

Fall 2023

Medical Physics Graduate Seminar
GMS 6089; Section 2023; Credits 1

CLASS MEETING INFO

3:00PM-3:50PM Wednesday
C1-003 Communicore

INSTRUCTOR

Manuel Arreola, PhD
arreom@radiology.ufl.edu
352.265.0293
G-097 Health Science Center
Office hours by appointment

TEACHING ASSISTANTS

N/A

DESCRIPTION

Students will be exposed to and updated on major concepts and issues impacting the science of Clinical Medical Physics. This includes principles, methods, and techniques (in practice and in research) for the prevention, diagnosis, and treatment of human diseases.

PRE-REQUISITES/CO-REQUISITES

N/A

OBJECTIVES

- Interact with both internal and external experienced medical physicists and other scientists/physicians that work in academia, industry, and government settings.
- Review current state-of-the-art topics that are impacting the field of medical physics.
- Discuss new and/or changing concepts in medical physics and identify potential impacts to patient care.
- Develop a thorough understanding of current research areas of interest in medical physics and assess their clinical application.
- Predict the impact of emerging innovative technologies on the field of medical physics.
- Assess gaps in education, research, and the clinical setting, as they pertain to medical physics.
- Propose future topics of discussion relevant to medical physics.

REQUIRED TEXTBOOKS & SOFTWARE

N/A

MATERIALS AND SUPPLY FEES

N/A

RECOMMENDED MATERIALS

N/A

COURSE SCHEDULE

Week	Date	Topic
Week 1	Wednesday, August 23	Dr Manuel Arreola: Overview – VIA ZOOM ONLY
Week 2	Wednesday, August 30	Aroon Pressram: Exploring Applications and Issues of Multi-Energy CT TJ Moretti: Monte Carlo Dose Evaluation for Yttrium-90 Microsphere Procedures and Associated Imaging
Week 3	Wednesday, September 6	Natalia Carrasco-Rojas: Development and application of the ROBY mesh-type phantom to radiopharmaceutical dosimetry Graham Stoddard: Characterization and Image Quality Assessment of a Novel CT Filter for Low Dose Lung CT
Week 4	Wednesday, September 13	Jared Baggett: Development and expansion of clinical decision support software for CT dosimetry Wyatt Smither: Establishing dose coefficients for common pediatric diagnostic fluoroscopic examinations in support of ICRP Task Group 113
Week 5	Wednesday, September 20	Bobby Dawson: Skeletal and Vascular Models within the ICRP Reference Phantoms Jingxi Weng: Convolutional LSTM Model for Cine Image Prediction of Abdominal Motion
Week 6	Wednesday, September 27	Bonnie President: Development of a Microscale Model of the Lung for Alpha-Particle Dosimetry Matthew Frain: Small angle light scattering (SALS) for disease tissue analysis.
Week 7	Wednesday, October 4	Keaton Reiners: TBA
Week 8	Wednesday, October 11	Ryan Stephenson: Dual Energy Comparison and DEXA Adipose Quantification in Large Animal Radiography James Perez-Sanchez: Developing a contour propagation algorithm for MR-guided radiotherapy
Week 9	Wednesday, October 18	Kati McCord: Radiosurgery for Trigeminal Neuralgia: metrics to consider for reporting outcomes and treatment planning Homa Mojabi: Low Energy vs Medium Energy Collimator for Lesion Detection in Neuroblastoma for 123I-MIBG SPECT/CT/ Imaging: A Physical and Simulated Phantom Study
Week 10	Wednesday, October 25	Jaime Torres Juarez: DTI in Heart (University Autonoma Metropolitana) Brandon Macias: Spectroscopy COVID (University Autonoma Metropolitana)
Week 11	Wednesday, November 1	Naipy Perez: Biological Equivalent Uniform Dose for Lattice Radiotherapy in Advanced Cervical Cancer Michael Vieceli: Therapeutic ratio improvement with LET-optimization in proton therapy prostate cancer treatment and disease-specific LET-dependent RBE modeling
Week 12	Wednesday, November 8	Amanda Jackson: Mixed Reality Applications in Radiation Oncology Hao-Wen Cheng: Establish the Clinical and Quality Assurance Procedure for Frame-less Stereotactic Radiosurgery using Catalyst ⁺ HD
Week 13	Wednesday, November 15	Ben Heggie: A Brief Introduction to 3D Printing and DECT phantom design and development Shorug Alshammari: TBA
Week 14	Wednesday, November 29	Abby Dare: TBA Sidney Tazeh: Building a Culture of Safety in a New Radiology or Radiation Oncology Program
Week 15	Wednesday, December 6	Doug Goddard: Photon Counting Slot Scan Radiographic System Integration for Image guided Equine Surgery

