PY 501 Mathematical Physics
Syllabus
Fall Term 2019

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Office hours: We 2:30PM-4:00PM and by appointment

Goals of the course:
The course is designed to provide the students with the understanding of several
mathematical topics which play an important role in graduate physics courses.

Class meetings: MW 10:10AM-11:55AM, room PRB 150

Textbook: There is no mandatory textbook for this course.
The book “Mathematical Physics” by Eugene Butkov
will be used as main source. The book is out of print,
but a copy is available, under 24h reserve, at the Mugar library.

Additional reference books are:
"Mathematical Physics” by Arfken, Weber, and Harris;
"Mathematical Methods of Physics” by Courant and Hilbert;
"Foundations of Mathematical Physics” by Sadri Hassani.
Tentative Schedule of Lectures

9-4  Introduction to the course
9-9  Review of vector calculus
9-11 Review of vector calculus
9-16 Functions of a complex variable
9-18 Functions of a complex variable
9-23 Functions of a complex variable
9-25 Functions of a complex variable
9-30 Functions of a complex variable
10-2 Linear differential equations of second order
10-7 Linear differential equations of second order
10-9 Linear differential equations of second order
10-14 no class - Columbus Day Holiday
10-15 (Substitute Monday schedule of classes) Make-up and Review
10-16 Midterm exam
10-21 The Fourier transform
10-23 The Fourier transform
10-28 The Fourier transform
10-30 The Laplace transform
11-4 The Laplace transform
11-6 Differential equations with partial derivatives (PDEs)
11-11 PDEs
11-13 PDEs
11-18 PDEs
11-20 PDEs
11-25 PDEs
11-27 no class - Thanksgiving recess
12-2 Special functions
12-4 Special functions
12-9 Special functions
12-11 Make-up and Review

Note: Attendance at lectures is mandatory. Students who cannot attend should justify their absence by sending an email message, before the class they will miss if at all possible, to rebbi@bu.edu
Schedule of Exams

10-16, 10:10AM-11:55AM, room PRB B50  midterm exam
TBA (final exams will begin on Dec. 16 and end on Dec. 20)  final exam

Homework assignments

Homeworks will be distributed weekly. Solutions to homework problems will be graded very generously, provided that they are returned by the due date.

Grading

At the end of the course the scores for homework assignments, midterm exam and final exam will be averaged with a weight of 40% for homeworks, 20% for the midterm 20%, 40% for the final, and the average score $S$ will be converted to a letter grade as follows:

- $94 \leq S \leq 100$: A
- $88 \leq S < 94$: A-
- $82 \leq S < 88$: B+
- $76 \leq S < 82$: B
- $70 \leq S < 76$: B-
- $64 \leq S < 70$: C+
- $58 \leq S < 64$: C
- $52 \leq S < 58$: C-
- $S < 52$: F

These letter grades represent however minimum grades which students can expect solely for their results in homework and exams. Beyond homeworks and exams, students will be evaluated for motivation, class participation, attendance to office hours, and all those other factors which contribute to good course performance, and higher grades may awarded accordingly.

Graduate students should be aware that B- is the least passing grade for core graduate courses, which include PY 501.

Addendum

This addendum addresses further standard questions that students may have about the course.

1. Web site: syllabus, assignments, and other relevant material can be found at http://physics.bu.edu/~rebbi.
2. Late work: homework assignments must be returned by the deadline stated in the assignment. Extensions may be requested by sending an email message to the instructor only for very serious reasons (grave illness, etc...). Barring emergencies, the request for an extension must be sent before the deadline.

3. Independence of work: students should do their homework assignments by themselves.

4. Students’ responsibility: Students should know and understand the provisions of the CAS Academic Conduct Code. (Copies are available in room CAS 105). Cases of suspected academic misconduct will be referred to the Dean’s Office.

Relevant dates for the fall semester 2019 (from the 2019-20 Academic Calendar):
Classes Begin Tuesday, September 3
Columbus Day Holiday, Classes Suspended Monday, October 14
Substitute Monday Schedule of Classes Tuesday, October 15
Thanksgiving Recess Wednesday, November 27 - Sunday, December 1
Last Day of Classes Wednesday, December 11
Study Period Thursday, December 12  Sunday, December 15
Final Exams Begin Monday, December 16
Final Exams End Friday, December 20