

**University of California at San Francisco/San Francisco State University
Graduate Program in Physical Therapy**

COURSE TITLE: PT 210 Radiology for Physical Therapists

TERM: Spring 2019

CREDIT: 2 quarter units

CLOCK HOURS: 21.5

SCHEDULE: Variable

PREREQUISITE: Students must be enrolled in the UCSF/SFSU Program in Physical Therapy or the UCSF PhD in Rehabilitation Science.

COURSE DIRECTOR: Richard Souza, PT, PhD, ATC, CSCS (richard.souza@ucsf.edu)

GUEST LECTURERS: Alyssa Bird, PhD student
Matt Bucknor, MD
Myriam Chaumeil, PhD
Gatateia Kazakia, PhD
Roland Krug, PhD
Anthony Luke, MD
Sri Nagarajan, PhD
Rina Patel, MD
Magdalena Posadzy, MD
Koren Roach, PhD

TEACHING ASSISTANT: Alyssa Bird (alyssa.bird@ucsf.edu)

COURSE DESCRIPTION:

The purpose of this class is to develop skills in looking at musculoskeletal images. These skills are beneficial to the therapist to better understand the structures involved with any given pathology. In addition, these skills are necessary when patients bring their radiographs and images to their PT visit. The tests are generally ordered by a physician and interpreted by a radiologist. Patients frequently want to be sure the therapist understands the severity of the musculoskeletal problem and considers this when designing intervention.

COURSE OBJECTIVES:

Students will be expected to demonstrate mastery of: anatomical concepts and terms; surface anatomy; cross-sectional and 3-dimensional relationships. Students will be expected to begin to analyze joint motion in terms of functional anatomy and begin to apply their knowledge in clinical assessments and differential diagnosis in a case study format. Therefore, students will be directed to integrate the material presented with that of PT 201, Clinical Kinesiology and PT Assessment.

Upon successful completion of PT 210 the student will be able to:

1. Use imaging terminology appropriately, expressively and receptively with imaging professionals, and discuss the differences between various imaging modality terminologies. (CC-5.17; CC-5.31)
2. Identify and categorize normal tissues as well as abnormalities on radiographic images (including but not limited to fractures, osteophytes, and joint dislocations). (CC-1; CC-3; CC-5.31)
3. Understand the basic physics of magnetic resonance imaging (MRI), it's advantages and limitations, and be able to discuss briefly how MR images are acquired, and how key parameters such as repetition time (TR) and echo time (TE) influence image weighting. (CC-3)
4. Understand the basic physics of computerized tomography (CT), it's advantages and limitations, and be able to discuss briefly how CT images are acquired. (CC-3)
5. Identify and discuss normal anatomy and specific pathology of the knee, shoulder, spine and hip joints using x-ray, MR, and CT imaging. (CC-5.31)
6. Understand the uses and capabilities of ultrasound imaging and discuss the uses of ultrasound imaging in the physical therapy setting. (CC-5.30 b, e, f, k)
7. Be able to synthesize important characteristics of a patient case report to determine which of the musculoskeletal imaging modalities (x-ray, MRI, CT, ultrasound) would be more optimally suited to the needs of the imaging study. (CC-5.19)
8. Understand the various types of functional brain imaging, the capabilities and limitations of each, and be able to evaluate the most appropriate imaging modality for a given case need. (CC-5.19)
9. Discuss current research on functional brain imaging (including FMRI, TMS and MEG) and relate these topics to physical disability and recovery. (CC-1; CC-3; CC-5.30 l, n)
10. Describe advances in imaging of articular cartilage, understand the capabilities and limitations of these techniques, and discuss how these advances can be used by physical therapist to monitor or intervene on cartilage disease. (CC-1; CC-3; CC-5.39 a)

RECOMMENDED TEXTBOOKS AND READINGS:

Terry R. Malone, Charles Hazle, Michael L Grey. Imaging in Rehabilitation, McGraw Hill Medical, New York, 2008, Chapters 1, 2, 3, 4, 5, 8, 9, 11

Lynn N. McKinnis. Fundamentals of Musculoskeletal Imaging Contemporary Perspectives in Radiology, FA Davis Company, Philadelphia, 2005, 2nd edition

See Chapters 1, 2, 3, 4, 7, 8, 9, 10, 12, 15

Diagnostic Imaging: Orthopaedics. Stoller, Tirman, Bredella. Elsevier Publishers, Salt Lake City, 2008.

TEACHING METHODS AND LEARNING EXPERIENCES:

Didactic lectures accompanied by slides, in-class imaging demonstrations, handouts, relevant published research and case studies are primary means of the learning experience in this course. Final presentation and project utilize small groups and require mastery of imaging content and problem solving in a case study format.

METHODS OF EVALUATION:

Required readings, exercises

Each student is expected to attend all of the lectures. The powerpoint slides will be placed on-line for the current lecture.

Quizzes

There will be 4 quizzes given during the semester. You can drop your quiz with the lowest score, so your quiz grade will only include your 3 highest scores. While quizzes will focus primarily on the material covered since the previous quiz, information from previous quizzes may be used, especially material from the “Principles of ...” lectures. Make-up quizzes for students that do not attend class the day of the quiz are generally not allowed although the situation will be considered on a case-by-case basis.

Final Examination

Students will be divided into randomly assigned groups to complete a case-study examination and present their findings to the class. A written case report will be required and due on 5/14/19. The presentations and reports should include assessment of the imaging provided (normal and abnormal structures), as well as implications for rehabilitation. See final examination for details.

