

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
Prereq or concur: Math 1050, 1120, or 1121
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)
- 1249 Syllabus.pdf: Syllabus
(Syllabus. 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)

Comments

- 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)*
- Please see Subcommittee feedback email sent 2/13/24. *(by Neff, Jennifer on 02/13/2024 10:24 AM)*

COURSE REQUEST
1249 - Status: PENDING

Last Updated: Vankeerbergen, Bernadette
Chantal
03/28/2024

Workflow Information

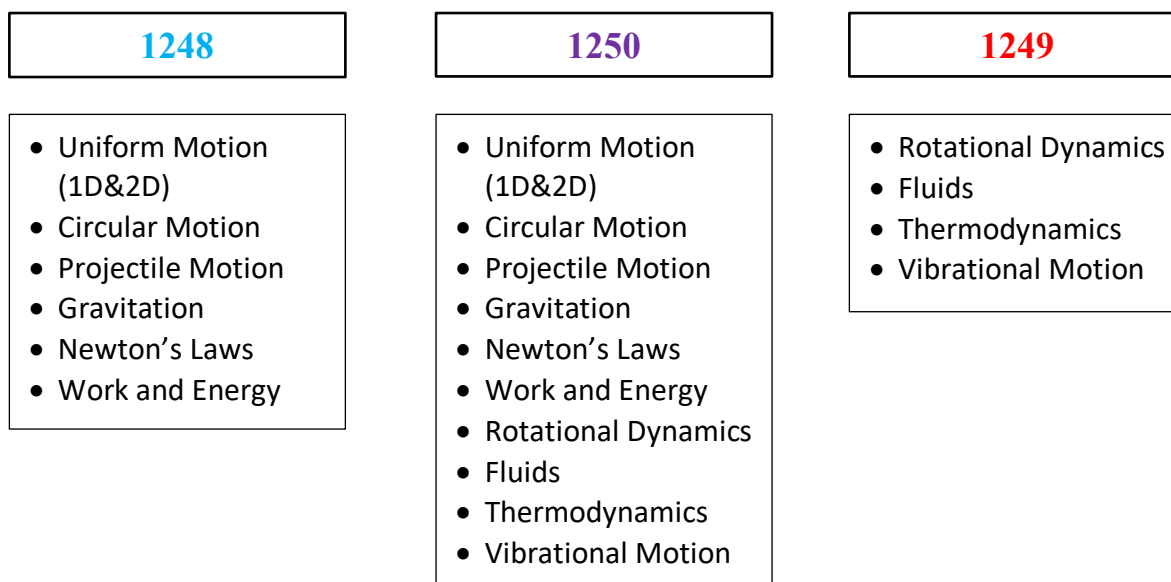
Status	User(s)	Date/Time	Step
Submitted	Gramila, Thomas J	12/09/2023 08:08 PM	Submitted for Approval
Approved	Humanic, Thomas John	12/10/2023 08:17 AM	Unit Approval
Revision Requested	Vankeerbergen, Bernadette Chantal	12/22/2023 11:50 AM	College Approval
Submitted	Gramila, Thomas J	01/24/2024 12:37 PM	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
Pending Approval	Jenkins, Mary Ellen Bigler Hanlin, Deborah Kay Hilty, Michael Neff, Jennifer Vankeerbergen, Bernadette Chantal Steele, Rachel Lea	03/28/2024 01:21 PM	ASCCAO Approval



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

Dear NMS Subcommittee members,

Thank you for the review of this course and the feedback. I have responded to the feedback in blue font below and noted any changes to the course syllabi.

Best,



geraldine Cochran

Physics Department

NMS Subcommittee Feedback

01/31/2024

1. Physics 1248 AND 1249 (new courses; 1248 requesting GEN Foundation Natural Sciences)
 - a. 1248 only: The Subcommittee requests that the department include the GEN Foundation Natural Sciences Goals with the ELOs listed in the syllabus on page 4. The GEN goals can be found in an easy to copy/paste format on the [Arts and Sciences Curriculum and Assessment Services website](#).
 - i. [Goals added to 1248 syllabus.](#)
 - b. 1248 only: The Subcommittee asks that the GE rationale for Natural Sciences ELO 1.3 from the GE submission form be added to the syllabus, as it is a great explanation for the course for the Foundation category and would be informative to students.
 - i. [Rationale for ELO 1.3 from GE submission form added to the syllabus.](#)
 - c. 1248 only: the Subcommittee notices that lecture participation is said to be worth up to 3% of extra credit in the description, but only 2% in the chart, and asks the department to correct this discrepancy. The Subcommittee also asks for more information regarding how extra credit for the design practicals will be assessed, how much can be earned, and how it will be added to the unit exam grade, since the unit exams are only worth 14% of the grade each. If a student receives a 100% on an exam and earns extra credit from the practical, will they be allowed to go over a 100%, making that exam worth more than 14% of the final grade?
[Syllabus p. 2-3]
 - i. [Description for Lecture participation updated to be 2%, removed from the table as suggested below.](#)
 - ii. [Extra credit for design practicals is determined based on the accuracy of predictions. It is calculated using percent difference or percent error depending on the assignment. To avoid confusion, I provide students with](#)

