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MAP6505: Mathematical Physics I, Syllabus

Prerequisites

UF Calculus 3 and Differential equations (necessary), UF Advanced Calculus or Mathematical Analysis or their equivalents (not mandatory)

Recommended Texts

L. Schwartz, Mathematics for Physical Sciences,
V.S. Vladimirov, Equations of Mathematical Physics,

Course Content

Functional sequences and series. Analytic functions. Review of the Riemann integration theory in Euclidean spaces. The Lebesgue theory of integration. The theory of distributions (the main part of the course). Basics equations of mathematical physics. Generalized solutions to partial differential equations. Green's functions, boundary value problems, applications to basic equations of mathematical physics. Applications to wave scattering (time permitted). The emphasis will be put on applications of the discussed mathematical concepts. However, all the concepts and statements will be rigorously formulated. If a proof is not given in class, a reference to a text where it can be found will be provided.

Written assignments and Homework

Homework: There will be three homework assignments at the last week of September, October, and November. The assignments are to be turned in, respectively, by October 1, November 1, and December 1.

Exams: There will be midterm and final exams. The midterm exam will be scheduled in mid-October at evening hours. The time and place will be posted later. You may bring up to two formula sheets (back and front) on each exam. The midterm exam covers the material discussed prior to it. The final exam covers the material discussed after the midterm. Make-ups for missed exams only with written medical excuse.

Grading

Each assignment is graded out of 100 pts (if no extra credit problem is offered). There is a small partial credit for incomplete solutions. In your course grade, the homework average counts 50% and the exam average counts 50%.

$G = 0.5\ HWA + 0.5\ EA$ where $HWA = (HW1+HW2+HW3)/3$ is the homework average and $EA = (MT+F)/2$ the exam average (MT and F are scores of the midterm and final exams). The grade thresholds

A: G>85; B+: G>75; B: G>65; C+: G>55; C: G>45; D+: G>35; D: G>30; F: G<30

The thresholds are defined up to a difficulty level adjustment. For example, the actual threshold for a B will be 65+x where -5< x < 5. The adjustment x will be set after the midterm. Minus grades will not be used.

Extra credit: One or two extra non-standard problems will be added to the exams. if solved correctly, it adds 10-20 pts toward your assignment score, i.e. the perfect score can exceed 100 pts.

Policies

Class attendance: No credit for class attendance. You may leave or come any time without asking my permission. However the class attendance is strongly recommended as the material presented does not follow any particular book, but rather is based on several texts. Your notes should be sufficient for all graded assignments. A brief description of each lecture will be posted in the homework page along with recommended texts useful for further reading on the topic discussed. If you miss a class meeting make sure you have a copy of notes either from your class mates or from me.

Special accommodation: Students requesting special accommodation for exams must first register with the Dean of Student Office. The Dean of Student Office will provide documentation to the student who must then provide this documentation to me when requesting accommodation.

Student honor code: When turning in a homework, please write "I did the assignment myself and received no help from anybody" on the front page and sign it.