

## **Course Syllabus**

**Course Number: CLSC 6104**

**Course Title: Diagnostic Imaging II (DI2)**

Course Director: Micheal L. Gilbert, DC, DACBR

Office Hours: Monday: 10:00 – 10:50

Tuesday: 12:00 – 12:50

Wednesday: 12:00 – 12:50

Thursday: 9:00 – 9:50, 11:00 – 11:50

Friday: 9:00 – 9:50

\*or by appointment

Lab Director/Instructors: Dr. Gilbert, Dr. Duval, Dr. Russ,

Dr. Ghelarducci, and Dr. Maguire

Trimester Credit Hours: 5

Total Contact Hours/Trimester: 90

Lab Hours Per Week: 2

Lab Contact Hours/Trimester: 30

### **COURSE DESCRIPTION:**

Diagnostic Imaging II (DI2) is the first of two courses focused on the imaging appearance of a variety of pathological aberrations affecting patients. This course will include a high level review of clinical imaging of the musculoskeletal system in various disease states. Lectures are geared toward a practical, problem-solving approach to musculoskeletal conditions and a systematic approach to interpretation of diagnostic imaging studies will be utilized. Emphasis is placed on the interrelationships between the fundamental histopathology and pathophysiology, the observable changes seen on imaging studies, and clinically relevant physical and biochemical findings. Additionally, the current state-of-the-art clinical practice for musculoskeletal advanced imaging will be included, highlighting the role and applications of such techniques.

Categories of bone disease to be discussed include primary benign and malignant neoplasms of bone of various histological etiologies, metastatic disease of bone, vascular pathologies, nutritional/metabolic and endocrine diseases, osteomyelitis, inflammatory and degenerative arthritic disorders, and autoimmune connective tissue disorders such as systemic lupus and scleroderma. This course supports the mission statement of Parker University, College of Chiropractic by helping to create leaders who promote Chiropractic wellness through high standards of education, research and service.

### **GENERAL APPROACH TO TEACHING:**

Although a level of didactics is necessary to disseminate information, an added concept of the course is one of peer-to-peer learning and group activities. In addition, a level of student-teacher interaction is encouraged. Questions and discussions are a welcomed activity in the classroom. Typically, questions or points of confusion brought up by one student are not unique to that individual.

Therefore, students are encouraged to participate and to bring up such areas of confusion for the purpose of discussion and for the benefit of all. Coming to class prepared and having read the material that is to be presented ahead of time is required and will facilitate meaningful interaction and discussions. In addition, content webinars will be utilized to augment didactic dissemination of material, freeing up some scheduled class periods for meaningful case discussions and interactive student learning activities.

It is important to remember that not all topics will necessarily be discussed formally in class and will require the student to conduct independent study and research to gain complete understanding of that material. This approach to some select topics does not take away from the importance of such material nor does it imply that the material will not be tested on.

### **ESTIMATE OF STUDENT WORK LOAD:**

The breadth and depth of the course work will require students to invest a goodly amount of time outside the classroom reading and reviewing notes and textbooks, watching assigned course webinars, reviewing podcasts, and interacting with one another in study groups as well as with the instructor. As graduate student doctors', my academic expectations are high. Success in this course is multifactorial. The following list is certainly not exhaustive but represents a strategy for successful course completion.

1. Be familiar with this syllabus and the lecture calendar.
2. Know the learning outcomes of the course.
3. Consult the course calendar regularly to ensure you stay abreast of the current topics of discussion.
4. View webinars as assigned. See published schedule.
5. You should anticipate spending at a minimum 2 – 2 1/2 hours each day studying information discussed in this course. This may include a review of notes and podcasts, reading the required textbooks, or discussing topics with your peers (group study).
6. Review lectures by taking advantage of the podcast/vodcast system.
7. Look at lots of pictures. These may be found in textbooks (read the captions) or on-line. I have included several links to web sites on the Diagnostic Imaging II home page of MyParker. These are very useful and much more efficient than merely performing a web search; however, web searches can provide a lot of examples.
8. Come to each class meeting prepared, no matter if it is lecture or lab. Know what topics are to be discussed and read ahead.
9. Participate in lecture and lab sessions. This will, of course, be facilitated by coming prepared.
10. Come see me if you need any help. You may also inquire about a tutor in the Student Affairs office.

