Mathematical Physics (Phys 382)
Syllabus

Taner Edis

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1   How to Find Me

The best way to reach me is e-mail, *edis@truman.edu*. My office phone is 785–4583, but I don't check messages often.

My office is MG 3004, and my office hours are: Tuesdays and Thursdays: 14:00–16:20, Wednesdays: 14:00–15:20. Check my calendar to see when might be best (*edis.sites.truman.edu/schedule/*).

I will be using the web to post course-related documents. Please bookmark the Phys 382 home page (*http://edis.sites.truman.edu/math-phys/*).

2   Course Description

Mathematical Physics is a survey of basic mathematical methods useful for physicists. It requires a solid background in calculus, and previous experience with the mathematics encountered in other physics courses will be useful. I will, however, assume little beyond what you should have picked up in your introductory physics and math courses.

As with most physics courses, Math-Phys involves a fair amount of homework and individual study of the textbook. You learn mathematical methods by applying them in solving problems, more than by reading the book or understanding the lectures.

3   Schedule

Lectures: Tuesday, Thursday from 10:30 to 11:50 in MG 1099.

Recitation: Wednesday 10:30 to 11:20 in MG 3000.

Final Exam: Monday December 11, 9:30 to 11:20 in MG 1099.

4   Course materials

The textbook: Mary L. Boas, *Mathematical Methods in the Physical Sciences,* 3rd edition, John Wiley & Sons.

I do not intend to follow the textbook slavishly, though it will be your primary point of reference.

	Book Chapters	**Tests**
3	Linear Algebra	
4	Partial Differentiation	First Midterm
6	Vector Analysis	
7	Fourier Series	
8	Ordinary Differential Equations	Second Midterm
11	Special Functions I	
12	Special Functions II	
13	Partial Differential Equations	Third Midterm
14	Functions of a Complex Variable	**Cumulative Final**

5   Homework and Recitations

Homework is *important.* It will determine 30% of your final grade.

I do not mind you discussing the homework with one another as well as with me. However, I expect you to turn in the results of your own efforts—not group solutions, and certainly not solutions directly borrowed from someone

else. If I find homeworks too similar to each other, especially if they make the same mistakes, you will have some explaining to do.

I will announce when each problem set is due in class. I will also give you the "special" problems that are not from the book at that time.

All problems are 10 points, except for those *emphasized,* which are 20.

HW	Ch	Problems
1	3	6.6, 6.30, 7.29, 8.10, 9.23, 11.42, 14.2, 14.11
2	4	1.18, 5.7, 7.23, 9.2, 10.11, 11.3, 11.10, 12.13
3	6	6.13, 8.12, 10.3, 11.2
4	7	5.5, 7.12, 8.13, 9.1, 12.6, 13.12
5	8	1.4, 2.16, 3.2, 5.8, 5.35, 6.16, 7.5, 13.34
6	11	*Special*, 5.1, 11.3, 11.4
7	12	*Special*, 11.7, 12.9, 15.6, 19.3, 23.10
8	13	*4.1 (special), 6.1(a), 6.3,* 10.25
9	14	2.21, 2.39, 3.6, 3.12, 7.2, 7.15

To give you practice, we will do recitation problems a class hour or two before the homework's are due. You don't have to get these right when I call on you to do one—I will help you through wherever you might be stuck—but I will expect you to have at least taken a look at these.

Rec	Ch	Problems
1	3	6.32, 11.41
2	4	9.1, 10.14
3	6	6.9, 8.10
4	7	8.12, 12.4
5	8	3.1, 7.6
6	11	3.4, 11.5
7	12	11.10, 23.11
8	13	4.2, 10.17
9	14	3.17, 7.1

6   Exams

There will be three midterms, each determining 15% of your final grade. The final is worth 25%.

You will be allowed to consult your textbook and notes during all exams.

I care about maintaining academic integrity, and I will apply all revelant Truman policies. See the Student Conduct Code.

7   Final grades

As with every other aspect of the course, I intend to be flexible. If you get less than 50% in your overall grade, you will certainly fail, and 90% or better will certainly be an A, but otherwise, I don't want to declare rigid boundaries such as "65%-77% is a C" and so forth.

If you want to know how you are doing, or what sort of performance on the final you would need for an A, or have similar grade-related concerns, just stop by my office and ask. I should be able to give you a fair estimate of where you stand.

8   Returned Work

I will return graded work to you during recitation or class. Keep all your work in one place for reference, and for possible inclusion in your University Portfolio. I may discard any papers that have not been picked up after a week from when they were first made available to you.

9   Make-Ups

It is hard to arrange for appropriate make-ups for exams or homeworks in a course like this. So I expect you will do everything possible to turn your work in on time, and so avoid later hassle for both me and yourself.

Nevertheless, you may find you have missed something because of a legitimate excuse like being badly sick or having a death in your family. In this case, come and speak with me, and I will decide, on a case-by-case basis, how to make up what you have missed. I will typically assign you some appropriate extra work, have you take a make-up exam in my office, or something similar.