

PT 645: Medical Imaging for Physical Therapists
Summer 2024
M-W3-4pm/9-10am; W202



COURSE DESCRIPTION:

An introduction to medical imaging and an overview of its role in the health care delivery system. Topics include principles of medical imaging, imaging equipment, diagnostic imaging, and application of imaging principles to inform physical therapy care.

CAPTE Standards & Elements:

Standard 7: Elements

DEPARTMENT OFFERING THE COURSE:

UND School of Medicine and Health Sciences - Department of Physical Therapy

CREDIT HOURS: 2 Credit Hours

ABOUT THE PROFESSOR & CONTACT INFORMATION:

Name: David Relling, PT, PhD; Gary Schindler PT, DPT, PhD, Steve Halcrow, PT, DPT.

Phone: (701)777-2831

Email: david.relling@und.edu ; gary.schindler@und.edu ; steven.halcrow@und.edu

Office Location: UND-SMHS Suite E321

Student Hours: By appointment, email or before/after class

COURSE CONTACT HOURS:

Schedule (Clock hours): 16 hours

Lecture: May 28-June 7 M-W 3-4pm; June 10-July 19 MW 9-10am

Laboratory: N/A

COURSE PREREQUISITES:

Registered in the professional Physical Therapy program.

COURSE OBJECTIVES:

After successfully completing this course, you should be able to:

1. Describe the terminology utilized in radiology departments.
2. Explain the basic theory and use of musculoskeletal diagnostic imaging methods, which include plain radiographs, MRI, CT scan, Diagnostic/MSK US, Fluoroscopy and Bone Scan.
3. Identify the risks associated with various diagnostic imaging methods.
4. Identify the advantages/disadvantages of each diagnostic imaging method.
5. Locate basic anatomic structure and structure orientation on common diagnostic images.
6. Identify and interpret findings in a radiology report on a variety of diagnostic images.
7. Analyze the impact of results from diagnostic imaging methods and radiographic findings on physical therapy involvement for patients with neoplastic processes, osteoporotic pathology, and various arthritides.

COURSE SCHEDULE AND OUTLINE OF CONTENT:

- "See attached schedule" or "See schedule on page # of syllabus"

DESCRIPTION OF TEACHING METHODS AND LEARNING EXPERIENCES:

Teaching methods in this course include lecture, case scenario, and critical thinking relative to scenarios and in class presentations. The objectives contribute to the Practice Model Components: Foundational Sciences and Clinical Sciences.

COURSE MODE OF DELIVERY:

- Synchronous, in-person. Online, asynchronous learning modules are also a component of this course.

MATERIALS – TEXT, READINGS, & SUPPLEMENTARY READINGS:

McKinnis LN. *Fundamentals of Musculoskeletal Imaging: 5th Ed.* Philadelphia, PA: FA Davis Company: 2021 or newest edition.

METHODS OF STUDENT EVALUATION:

In this course, your learning will be assessed in the following ways: Course content includes weekly in-class quizzes and learning activities, online audio power point lectures, reading assignments, case studies, three graded online learning modules, and a final comprehensive written examination. The online learning module/exam for each component is available through UND Blackboard.

GRADING SCALE:

Grading Scale		Breakdown	
A	90% to 100%	Online Module I	10%
B	80% to 89.9%	Online Module II	10%
C	76% to 79.9%	Online Module III	10%
F	< 76%	Weekly quizzes	25%
		Participation	15%
		Final Exam	30%

For more information on grading policies, please refer to the [UND-PT Scholastic Standards Document](#)

COURSE ACCESS & TECHNICAL REQUIREMENTS

This course was developed and will be facilitated utilizing Blackboard. For access go to: <http://blackboard.UND.edu> and log in with your NDUS.Identifier. If you do not know your NDUS Identifier or have forgotten your password, please visit [Your NDUS Account Webpage](#)

Visit the [UND Technical Requirements](#) webpage for more information. Students are expected to use their official UND email in the course. For technical assistance, please contact [UND Technical Support](#) at 701.777.2222

ARTIFICIAL INTELLIGENCE (AI)

Artificial Intelligence tools are allowed in this course as approved by the instructor(s). Students are required to disclose if they use AI-generated text or images and how they apply it in their work. Failure of students to acknowledge their use of AI or using fabricated information could result in their violation of the Academic Integrity Policy. Students must ensure the originality of their work, maintain academic integrity, and avoid any type of plagiarism. The students need to understand the material and complete assignments on their own, using AI tools as a supplement rather than a replacement for their work. Students should not use sources that are cited by AI tools without having read them because generative AI tools can either create fake citations or cite a real piece of writing, but the cited content may be inaccurate. The faculty reserves the right to use various plagiarism-checking tools in evaluating students' work, including those screening for AI-generated content, and impose consequences accordingly.