ATTENDANCE POLICY; MAKE-UP POLICY

Students are expected to attend each class period. Periods which may be missed should be brought to the attention of the Instructor as far in advance of the class period as possible. In the event of an unexcused absence, it is the student's responsibility to obtain and review the material that was covered during that class period. Students must participate in each laboratory exercise.

Excused absences must be consistent with university policies in the Graduate Catalog and require appropriate documentation:

<https://gradcatalog.ufl.edu/graduate/>

CLASS EXPECTATIONS

Class distractions such as cell phones and pagers are unacceptable. Students will ensure that any such devices that are brought into the classroom will be turned off, or operated in a silent mode, during the class period.

EVALUATION METHODS

Assignment	Percentage of Final Grade
Timely Attendance	50%
Active Participation	50%
	Total: 100%

GRADING POLICY

Percent	Grade
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
59 & below	E

More information on the UF grading policy may be found in the UF Graduate Catalog: <https://gradcatalog.ufl.edu/graduate/>

STUDENTS REQUIRING ACCOMMODATIONS

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center: <https://disability.ufl.edu/get-started/>. Once registered, students will receive an accommodation letter which must be presented to, and discussed with, the instructor when requesting accommodation. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

COURSE EVALUATIONS

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

UNIVERSITY HONESTY POLICY

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Student Conduct Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. If you have any questions or concerns, please consult with the instructor or TAs in this class.

SOFTWARE USE

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

STUDENT PRIVACY

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

CAMPUS RESOURCES

Health and Wellness

U Matter, We Care

Email: umatter@ufl.edu, Phone: 352-392-1575; Website: <https://umatter.ufl.edu/>

Counseling and Wellness Center

Phone: 352-392-1575; Website: <https://counseling.ufl.edu/>

Student Health Care Center:

Phone: 352-392-1161; Website: <https://shcc.ufl.edu/>

University Police Department

Phone: 352-392-1111 (or 911 for emergencies); Website: <http://www.police.ufl.edu/>

UF Health Shands Emergency Room/Trauma Center

Phone: 352-733-0111; Website: <https://ufhealth.org/emergency-room-trauma-center>

Location: 1515 SW Archer Road, Gainesville, FL, 32608

GatorWell Health Promotion Services

Phone: 352-273-4450; Website: <https://gatorwell.ufsa.ufl.edu/>

Academic Resources

E-learning Technical Support

Email: helpdesk@ufl.edu; Phone: 352-392-4357; Website: <https://helpdesk.ufl.edu/>

Career Connections Center

Phone: 352-392-1601; Website: <https://career.ufl.edu/>

Location: Reitz Union, Suite 1300

Library Support

Website: <https://uflib.ufl.edu/>

Teaching Center

Phone: 352-392-2010 or 352-392-6420; Website: <https://teachingcenter.ufl.edu/>

Location: Broward Hall

Writing Studio

Phone: 352-846-1138; Website: <https://writing.ufl.edu/writing-studio/>

Location: 2215 Turlington Hall

Student Complaints (On-Campus)

Website: <https://sccr.dso.ufl.edu/policies/student-honor-%20code-student-conduct-code/>

Student Complaints (On-Line)

Website: <https://distance.ufl.edu/state-authorization-status/#student-complaint>