the specific instructions with each assignment rather than on the syllabus. The score that determines their accuracy is my score for when I do the design practical. To promote collaboration among the students but also encourage competition – they work collaboratively as a group to basically beat my score. The students generally have a lot of fun with this. If the student earns a perfect grade on the exam, then yes they have the possibility of earning more than 100% on the exam. There are also affirmations included on each exam as extra credit allowing students to earn more than 100% on the exam grade. I do not include this on the syllabus. We discuss in class before the exam and the instructions are on the exam.

- d. 1248 only: The Subcommittee asks that the department include information in the syllabus regarding whether the design practicals will be graded by a group submission or an individual submission that follows group work. [Syllabus p. 2]
 - i. I have added on the syllabus that students can submit their design practical assignment individually or as a group. This is something else that is explained in detail on the design practical handout rather than on the syllabus to avoid confusion as the nature of the submission is very different for each design practical. In some cases, it's a picture of a target punctured by projectiles with a circle surrounding the puncture. There will only be one per group. Other times it is written calculations and a signed sheet by the lab instructor indicating the experimental results. Students often like to submit this individually so that I can see several trials and their calculations. This level of detail on the syllabus is usually overwhelming; so I provide a detailed handout prior to the assignment and also discuss with them before they start the design practical. I allow them to turn it in individually or as a group as the grades are tracked via Canvas. However, all students usually know their grade before they leave the design practical. How the grade is calculated is provided with each design practical handout and it also includes my performance. So, they know the score they are trying to beat. We have included an example of a Design Practical handout.
- e. 1248 only: The Subcommittee asks for clarification in the syllabus addressing whether the homework will be assigned in a way that forces students to work on the weekend or if assignments will be open for completion during the week. [Syllabus p. 2]
 - i. Assignments are open ahead of time. Students have electronic access to homework assignments and can complete it on any day and at any time before the due date.
- f. 1249 only: The Subcommittee notices that a recitation grade (workshop) is mentioned in the descriptions of course assignments but is not listed under course format or in the grade breakdown table. Assuming that recitation is not an aspect

of this course, the Subcommittee requests that the department remove this reference, especially since it pushes the total grade to 120%. [Syllabus p. 2]

- i. [The reference to recitation for 1249 was in error and has been removed.](#)
- g. 1249 only: The Subcommittee requests that the department remove the GE rationale document that is present in curriculum.osu.edu since they have removed the GE request.
 - i. [This was present in error and will be removed.](#)
- h. 1248 and 1249: The Subcommittee notices that the course descriptions in both syllabi *and* both forms in curriculum.osu.edu incorporate Physics 1250 a great deal rather than explaining 1248/1249 as individual courses. Perhaps it would be appropriate to instead include a sentence or two following the descriptions stating that the courses, when combined, are equivalent to 1250, allowing the description to focus solely on the contents of the courses independently. Additionally, the Subcommittee encourages the department to reword the phrase “slower pace” in the course descriptions on the curriculum.osu.edu forms, as it may have negative connotations to students regarding their aptitudes compared to their peers taking Physics 1250. The Subcommittee asks that the department use the course descriptions to highlight the positive implications of the courses, emphasizing that each will focus more deeply on less content to allow students to develop a fuller comprehension of the material. The Subcommittee would like to emphasize the importance of addressing these concerns in curriculum.osu as students will see that description in the course search.
 - i. [I am not sure where the committee sees this on the syllabus. The course description on the syllabus mentions 1250 twice so that students know how this sequence compares to the 1250 course. The course description also lists in detail the topics covered in the proposed courses. It currently reads](#)
 1. [PHYSICS 1248 is the first course in a two-course series, for students in physical sciences, mathematics, and engineering. This course covers Newton’s Laws, work and energy. The physics content in relation to these topics is covered in the same depth and rigor as in PHYSICS 1250, but is about ½ of the PHYSICS 1250 content.](#)
 2. [“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 ½ of the PHYSICS 1250 content.”](#)
 - ii. [I do not mention “slower pace” in the syllabus or in the course description I gave; so I think this may have been input into the system I can’t access: curriculum.osu.edu; so, I will ask that this is checked prior to submission. I have removed “reduced pace” from the course request letter I created.](#)

