MP 6403

Applications of the Monte Carlo Method in Medical Physics

Lecture: TBD

Instructor: TBD

Instructors Office: TBD

MP 6403: Develop familiarity with methods and tools for radiation transport calculation via Monte Carlo methods within medical physics.

Course objectives: Cover basic principles of the Monte Carlo method, Monte Carlo transport of photon and electron, various applications of the Monte Carlo method in medical physics.

Prerequisites:

Graduate Semester level NRE 6756 Minimum Grade of D and Graduate Semester level MP 6406 Minimum Grade of D.

Grade Distribution:

Midterm exam	25%
Final exam	25%
Homework	30%
Projects	20%

Course Policies and Important Notes:

- **Exams (50% of grade)**
  - Both exams will be in-person.
  - Exams are closed-book
  - No makeup exams will be given unless approved by the Office of the Dean of Students.
- **Homework (30% of grade)**
  - Students are expected to work independently. **Offering** and **accepting** solutions from others is an act of **plagiarism**, which is a serious offense and **all involved parties will be penalized according to the Academic Honesty Policy**. Discussion amongst students is encouraged, but when in doubt, direct your questions to the professor, grader, or lab assistant.

- **Project (20% of grade)**
  - There will be two projects:
    1. Writing of Monte Carlo transport code.
    2. MCNP (MCNP must be obtained from RSICC. Order this early as it takes a while to obtain).

- **Grades**
  Your final grade will be assigned as a letter grade according to the following scale:

  A 90-100%
  B 80-89%
  C 70-79%
  D 60-69%
  F 0-59%

  No curves should be anticipated for this course.

- **Attendance and Absences**
  - Class attendance is expected.
  - Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee's responsibility to get all missing notes or materials.

Academic Honesty Policy Summary:

Introduction

Scholastic Dishonesty is any act designed to give an unfair academic advantage to a student, or the attempt to commit such an act. This includes copying from another students exam; possessing or using unauthorized materials during an exam; using, buying, stealing, transporting or soliciting a test or the answer key; collaborating with another student during a test; copying someone else's homework or assignment; and permitting someone to take a test for you. The falsification of academic records is also an act of scholastic dishonesty. Students who participate in scholastic dishonesty will be reported and dealt with in accordance with Institute regulations. For information on the students responsibility in meeting the specific Georgia Tech Honor Code, see Section 3 of the Honor Code at the following website:
http://osi.gatech.edu/content/honor-code/

Authorship

The student must clearly establish authorship of a work. Referenced work must be clearly documented, cited, and attributed, regardless of media or distribution. Even in the case of work licensed as public domain or Copyleft, (See: http://creativecommons.org/) the student must provide attribution of that work in order to uphold the standards of intent and authorship.

Collaboration & Group Work

Students are expected to turn in their own work for assignments and projects, however, discussion among students on understanding of the subjects and topics is encouraged. At all times students are expected to follow the Academic Honor Code (http://www.catalog.gatech.edu/policies/honor-code/)

Extensions, Late Assignments, & Re-Scheduled/Missed Exams

Late assignments will not be accepted and missed exams will not be rescheduled without an Institute

approved absence (e.g. field trips and athletic events). Students with medical or family emergencies should contact the Dean of Students. See http://catalog.gatech.edu/rules/4/ for an articulation of the Institute rules.

Student-Faculty Expectations Agreement

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See http://www.catalog.gatech.edu/rules/22/ for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Student Use of Mobile Devices in the Classroom

Use of portable technology during class time is not permitted unless prior arrangement has been made with the course instructor. Please leave your laptop in your bag, turn off your cell phone, and resist the urge to text your mom.

Additional Course Policies

The materials used in this class, including, but not limited to, exams, quizzes, homework assignments, and lectures are copyright protected works. Any unauthorized copying of the class materials is a violation of federal law and may result in disciplinary actions being taken against the student. This includes, among other things, uploading class materials to websites for the purpose of sharing those materials with other current or future students.

Campus Resources for Students

Academic Advisors (advising.gatech.edu/) in each school help students navigate degree requirements and take advantage of campus resources to ensure their success.

The **Center for Academic Success** (success.gatech.edu/) offers a variety of academic support services to help students succeed academically at Georgia Tech (e.g. tutoring, peer-led study groups, study skills, etc.).

The **Communication Center** (communicationcenter.gatech.edu/) provides support for students with respect to developing competency and excellence in written, oral, visual, electronic, and nonverbal communication.

The **Library** (library.gatech.edu/) provides students with many services besides borrowing privileges including access to technology and technical assistance, online access to many journals and databases, and subject and personalized research assistance.

The **Office of Disability Services** (disabilityservices.gatech.edu/) ensures that students with disabilities have equal access to all programs and activities offered at Georgia Tech. They provide documentation and officially sanctioned requests for accommodation for students

OMED: Educational Services (omed.gatech.edu/) is the unit charged by Georgia Tech with the retention, development, and performance of the complete student learner who is traditionally underrepresented: African American, Hispanic, and Native American. OMED's programming and academic support services are aimed at equipping all students with strategies to navigate the Georgia Tech environment.

The **Division of Student Life** (studentlife.gatech.edu/) – often referred to as the Office of the Dean of Students – offers resources and support for all students in our community.

Counseling Center	counseling.gatech.edu/	404-894-2575

Dean of Students	studentlife.gatech.edu/	404-385-8772
GT Police	police.gatech.edu/	404-894-2500
Stamps Health Services	health.gatech.edu/	404-894-1420

Course Schedule

See associated course schedule

COVID-19 Related Expectations and Guidelines

Each of us has a responsibility to ourselves and our fellow Yellow Jackets to be mindful of our shared commitment.

We will follow Georgia Tech guidelines: https://health.gatech.edu/tech-moving-forward

Class Recordings

This is an on-campus class. As a result, students are expected to show up to class. Some, but not all classes, may be recorded. If there is a class you need recorded due to an anticipated absence, please let the instructor know in advance. This policy may change as the semester progresses.