For more information on AI Policies, please visit [Artificial Intelligence Resources](#).

UNIVERSITY OF NORTH DAKOTA POLICIES & RESOURCES:

Notice of Nondiscrimination

It is the policy of the University of North Dakota that no person shall be discriminated against because of race, religion, age, color, gender, disability, national origin, creed, sexual orientation, gender identity, genetic information, marital status, veteran's status, or political belief or affiliation and the equal opportunity and access to facilities shall be available to all. Concerns regarding Title IX, Title VI, Title VII, ADA, and Section 504 may be addressed to Donna Smith, Assistant Vice President for Equal Opportunity and Title IX/ADA Coordinator, 102 Twamley Hall, 701.777.4171, UND.EO.TitleIX@UND.edu or the Office for Civil Rights, U.S. Dept. of Education, 230 S. Dearborn St., 37th Floor, 500 West Madison, Suite 1475, Chicago, IL 60611 or any other federal agency.

Academic Integrity

Academic integrity is a serious matter, and any deviations from appropriate behavior will be dealt with strongly. At the discretion of the professor, situations of concern may be dealt with as a scholastic matter or a disciplinary matter.

As a scholastic matter, the professor has the discretion to determine appropriate penalties for the student's workload or grade, but the situation may be resolved without involving many individuals. An alternative is to treat the situation as a disciplinary matter, which can result in suspension from the University, or have lesser penalties. Be aware that I view this as a very serious matter and will have little tolerance and/or sympathy for questionable practices. A student who attempts to obtain credit for work that is not their own (whether that be on a paper, quiz, homework assignment, exam, etc.) will likely receive a failing grade for that item of work, and at the professor's discretion, may also receive a failing grade in the course. For more information read the [Code of Student Life](#).

Accessibility Statement

The University of North Dakota is committed to providing equal access to students with documented disabilities. To ensure access to this class and your program, please contact [Accessibility for Students](#) to engage in a confidential discussion about accommodations for the classroom and clinical settings. Accommodations are not provided retroactively. Students are encouraged to register with Accessibility for Students at the start of their program.

More information can be obtained by email, UND.accessibilityforstudents@UND.edu, or by phone at 701.777.2664.

Religious Accommodations

UND offers religious accommodations, which are reasonable changes in the academic environment that enable a student to practice or observe a sincerely held religious belief without undue hardship on the University. Examples include time for prayer or the ability to attend religious events or observe a religious holiday. To request an accommodation, complete [student religious accommodation request form](#). If you have any questions, you may contact the [Equal Opportunity & Title IX Office](#).

Pregnancy Accommodations

Students who need assistance with academic adjustments related to pregnancy or childbirth may contact the [Equal Opportunity & Title IX Office](#) or Academic Affairs to learn about your options. Additional information and services may be found at [Pregnancy Resources](#).

Resolution of Problems

Should a problem occur, you should speak to your instructor first. If the problem is not resolved by speaking with your instructor, refer to the college grievance policy by contacting the department chair or the dean's office. [Link to college grievance policy.] Should the problem persist after taking these initial steps, you have the right to go to the provost next, and then to the president.

Reporting of Discrimination, Harassment, or Sexual Misconduct

If you or a friend has experienced sexual misconduct, such as sexual harassment, domestic violence, dating violence, or stalking, please contact the Equal Opportunity & Title IX Office or UND's Title IX Coordinator, Donna Smith, for assistance at 701.777.4171 or donna.smith@UND.edu.

You may also contact the Equal Opportunity & Title IX office if you or a friend has experienced discrimination

or harassment based on a protected class, such as race, color, national origin, religion, sex, age, disability, sexual orientation, gender identity, genetic information, pregnancy, marital or parental status, veteran's status, or political belief or affiliation.

