Ohio State University

[PEARL - The Cochran Research Group](#)

From: Tomasko, David <tomasko.1@osu.edu>

Sent: Tuesday, November 14, 2023 10:19 AM

To: Sampson, Winnie <sampson.38@osu.edu>; Cochran, Geraldine <cochran.604@osu.edu>; Grzybowski, Deborah <grzybowski.3@osu.edu>

Subject: Re: Introductions

All,

Is there any chance we could do this mtg at 3:30 instead of 4pm? I've have something come up at 4 that I would like to attend if possible.

David

David L. Tomasko

Associate Dean for Academic Programs & Student Services

Professor of Chemical & Biomolecular Engineering

The Ohio State University

If you have a zoom meeting scheduled with me: <https://osu.zoom.us/my/davidtomasko>

Executive Assistant: Winnie Sampson

sampson.38@osu.edu

614-688-4602

If one accepts that without deeply understanding and being a part of society then one cannot develop meaningful solutions to the problems it presents, then current demographic trends in engineering are an actual threat to the profession.

From: Sampson, Winnie

Sent: Friday, October 6, 2023 1:01 PM

To: Sampson, Winnie <sampson.38@osu.edu>; Cochran, Geraldine <cochran.604@osu.edu>; Grzybowski, Deborah <grzybowski.3@osu.edu>; Tomasko, David <tomasko.1@osu.edu>

Subject: Introductions

When: Tuesday, November 14, 2023 4:00 PM-4:30 PM.

Where: Microsoft Teams Meeting

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