

# PHYSICS 616 - Mathematical Methods

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## Text

Arfken & Weber, *Mathematical Methods of Physics*, any edition

### **Main topics**

*Infinite series*

*Asymptotic series*

*Complete sets*

*Dirac  $\delta$ -function*

*Fourier series*

*Fourier and Laplace transforms*

*Legendre functions & spherical harmonics*

*Sturm-Liouville theory & orthogonal polynomials*

*Gamma-function*

*Complex analysis*

### **Sections in Arfken**

5.1-5.7; 5.9

5.10; 11.6

9.2-9.4

1.15

14.1-14.6

15.1-15.3; 15.5; 15.8; 15.11-15.12

12.1-12.8

9.1-9.2

10.1-10.5

6.1-6.5; 7.1-7.2

## Grading

problem sets 30%  
mid-term 20%  
final 50%

## Homework

We will have one homework every two weeks.

I will be e-mailing the homework assignments.

To avoid possible inconsistencies between different editions of the textbook, the homework assignments are supplemented by a copy from the textbook. Please refer to those, rather than to a problem number.

## Mid-term

Open book, open notes.

## Final

Open book, open notes.