- i. 1248 and 1249: The Subcommittee requests that the department clarify the format of the courses, specifically what is meant by the term “interactive lectures”. This reference, along with only stating that labs will be in-person, is confusing language given that the course is entirely in-person. This hints that the course may be offered as a mix of in-person and online delivery, in which case the Subcommittee would need specification of which components are in-person and which are at a distance. Depending on this ratio, the courses may need reviewed for distance learning. Ohio State Distance Education Definitions can be found on the [Administrative Resource Center website](#). [P. 1 of both syllabi]
 - i. The course is not hybrid. It requires in-person attendance. The lecture is interactive because students are required to “work” during the lecture. They solve problems open-ended and poll-style during lecture. They do this using the same system as the homework; so it is no extra charge to the students. They can use any mobile device or laptop to submit responses. Along with the design practical this is one of the things that students who have evaluated my course said they like the most. It makes the lecture go really fast because they are participating rather than just listening passively. That is why I refer to it as interactive. The first two lectures; they get to “test” the system and understand how it works responding to “fun” prompts and easy problems. By week three all students – including those that enroll late – are used to the system as I use it consistently every lecture.
- j. 1248 and 1249: The Subcommittee asks that the total grade for each course add to 100%. Extra credit can certainly still be available, but the Subcommittee requests that the department include it separately from the grade weight table, perhaps as a statement beneath that explains how much extra credit is available and how it is awarded.
 - i. Extra credit is removed from the tables.
 - ii. On 1248, the survey is adjusted to 2% so that the total is correct.
 - iii. 1248 and 1240: The extra credit is explained with the respective course components: lecture participation, lecture participation and course survey.
- k. 1248 and 1249: For the purpose of conciseness, the Subcommittee requests that the department remove Math 1140 as a prerequisite on the form in curriculum.osu.edu for 1248 (since it is already a prerequisite for Math 1141) and remove the math prerequisites altogether for 1249 (since students will have already met them before taking 1248). Additionally, the Subcommittee requests that the prerequisites listed in the 1248 syllabus reflect those on the form, as they currently are only listed in terms of math placement level, and that the math prerequisites be removed completely from the 1249 syllabus. [P. 1 of both syllabi]
 - i. I will ask that the math place prerequisite or Math 1140 is removed as a prerequisite for this course in curriculum.osu.edu. The math prerequisite for enrollment in this course should not be Math 1140. I will ask that the system list as corequisites Math 1050, 1120, or 1121. The course is

intended for students who are not quite ready to take Calculus 1, which is why I listed the math placement. I have now removed those and instead listed the corequisites Math 1050, 1120, or 1121.

1. 1248 and 1249: The Subcommittee asks that the department include a credit hour expectation statement in the syllabus.
 - i. I have added the following to the syllabi underneath the Course Format listing the amount of time for each course component:
 1. **Note:** For this 4 credit hour course, out-of-class work is approximately 6 hours each week. (1248)
 2. **Note:** For this 3 credit hour course, out-of-class work is approximately 4 hours each week. (1249)

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 Placement Level M, N or R and PHYSICS 1248.

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 4 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.***

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.

Course Number: 1249

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

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.

Course Number: 1249**Course Title: Rotational Dynamics, Thermal Physics, and Vibrational Motion****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

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Additional Important Information:

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

It is Ohio State's policy to reasonably accommodate the sincerely held religious beliefs and practices of all students. The policy permits a student to be absent for up to three days each academic semester for reasons of faith or religious or spiritual belief.

Students planning to use religious beliefs or practices accommodations for course requirements must inform the instructor in writing no later than 14 days after the course begins. The instructor is then responsible for scheduling an alternative time and date for the course requirement, which may be before or after the original time and date of the course requirement. These alternative accommodations will remain confidential. It is the student's responsibility to ensure that all course assignments are completed.

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

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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	

Course Number: 1249

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

	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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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)		

Course Number: 1249

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

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

[PEARL - The Cochran Research Group](#)

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

[PEARL - The Cochran Research Group](#)

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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