

## PHY 307: MATHEMATICAL PHYSICS – Fall 2018

Instructor: Professor Dmitry Garanin

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Detailed description of this course available at professor's web site:

<http://www.lehman.edu/faculty/dgaranin>

What is needed:

1) Textbook: *Mathematical Methods of the Physical Sciences*, by Mary L. Boas

2) Lecture notes on the website. Wolfram Mathematica usage is optional.

Course content:

- Derivatives and their numerical approximation.
- Series, sums, products with convergence criteria
- Indefinite and definite integrals. Calculation using integration by parts, integration and differentiation over parameters, functions of complex variables
- Multiple integrals. Calculation in polar and spherical coordinates.
- Ordinary differential equations and systems of ordinary differential equations. Methods of analytical and numerical solving.
- Special functions
- Partial differential equations
- Fourier series and integrals. Eigenfunctions and Eigenvalues with application to partial differential equations.

There will be graded homework on the material above.

Exams and grading:

There will be two midterm exams and a final. You will be earning points for the following:

Midterm and final exams:  $15 + 15 + 15 = 45$  (max) (3 problems, 5 points each)

Homework:  $15 + 15 + 15 = 45$

Total: 90 (max).

Midterms and the final are open-book.

Your work is individual and it is illegal to share it. Identical solutions provided by groups of students are easily detectable and they are labelled as plagiarism. Plagiarism is punishable by taking off points/

Schedule of midterm tests (tentative):

Midterm 1: Th, October 11

Midterm 2: Th, November 15

