Oakland University *College of Arts & Sciences* *Department of Physics*

PHY 3510, Intermediate Theoretical Physics
4 Credit Hours
Fall 2025

Instructor: Eugene Surdutovich
E-mail: surdutov@oakland.edu
Office: 172 Hannah Hall
Office phone: 248-370-3409

Class Time: MWF, 10:40 – 11:47 pm
Office hours: MW 12-1pm or by appointment
Auditorium: 187 MSC
Textbook: Advanced Engineering Mathematics by Erwin Kreyszig, 10th edition, Wiley, 2020 – ISBN 9781119455929

Homework: Every week, I will assign homework. **Late homework will not be graded. No e-mailed homework is accepted. The homework is worth 20% of the final grade.**

Exams: There will be three exams. The material covered will be discussed on pre-exam reviews.

Make-up Policy: In order to be fair to the majority of students who take the exams on time, the general policy is: *NO make-up exams* will be given. A score of zero will be entered for missed tests. If you cannot be present for an exam due to an unavoidable emergency, contact me before the exam if possible or as quickly as possible after the exam to see if an exception can be made.

Grading: I will give you the better of the following two scores in the table on the left below:

Exam 1		**25%**	**15%**	**25%**
Exam 2		**25%**	**25%**	**15%**
Final Exam		**30%**	**40%**	**40%**
Homework		**20%**	**20%**	**20%**
Total		**100%**	**100%**	**100%**

Grading Scale:

A	**96-100**
A-	**90-95**
B+	**85-89**
B	**80-84**
B-	**75-79**
C+	**70-74**
C	**65-69**
C-	**60-64**
D+	**55-59**
D	**50-54**
F	**< 50**

Outcomes:

- Get in shape in linear algebra
- Master applications of vector calculus
- Master skills in solving ordinary differential equations
- Get familiar and use some special functions
- Learn how to use Laplace transforms
- Learn how to use Fourier series and transforms
- Get some experience with partial differential equations

PHY 3510 **Tentative Course Schedule** **Fall 2025**

Week	Day	Date	Lecture Topics	Chapters
1	W	9/3	Linear Algebra, Matrices, Linear Systems	7
	F	9/5	Ranks, Determinants …	7
2	M	9/8	Examples	7
	W	9/10	Eigen value problems	8
	F	9/12	Continued	8
3	M	9/15	Continued	8
	W	9/17	Continued	8
	F	9/19	Vector differential calculus	9
4	M	9/22	Continued	9
	W	9/24	Continued	9
	F	9/26	Continued	9
5	M	9/29	Continued	9
	W	10/1	Vector integral calculus	10
	F	10/3	Continued	10
6	M	10/6	**Exam 1**	
	W	10/8	Vector integral calculus	10
	F	10/10	Continued	10
7	M	10/13	First order ODEs	1
	W	10/15	Continued	1
	F	**10/17**	**Autumn recess, no class**	
8	M	10/20	Second order ODEs	2
	W	10/22	Continued	2
	F	10/24	Continued	2
9	M	10/27	Continued	2
	W	10/29	Systems of ODEs	4
	F	10/31	Continued	4
10	M	11/3	Continued	4
	W	11/5	Continued	4
	F	11/7	Series solutions, special functions	5
11	M	11/10	Continued	5
	W	11/12	Laplace transforms	6
	F	11/14	Continued	6
12	M	11/17	**Exam 2**	
	W	11/19	Fourier series, integrals and transforms	11
	F	11/21	Continued	11
13	M	11/24	Continued	11
	W	11/26	Continued	11
	F	11/28	**Thanksgiving recess, no class**	
14	M	12/1	PDEs	12
	W	12/3	Continued	12
	F	12/5	Continued, review	12
15	W	12/10	**12-3 p.m. Final Exam, cumulative**	