

Fall 2019
Methods in Mathematical Physics
PHYSICS 230
TR 1630 - 1745, Science 242

Instructor:

Professor Kiumars Parvin

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Office hours: TR 1530 – 1620, Sci 322; other times by appointment

Description of the course:

Following is the list of topics to be covered:

Review of infinite series

Functions of complex variables with applications

Special functions: Legendre, Bessel, and Hermite functions

Fourier transform

Laplace transform

Solution of some partial differential equations in physics

Course Prerequisites:

Physics 105B, 110B, 160, 163, and Math 133A.

Textbook:

Mathematical Methods for Physicists, A Comprehensive Guide, 7th edition, G.B. Arfkin, H.J. Weber, and F.E. Harris

Homework:

A weekly homework is assigned that should be turned in to the instructor in class on due date. *No late homework is accepted.* A minimum overall Homework Grade of 60% is required to pass the course.

Examinations:

There will be 2 midterm examinations and a comprehensive final examination. All examinations are closed book and closed notes. A formula sheet will be provided for the final exam.

Grading:

Semester numerical grade will be calculated according to the following format.

Homework:	20%
Midterm 1	25%
Midterm 2	25%
Final exam	30%

The table below shows the conversion from numerical grade to semester letter grade.

	A+	A	A-	B+	B	B-	C+	C	C-	F
Minimum Grade	95	90	85	80	75	70	64	57	50	<50

Learning Objectives:

Students who successfully complete this course will be able to:

- Calculate special definite integrals and sums using complex variable methods.
- Do differential and integral calculations involving Legendre, Bessel, and Hermite functions.
- Apply the properties of above functions in solving certain problems in quantum mechanics and electromagnetism.
- Solve special partial differential equations such as heat transfer and wave equations.
- Calculate Fourier and Laplace transform of functions and apply such transformations in solving differential equations and integrals important in certain classical and quantum mechanics problems.

University Policies

Academic integrity

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University.

The [University's Academic Integrity policy](http://www.sjsu.edu/senate/S07-2.htm), located at <http://www.sjsu.edu/senate/S07-2.htm>, requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The [Student Conduct and Ethical Development website](http://www.sjsu.edu/studentconduct/) is available at <http://www.sjsu.edu/studentconduct/>.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Policy S07-2 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the [Accesible Education Center](http://www.sjsu.edu/aec/) at <http://www.sjsu.edu/aec/> to establish a record of their disability.