

Mathematical Methods for the Physical Sciences

Course Description: Physics 2400 (Mathematical Methods for the Physical Sciences) provides an overview of operator algebra, complex analysis, integral transformations, ordinary and partial differential equations, asymptotic expansions, and special functions with applications to various physics problems. The course introduces Computer Algebra Systems (as analytic calculators) - mathematica, maple, maxima, matlab, and sympy, and encourages the use computerized typesetting (as used by physicists and mathematicians for professional publications).

Lectures: TuTh 3:30 PM — 4:45 PM in M407, Math Building

Computer Lab: Physics Computer Lab P122, time to be arranged

Course Webpage: <http://www.phys.uconn.edu/phys2400/>

Instructor: Michael Rozman

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office hours: TuTh 4:45 PM – 6:00 PM in M407, and/or by appointment

Course Assistant: Sanka Piyadasa

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office hours: TBA

Textbook(s):

- Hung Cheng, *Advanced Analytic Methods in Applied Mathematics, Science, and Engineering*, Luban Press, 2006
- Sanjoy Mahajan, *Street-Fighting Mathematics: The Art of Educated Guessing and Opportunistic Problem Solving*, MIT Press, 2010

Other books (worth knowing/owning):

- J. Mathews and R. L. Walker, *Mathematical Methods of Physics*, 2nd edition, Benjamin, 1970
- G. B. Arfken and H. J. Weber, and F. E. Harris, *Mathematical Methods for Physicists*, 7th edition, Academic Press, 2012
- K. F. Riley, M. P. Hobson, S. J. Bence, *Mathematical Methods for Physics and Engineering*, 3rd edition, Cambridge University Press, 2006

Communications: talking in person is the preferred method to contact the instructor. If this is not feasible, email to <mailto:rozman@phys.uconn.edu> is the next option.

- please include the tag “[*phys2400*]” (without quotes, no spaces) in the subject of your email, e.g. “[*phys2400*] midterm II retake”
- please no emails larger than 50K without instructor’s explicit request/permission. Use *UConn File DropBox* <https://dropbox.uconn.edu/dropbox> or *UConn FileLocker* <http://web2.uconn.edu/filelocker/> for submitting large files
- best time to email - after 5am (the reasons to be explained in class)

Homework: Weekly homework assignments

Assignments that are hard to understand are also hard to grade properly, therefore: (a) use words and pictures to supplement your equations; (b) work must progress linearly down the page – recopy solutions that are too nonlinear.

Some reminders about minimum requirements for acceptable written assignments:

- Use letter-size paper. Use only one side of each sheet.
- Put your name and the assignment number on the top of each page.
- Staple your sheets together. (i.e. no paper clips, torn or folded corners)
- Box your final answer(s).

Highly recommended: make copies of homework assignments for your own files. (A copy machine is in the main physics office. It is available for you for free.)

Honors conversion: Students interested in honors conversion should contact the instructor during *the first week of classes*.

Exams: Two lecture-hour midterm exams and a *cumulative* final exam

Course project: will be assigned individually as a partial or full replacement of the final exam

Use of \LaTeX is strongly encouraged. Extra points will be assigned for homework prepared in \LaTeX

Grading scheme: The course grade will be calculated using the following scheme.

Homework	40%
Midterms	40%
Final exam	20%