

SYLLABUS TO PHY 408, INTRODUCTION TO SPECIAL AND GENERAL RELATIVITY

PHY 408: Introduction to Special and General Relativity

lectures Tue-Thu

Instructor: Prof. Edward Shuryak

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Office hours: TBD

Purpose:

This introductory course is designed to provide not only an Introduction to ideas of Relativity but also teach you usage of tensor calculus, facilitated by many exercises in class and homework problems.

There are many textbooks, but they mostly cover basic 20-th century material. The basic book for the course is "A first course in GR" by B.Schutz, third edition, which is good and detailed but written for two semesters, so we cannot really cover it all.

I expect to include modern tools to do calculations as well. We will also discuss more recent physics discoveries, say detection of Gravity Waves and issues in Cosmology. I intend to compile my lectures into a textbook, but not yet have it complete. Therefore I will provide files for *most* lecture as we go, with information collected from multiple sources.

What to Expect:

This course will require you to carry out homework assignments weekly: as usual, doing these problems reinforce the material presented at the lectures. This course will involve a lot of mathematics new to you, and usage of computer algebra (Wolfram Mathematica) without which calculations are too lengthy (even for Einstein). Please upload free version from University web and learn elementary tasks like creating a Table of expressions, taking derivatives of those, and perhaps plotting a formula.

Course Grading and Attendance:

The grading for the course will be based on the completion of weekly homework assignments (1/3), midterm (1/3) and a final exam (1/3).

Student Accessibility Support Center (SASC) Statement:

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact the Student Accessibility Support Center (SASC), ECC (Educational Communications Center) Building, room 128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and

documentation is confidential. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and the staff at the Student Accessibility Support Center (SASC). For procedures and information go to the following website: <http://www.stonybrook.edu/ehs/fire/disabilities>

Academic Integrity Statement:

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology and Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at

http://www.stonybrook.edu/commcms/academic_integrity/index.html

SPECIAL NOTE REGARDING PLAGIARISM AND DISHONESTY: All instances of suspected plagiarism or academic dishonesty will be brought before the Academic Judiciary Committee. All parties suspected (both the copier and the person who produced the original work) will be held accountable for any instance of plagiarism or dishonesty. You are responsible for protecting the security of your programming assignments by making sure that your directories are not world readable. If you are unsure how to secure your home directory see the instructor immediately.