

312. Methods of Theoretical Physics II

Spring 2004 Syllabus

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| Professor: | Robin Côté | Office: | Tuesday & Thursday |
| Office: | P-114 | Hours: | 2:30-3:30 PM |
| Phone: | (860) 486-4912 | | or by appointment |
| email: | rcote@phys.uconn.edu | | |

Textbook: *Mathematical Methods for Physicists*, 5th ed., George B. Arfken and Hans J. Weber, Academic Press, San Diego (CA), 2001. (ISBN 0-12-059825-6).

Lectures: Tuesday-Thursday, 4:00-5:15PM, Room P-121.

Assessment: There will be weekly written homework assignments, which will constitute 40% of the grade. The remainder of the grade will be determined from one written midterm exam (25%, week of March 1), and one final exam (35%, end of semester).

Course Outline:

1. Differential Equations
2. Sturm-Liouville theory - orthogonal functions
3. Special Functions
 - Gamma function
 - Bessel functions
 - Legendre functions
 - special functions
4. Fourier series and integral transforms
5. Integral equations
6. Variations
7. Nonlinear methods (time permitting)

Other Recommended Textbooks:

- *Mathematical Physics*, Eugene Butkov, Addison-Wesley, Reading (MA), 1966. (ISBN 0-201-00727-4).
- *Mathematical Methods of Physicists*, 2nd ed., Jon Mathews and R.L. Walker, Addison-Wesley, New York (NY), 1970. (ISBN 0-8053-7002-1).