Grading

Comprehension of course material is evaluated by quizzes, participation in class and final examinations. Grading for PT 210 is based on a total of 200 possible points:

Quizzes	60 points
Class Presentation - written	70 points
Class Presentation - oral	70 points

Letter grades will be assigned on a straight scale as established by the UCSF/SFSU Graduate Program in Physical Therapy of A (90-100%), B (80-89.9%), C (70-79.9%), D (60-69.9%), F (50-59.9%), and I (incomplete).

CULTURAL INCLUSION:

As a part of the mission statement of the UCSF/SFSU DPT Program, we value diversity, inclusion and cultural sensitivity. Our courses are designed to be a welcoming environment for students and instructors to learn from each other to ensure the best learning experience. As we continue to learn and grow in our professional development, we aim to use language that is inclusive of the following: race, color, national origin, religion, sex, gender, gender expression, gender identity, pregnancy, physical or mental disability, medical condition (cancer-related or genetic characteristics), genetic information (including family medical history), ancestry, marital status, age, sexual orientation, citizenship, and/or service in the uniformed services. Students are encouraged to provide feedback to the Course Director throughout the duration of the course. Students are also invited to share with the Course Director ways in which cultural diversity can be added or integrated into the course material. Should a student fear retaliation for bringing forward suggestions, s/he may share comments with the Class Diversity Liaison who will then relay this information anonymously to the Course Director.

DISABILITY SERVICES:

Student Disability Services at UCSF

UCSF/SFSU is committed to providing equal access to students with documented disabilities. To ensure your access to this course and to the program, students with disabilities may contact Student Disability Services (SDS). There you can engage in a confidential conversation about the process for requesting reasonable accommodations in the classroom and clinical settings. Accommodations are not provided retroactively. Students are encouraged to register with SDS as soon as they begin the program. More information can be found online at sds.ucsf.edu or by contacting SDS at 415-502-6595, studentdisability@ucsf.edu.

- Homepage: <https://sds.ucsf.edu/>
- How to Register: <https://sds.ucsf.edu/register>

- Processes for Current Students in Physical Therapy: <https://sds.ucsf.edu/Physical-Therapy>

Disability Access at SFSU

Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center (DPRC) is available to facilitate the reasonable accommodations process. The DPRC is located in the Student Service Building and can be reached by telephone (voice/415-338-2472, video phone/415-335-7210) or by email (dprc@sfsu.edu). For more information on the process, refer to the DPT Student Handbook.

ACADEMIC INTEGRITY:

Students are expected to follow the student conduct and non-plagiarism standards cited in the UCSF Policy on Student Conduct & Discipline and the SFSU Bulletin. It is also the expectation that students will not attempt to gain an unfair advantage over their classmates by: (a) stealing, reproducing, circulating, or otherwise gaining access to written and/or practical examination materials prior to the time authorized by the instructor; (b) unauthorized collaborating on an academic assignment (c) retaining, possessing, using, circulating, or discussing previously given written and/or practical examination materials (including case scenarios and test materials to be returned to the instructor at the conclusion of the examination; or (d) intentionally obstructing or interfering with another student's academic work. The use of electronic media (e.g., cell phones, tablets) is prohibited during examinations unless authorized by the instructor/proctor.

As members of an established profession, the program faculty and students will adhere to the APTA Code of Ethics. Any violation of that code is subject to disciplinary action by the Academic Review Committee up to and including dismissal from the program. Students are expected to work independently and honestly on all examinations and report those who appear to be cheating.

STUDENT DISCLOSURES OF SEXUAL VIOLENCE:

Student disclosures of sexual violence

SF State fosters a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. If you disclose a personal experience as an SF State student, the course instructor is required to notify the Title IX Coordinator by completing the report form available at <http://titleix.sfsu.edu>, emailing vpsaem@sfsu.edu or calling 338-2032.

To disclose any such violence confidentially, contact:

- The SAFE Place - (415) 338-2208; http://www.sfsu.edu/~safe_plc/
- Counseling and Psychological Services Center - (415) 338-2208; <http://psyservs.sfsu.edu/>
- For more information on your rights and available resources: <http://titleix.sfsu.edu>

COURSE SCHEDULE:

We are fortunate to have many different experts providing the lectures in this class. This is both good as well as challenging to coordinate their schedule with the class schedule. With new Fellows coming to UCSF, it does require some flexibility. However, I appreciate the participation of faculty in the Department of Radiology and Orthopaedic Surgery.

Date	Time	Place	Instructor	Topic
Mon Apr 8	9-11	GEN 114	Alyssa Bird, PhD student Galatea Kazakia, PhD	ABC's of Skeletal Radiology Principles of CT (Residents attend)
Wed Apr 10	10-12	GEN 114	Roland Krug, PhD	Principles of MRI
Mon Apr 15 QUIZ	9-11	GEN 114	Anthony Luke, MD	Ultrasound Physics and Lab Demonstration (Residents attend)
Mon Apr 22	9-11	GEN 114	Magdalena Posadzy, MD	Spine Imaging
Wed Apr 24 QUIZ	9-11	Parn N-217	Rina Patel, MD	MRI Knee and Hip (Residents attend)
Mon Apr 29	9-11	GEN 114	Matt Bucknor, MD	MRI Shoulder (Residents attend)
Mon May 6 QUIZ	9-11:30	MH- 1401/ 1402	Alyssa Bird, PhD student Koren Roach, PhD	Cartilage and Muscle imaging PET MR for bone metabolism
Wed May 8	9-12	GEN 114	Myriam Chaumeil Sri Nagarajan, PhD	Brain Imaging Basics Functional brain imaging
Tues May 14 QUIZ	8-10:30	GEN 114		Class Presentations of Case Studies
Wed May 15	9-11:30	GEN 114		Class Presentations of Case Studies

GH = Genentech Hall (Mission Bay)

MH = Mission Hall (Mission Bay)

N = Nursing Building (Parnassus)