Faculty Reporting Obligations Regarding Discrimination, Harassment, or Sexual Misconduct

It is important for students to understand that faculty are required to share with UND's Title IX Coordinator any incidents of sexual misconduct or of discrimination or harassment based on a protected class that they become aware of, even if those incidents occurred in the past or are disclosed as part of a class assignment. This does not mean an investigation will occur if the student does not want that, but it does allow UND to provide resources to help the student continue to be successful at UND. If you have been impacted by discrimination, harassment, or sexual misconduct, you can find information about confidential support services at the Equal Opportunity and Title IX webpage.

Health and Safety

UND is committed to maintaining a safe learning environment while providing quality learning experiences for our students. As such, UND asks students and instructors to be flexible when necessary to promote a safe environment for learning. Please do not attend an in-person class or lab if you are feeling ill or if you have been directed by health professionals to quarantine or isolate. UND follows isolation and quarantine guidelines recommended by the [CDC and the North Dakota Department of Health](#). If you are not able to attend class or lab, please notify your instructor as soon as possible and discuss options for making up any missed work in order to ensure your ability to succeed in the course. If you will have an extended absence due to serious illness or other uncontrollable circumstances, you may request an absence notification through the [Office of Community Standards](#). Similarly, if your instructor is ill they may need to cancel class or temporarily move your course to online delivery to ensure that you are able to complete the course successfully. Please consult the [COVID-19 at UND](#) webpage for information regarding on-campus COVID-19 testing, isolation and quarantine guidelines, and vaccines.

COURSE OUTLINE/ BLACKBOARD ONLINE MODULE SCHEDULE

BLOCK I

Imaging Pre-Test

Introduction Presentation, General Principles Presentation

Reading McKinnis: Chapters 1-3

MRI, CT Scan, Fluoroscopy, Etc. Presentation ABCs, Fractures and Clinical Decision Rules

Reading McKinnis: Chapters 4-6

Arthritides and Arthropathies Presentation

COMPLETE FIRST IMAGING MODULE/EXAM--Due by 5:00pm, June 14, 2024

BLOCK II

Imaging the Cervical Spine Presentation:

Reading - McKinnis: Chapter 7-8

Imaging the Thoracic Spine Presentation;

Reading - McKinnis: Chapter 9

Imaging the Shoulder Girdle and Arm, Elbow and Forearm Presentation;

Reading - McKinnis: Chapters 15 & 16

Imaging the Wrist and Hand Presentation;

Reading - McKinnis: Chapters 17

COMPLETE SECOND IMAGING MODULE/EXAM—Due by 5:00pm, June 28, 2024

BLOCK III

Imaging the Lumbar Spine and SI Joints Presentation

Reading - McKinnis: Chapter 11

Imaging the Pelvis, Hip and Thigh Presentation

Reading - McKinnis: Chapter 12

Imaging the Knee and Leg Presentation

Reading - McKinnis: Chapter 13

Imaging the Ankle and Foot Presentation

Reading - McKinnis: Chapters 14

Imaging of the Trunk

Reading – McKinnis: Chapter 10

COMPLETE THIRD IMAGING MODULE/EXAM—Due by 5:00pm, July 12, 2024

COURSE OUTLINE/ IN CLASS SCHEDULE

Lectures may be pre-recorded to be reviewed prior to class. In class application will include review of material and quizzes.

- May 31 Introduction to Course (DR), General Principles & Radiological Evaluation (DR)
Chapt 1-3
Pre-Test (DR) Examssoft
- June 3 Recorded: CT, MRI (DR) Chapt 4-5 (US – Chapter 6 covered in Seminar)
Quiz: Intro info,
- June 5 Cervical Spine (DR) Chapt 7, TMJ (DR) Chapt 8;
- June 10 Thoracic Spine (SH) Chapt 9
Quiz: TMJ, Cervical Spine
- June 12 Shoulder (DR) Chapt 15
- June 17 Elbow, Wrist, Hand (GS) Chap 16-17
Quiz Thoracic Spine, Shoulder
- June 19 Elbow, Wrist, Hand (GS) Chap 16-17
- June 24 Lumbar Spine (SH) Chapt 11
Quiz Elbow, Wrist, Hand
- June 26 Pelvis & Hip (SH) Chapt 12
- July 1 Knee (GS) Chapt 13
Quiz: Lumbar Spine, Pelvis, Hip
- July 3 Ankle, and Foot (GS) Chapt 14
- July 8 Trunk – Chest, Abdomen (DR) Chapt 10
Quiz: Knee, Ankle, Foot
- July 10 Review
- July 15-19 **FINAL EXAM**

Textbook is available through HEF AccessPhysiotherapy FA Davis PT Collection.