Syllabus: Methods of Theoretical Physics

PH3320; Fall 2011
MWF 12:05-12:55 PM; Fisher 131

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Office hours: Thursdays, 10 AM -12 PM. Otherwise e-mail me to schedule an appointment.

Grader: Kamal Dhungana, kbdhunga@mtu.edu

Grading:
50% Final Exam
45% Quizzes (announced, usually on Friday’s, bi-weekly, ∼ 20 mins)
You will get a set of homework problems every week. The Quizzes will be HEAVILY based on them.
5% Class participation

Rules:
You are not allowed to use the book or your notes in the exam or quizzes. The information you need to solve a problem will be provided to you. No extra credit.

Grading:
Kamal Dhungana and/or I will grade the Quizzes and exams.


Course rationale: The emphasis of the course will always be how to use the mathematical methods to illuminate or describe physical phenomena (see title...). I will always try to give example applications.

Academic Integrity:
Academic integrity and honesty are central components of a student’s education, and the ethical conduct maintained in an academic context will be taken eventually into a student’s professional career. Academic honesty is essential in a community of scholars searching and learning to search for truth. Anything less than total commitment to honesty undermines the efforts of the entire academic community. Both students and faculty are responsible for insuring the academic integrity of the university.
ADA Compliance
Michigan Technological University complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act of 1990. If you have a disability and need a reasonable accommodation for equal access to education or services at Michigan Tech, please call the Dean of Students Office, at 487-2212. For other concerns about discrimination, you may contact your advisor, Chair/Dean of your academic unit or the Affirmative Programs Office, at 487-3310.

Other Tips:
- make notes during the lectures and keep them
- your written work needs to be comprehensible to anyone reading it
- think before writing
- your arguments/calculations need to be linear
- write down your work
- define, define, define
- somebody with as little time as you have is reading your solutions

Things I plan to cover (each topic will take between one to three weeks; the book chapters I am listing are the ones where you will find most of the material that I am covering):
- Infinite Series, Power Series (Boas, Ch. 1)
- Complex numbers (Boas, Ch. 2)
- Linear Algebra, Operators, Eigenvalues and -vectors, Matrices, Fitting Data (Boas, Ch.3)
- Partial Differentiation (Boas, Ch. 4)
- Grad, Div, Curl (Boas, Ch. 6)
- Fourier Series and Transforms (Boas, Ch. 7)
- Partial Differential Equations (Boas, Ch. 13)
- Special Functions, Bessel Functions (Boas, Ch.11/12)
- Probability and Statistics (Boas, Ch. 15)
A few dates:

- Sep 9 K-Day, no class
- Sep 12-14: reading assignment, Boas Ch. 1 and 2
- the first quiz will be on Sep 16
- Thanksgiving is Nov 24