

# PHYS:4761

# Mathematical Methods of Physics I

Fall 2023

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<b>Office Hours:</b>	11:00am–12:00pm T, 10:00am–12:00pm W, or by appointment
<b>Department:</b>	Physics & Astronomy, 203 Van Allen Hall, Prof. Mary Hall Reno, Chair
<b>Catalog Description:</b>	Functions of complex variables, integration methods, linear vector spaces, tensors, matrix algebra.
<b>Lectures:</b>	Tuesday and Thursday, 9:30–10:45am 456 Van Allen Hall
<b>Required Textbook:</b>	Arfken, Weber, & Harris, <i>Mathematical Methods for Physicists</i> , 7th edition
<b>Recommended Reference:</b>	Spiegel, Lipschutz, & Liu, <i>Schaum's Outlines: Mathematical Handbook of Formulas and Tables</i> , 4th edition
<b>Web Page:</b>	<a href="http://homepage.physics.uiowa.edu/~ghowes/teach/phys4761/index.html">http://homepage.physics.uiowa.edu/~ghowes/teach/phys4761/index.html</a>
<b>Exams</b>	<b>Two Midterm Exams:</b> Tentatively on Thursday, Oct 5 and Thursday, Nov 16 <b>Final Exam:</b> To be announced by Registrar in mid-September
<b>Grading:</b>	Homework: 20% Two Midterm Exams: 20% each Final Exam: 40%
<b>Topics:</b>	Chapters 1–10 and 23 of Arfken, Weber, & Harris in PHYS:4761.
<b>Homework:</b>	Homework will be assigned weekly, due on Thursday mornings at the beginning of lecture. Late homework will not be accepted. Working through the homework problems is a critical step in learning the course material. You are encouraged to work together in groups on the homework, but each student must write his or her own solutions; you may discuss how to solve the problem together, but you may not copy another student's solution.
<b>Symbolic Solvers:</b>	The only way to learn to use advanced mathematical methods is to actually apply them yourself. Thus, you are not allowed to use symbolic solvers (Mathematica, Maple, etc.) to do your homework. You may check your answers with this software, if you wish, but the homework that you submit must have the solutions written out by hand to demonstrate that you actually solved problem yourself, otherwise you will get at most half credit for that problem.
<b>Lecture Notes:</b>	I will hand out a paper copy of the lecture notes at the beginning of each lecture so that you can focus on the material being presented and not on copying down notes from the board. PDF copies of those lecture notes will be available on my personal course website (URL above, not ICON) under the "Lectures" link in the left column.
<b>Solutions:</b>	Solutions for the homework assignments and midterm exams will be available only to enrolled students through the ICON course website under the "Files" section.

**Formula Summary Sheets:** All exams are closed book and closed notes. For each exam, you are allowed to prepare a Formula Summary Sheet to use during the exam. For each midterm exam, your Formula Summary Sheet may use two sides of 8.5 inch by 11 inch paper. You may also reference the Formula Summary Sheets from previous exams (which do not count against the two side limit). For the final, in addition to the four sides of Formula Summary Sheets from the two midterm exams, you may include one additional side of 8.5 inch by 11 inch paper (for a total of 5 sides of paper).

## College of Liberal Arts and Sciences (CLAS) Policies and Procedures

### Academic Honesty and Misconduct

All students in CLAS courses are expected to abide by the [CLAS Code of Academic Honesty](#). Undergraduate academic misconduct must be reported by instructors to CLAS according to [these procedures](#). Graduate academic misconduct must be reported to the Graduate College according to Section F of the [Graduate College Manual](#).

### Student Complaints

Students with a complaint about a grade or a related matter should first discuss the situation with the instructor and/or the course supervisor (if applicable), and finally with the Director or Chair of the school, department, or program offering the course.

Undergraduate students should contact [CLAS Undergraduate Programs](#) for support when the matter is not resolved at the previous level. Graduate students should contact the CLAS [Associate Dean for Graduate Education and Outreach and Engagement](#) when additional support is needed.

### Drop Deadline for this Course

You may drop an individual course before the deadline; after this deadline you will need collegiate approval. You can look up the [drop deadline for this course](#) here. When you drop a course, a “W” will appear on your transcript. The mark of “W” is a neutral mark that does not affect your GPA. Directions for adding or dropping a course and other registration changes can be found on the [Registrar’s website](#). Undergraduate students can find policies on dropping CLAS courses [here](#). Graduate students should adhere to the [academic deadlines](#) and policies set by the Graduate College.

### Grading System and the Use of +/-

<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>F</b>
A+	B+	C+	D+	F
A	B	C	D	
A-	B-	C-	D-	

### Date and Time of the Final Exam

The [final examination date and time](#) will be announced by the Registrar generally by the fifth week of classes and it will be announced on the course ICON site once it is known. **Do not plan your end of the semester travel plans until the final exam schedule is made public. It is your responsibility to know the date, time, and place of the final exam.** According to Registrar's final exam policy, students **have a maximum of two weeks after the announced final exam schedule** to request a change if an exam conflict exists or if a student has more than two exams in one day (see the [policy](#) here).

## **Attendance and Absences**

[University regulations require that students be allowed to make up examinations](#) that have been missed due to illness, religious holy days, military service obligations (including service-related medical appointments), or other unavoidable circumstances or University-sponsored activities. Students with UI-authorized activities must discuss their absences with the instructor as soon as possible. Religious obligations must be communicated within the first three weeks of classes.

## **Communication: UI Email**

Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community. For the privacy and the protection of student records, UI faculty and staff can only correspond with UI email addresses.

## **Mental Health Resources and Student Support**

Students are encouraged to be mindful of their mental health and seek help as a preventive measure or if feeling overwhelmed and/or struggling to meet course expectations. Students are encouraged to talk to their instructor for assistance with specific class-related concerns. For additional support and counseling, students are encouraged to contact University Counseling Service (UCS). Information about UCS, including resources and how to schedule an appointment, can be found at [counseling.uiowa.edu](http://counseling.uiowa.edu). Find out more about UI mental health services at [mentalhealth.uiowa.edu](http://mentalhealth.uiowa.edu).

[Student Care and Assistance](#) provides assistance to University of Iowa students who are experiencing a variety of crisis and emergency situations, including but not limited to medical issues, family emergencies, unexpected challenges, and sourcing basic needs such as food and shelter. More information on the resources related to basic needs can be found at [basicneeds.uiowa.edu/resources/](http://basicneeds.uiowa.edu/resources/). Students are encouraged to contact Student Care & Assistance in the Office of the Dean of Students (Room 135 IMU, [dos-assistance@uiowa.edu](mailto:dos-assistance@uiowa.edu), or 319-335-1162) for support and assistance with resources.

## University Policies

### Accommodations for Students with Disabilities

The University is committed to providing an educational experience that is accessible to all. If a student has a diagnosed disability or other disabling condition that may impact the student's ability to complete the course requirements as stated in the syllabus, the student may seek accommodations through [Student Disability Services](#) (SDS). SDS is responsible for making Letters of Accommodation (LOA) available. **The student must provide an LOA to the instructor as early in the semester as possible, but requests not made at least two weeks prior to the scheduled activity for which an accommodation is sought may not be accommodated.** The LOA will specify what reasonable course accommodations the student is eligible for and those the instructor should provide. Additional information can be found on the [SDS website](#).

### Free Speech and Expression

### Absences for Religious Holy Days

### Classroom Expectations

### Non-discrimination

### Sexual Harassment/Misconduct and Supportive Measures

### Sharing of Class Recordings (if appropriate)