

**IMPORTANT:** This syllabus form should be submitted to OAA ([gsbs\\_academic\\_affairs@uth.tmc.edu](mailto:gsbs_academic_affairs@uth.tmc.edu)) a week before the start of each semester.

**NOTE to STUDENTS:** If you need any accommodations related to attending/enrolling in this course, please contact one of the Graduate School's 504 Coordinators, Cheryl Spitzenberger or Natalie Sirisaengtaksin. We ask that you notify GSBS in advance (preferably at least 3 days before the start of the semester) so we can make appropriate arrangements.

<p>Term and Year: <b>Fall 2023</b></p> <p>Course Number and Course Title: <b>GS02 1093: Introduction to Medical Physics I: Basic Interactions</b></p> <p>Credit Hours: <b>3</b></p> <p>Meeting Location: <b>MD Anderson Main Main Bldg.</b></p> <p>Building/Room#: <b>FCT8.6091 (Radiation Physics Classroom)</b></p> <p>WebEx/Zoom Link: <b>N/A</b></p>	<p>Program Required Course: <b>Yes</b></p> <p>Approval Code: <b>Yes</b> (If yes, the Course Director or the Course Designee will provide the approval code.)</p> <p>Audit Permitted: <b>Yes</b></p> <p>Classes Begin: <b>August 31, 2023</b></p> <p>Classes End: <b>December 11, 2023</b></p> <p>Final Exam Week: <b>December 11-15, 2023</b></p>
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**Class Meeting Schedule**

Day	Time
<b>Thursdays</b>	<b>2:00-3:30 PM</b>

<p><b>Course Director:</b></p> <p>Name and Degree: <b>Kent Gifford, PhD</b></p> <p>Title: <b>Associate Professor</b></p> <p>Department: <b>Radiation Physics</b></p> <p>Institution: <b>MDACC</b></p> <p>Email Address: <a href="mailto:kagifford@mdanderson.org">kagifford@mdanderson.org</a></p> <p>Contact Number: <b>(713) 563-2596</b></p> <p><b>Course Co-Director/s:</b> (if any)</p> <p>Name and Degree: <b>N/A</b></p> <p>Title:</p> <p>Department:</p> <p>Institution:</p> <p>Email Address:</p> <p>Contact Number:</p>	<p><b>Instructors:</b></p> <p>1. <b>Kent Gifford, PhD</b> Institution: MD Anderson Email Address: <a href="mailto:kagifford@mdanderson.org">kagifford@mdanderson.org</a></p> <p>2. <b>Leonard Che Fru, PhD</b> Institution: MD Anderson Email Address: <a href="mailto:LChe@mdanderson.org">LChe@mdanderson.org</a></p> <p>3. <b>Surendra Prajapati, PhD</b> Institution: MD Anderson Email Address: <a href="mailto:Sprajapati1@mdanderson.org">Sprajapati1@mdanderson.org</a></p> <p>4. <b>Sara Thrower, PhD</b> Institution: MDA Anderson Email Address: <a href="mailto:sathrower@mdanderson.org">sathrower@mdanderson.org</a></p>
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**NOTE:** Office hours are available by request. Please email me to arrange a time to meet.

**Teaching Assistant:** (if any)

N/A

Name and Email Address

**Course Description:**

This semester covers the basic interactions of ionizing and non-ionizing radiation important in medicine. Topics include production of radiation; photon, charged-particle, and neutron interactions; cavity theory; radiation interactions with solids; and ultrasound interactions.

**Textbook/Supplemental Reading Materials**

The required text for the course is *Introduction to Radiological Physics and Radiation Dosimetry*, by F.H. Attix.

**Course Objective/s:**

The purpose of this course is to provide the medical physics student with an introduction to radiation and its use in medicine. Topics covered include fundamental quantities and units, interactions of radiation with matter, and basic dosimetry.

***Specific Learning Objectives:***

1. Define the most common units of radiation measurements and identify how the definitions are connected to the measurements.
2. Learn to relate the various attenuation coefficients to the deposition of energy.
3. Learn to relate the various photon and charged particles interaction processes to the deposition of energy.
4. Identify the pathways of radioactive decay and indicate where the emitted radiation deposits energy.

**Student Responsibilities and Expectations:****Lectures:**

The lectures are online on the CANVAS course website. Homework problems will be presented by each student, concepts and unclear points will be discussed by all during class.

**The need for care:**

Medical physics is a discipline in which care, and meticulousness is essential, with dire consequences for sloppy work.

**Before each class:**

In order to make most effective use of class time, it is essential for you to come to class prepared to discuss the class material. Before class, please view the lectures, take the post-lecture quizzes, and complete any homework due. If any points presented in the lecture are unclear to you, please submit your questions via email or phone and we will address the questions in class.

**During class:**

Please come to class prepared to present a homework problem. Medical physics is a discipline where interpersonal interaction and thinking "on your feet" is essential. We will also discuss pertinent highlights from the lectures and unclear points.

**Grading System: Letter Grade (A-F)**

**Student Assessment and Grading Criteria :**

**Grading is done on an absolute basis; therefore, there is no grading on a curve. Homework to be discussed in the Thursday class will be due before the start of the class. Any homework turned in after this time will not be graded.**

Percentage	Description
Post-lecture Quizzes ( 20 %)	
Homework ( 20 %)	
Midterm Exam ( 30 %)	Take home
Final Exam ( 30%)	Take home, Comprehensive

**CLASS SCHEDULE**

<b>Week</b>	<b>Date</b>	<b>Material</b>	<b>Faculty</b>
1	31-Aug	Chapters 1,2,3 (Attix)	Prajapati
2	7-Sep	Chapters 1,2,3 (Attix)	Prajapati
3	14-Sep	Chapters 1,2,3 (Attix)	Prajapati
4	21-Sep	Chapters 7,8 (Attix)	Che Fru
5	28-Sep	Chapters 7,8 (Attix)	Che Fru
6	5-Oct	Chapters 7,8 (Attix)	Che Fru
7	12-Oct	Chapters 7,8 (Attix)	Gifford
8	19-Oct	Chapters 7,8 (Attix), MIDTERM	Gifford
9	26-Oct	Chapters 7,8 (Attix)	Thrower
10	2-Nov	Chapters 4,6 (Attix)	Thrower
11	9-Nov	Chapters 4,6 (Attix)	Thrower
12	16-Nov	Chapter 16 (Attix, Krane)	Thrower
13	23-Nov	NO CLASS THANKSGIVING	
14	30-Nov	Chapter 16 (Attix, Krane)	Thrower
15	7-Dec	Chapter 10 (Attix)	Gifford
16	11-Dec	FINAL EXAM	Gifford

KG/jal