## **LEARNING OUTCOMES:**

The primary objective of DI2 is to improve the student doctor's skills in regards to interpretation of diagnostic imaging studies and differential diagnosis development. The focus will be on benign and malignant primary osseous neoplasms, secondary malignancies, osseous infection, various metabolic, nutritional, endocrine, and vascular pathologies, inflammatory and degenerative arthritic disorders, and connective tissue disorders such as systemic lupus and scleroderma. Upon successful completion of DI2 the student doctor should be able to:

1. Explain the fundamental pathophysiology of the discussed entities.
2. Understand the epidemiological characteristics of the discussed diseases and recognize their presenting clinical symptomatology and abnormal clinical lab findings.
3. Demonstrate familiarity with the various imaging modalities available, including conventional radiography, magnetic resonance imaging (MRI), computed tomography (CT), and bone scintigraphy.
4. Effectively describe fundamental pathological changes to the skeleton and adjacent soft tissues associated with the various pathologies discussed using expected descriptive terminology and named radiographic signs, when applicable, in accordance with the various imaging modalities, particularly conventional radiographs.
5. Analyze imaging studies and, in association with pertinent clinical information, develop a reasonable differential diagnosis in regards to the pathologies discussed.
6. Explain appropriate patient management recognizing the most widely used treatment options, potential co-morbidities/complications, and prognosis of discussed disease processes, and when they are encountered in practice what aspects might fit into the scope of practice of a chiropractic physician.

## **ASSESSMENT:**

### Course Pre-test

The course pre-test will be given during the first week of the trimester. The examination has been developed to evaluate the student's retention of basic science concepts and foundations that relate to this course and includes topics from anatomy and physiology, histology, pathology, normal radiographic anatomy and x-ray physics. Moreover, a preliminary evaluation of subjects to be covered in Diagnostic Imaging II will be conducted.

The purpose of this form of assessment is to appraise the students level of knowledge and understanding of previously learned material and any level of mastery students may possess regarding new information to be covered in this course. In addition, pre-tests can provide students a preview of what will be

expected of them, which can help them begin to focus on key topics. Finally, as your teacher it provides me an opportunity to discover knowledge gaps that may not be anticipated. Armed with this data, the class can be more personalized to facilitate a greater level of success.

Written Interim Examinations:

- Exam 1 – Monday, October 3<sup>rd</sup> @ 8:00AM 18%
- Exam 2 – Friday, November 11<sup>th</sup> @ 8:00AM 18%
- Comprehensive Final – Monday, December 12<sup>th</sup> @ 9:00AM 30%

The written examinations will be completed on Scantron<sup>®</sup> forms and are of multiple choice, matching and true/false format. The interim exams will consist of forty to sixty (40 - 60) questions to be completed in fifty (50) minutes. Some questions may have corresponding images presented in PowerPoint<sup>®</sup> format.

The final exam is considered a DI2 “Capstone” examination and will be cumulative. Varied formats may be used and include: multiple choice, true/false, short answer, essay, or any combination. The examination will be completed in ninety (90) minutes and is integrated with the final practical (see description below).

Lab (Practical) Examinations:

- Midterm – Monday, October 17<sup>th</sup> @ 8:00AM 19%
- Comprehensive Final – integrated with final exam

The midterm practical examination will consist of eight (8) to twelve (12) cases presented in view-box or PowerPoint<sup>®</sup> format. Four (6) to six (6) extended multiple choice questions will be asked on each case, with an allotted time of five (5) minute per case. Each case will consist of plain film only or plain film with some related advanced imaging (MRI, CT, scintigraphy, etc.).

The final practical examination is integrated with the final written examination. It will be composed of a maximum of fifteen (15) questions in PowerPoint<sup>®</sup> format. Each image or set of images (i.e. each slide) will comprise one question. Each slide will remain for forty (40) seconds; however, the entire presentation will continuously loop during the entire examination period.

Case Review Exercises:

- Lecture and lab 15%

Case Review Exercises are interactive learning activities designed to facilitate critical thinking and clinical decision making. Various formats will be utilized and will be administered in both the lecture and lab settings of the course. It is well

recognized that active information processing is far superior to passive reception in regards to knowledge acquisition and learning. Effective learning takes place when students are provided opportunities to interpret, relate, and incorporate newly learned information with existing knowledge followed by application, with the learner using the collective knowledge they have obtained in a problem-solving situation. Think-pair-share methods, educational “games”, and collaborative testing schemes will be utilized.

These activities may be given at any point of the scheduled class (lecture, lab) period and only those students present during the period will be eligible to receive any credit for the activity. There is no make-up for these exercises.

**PREREQUISITES:**

1. Diagnostic Imaging I (CLSC 5301)
2. General Pathology (BASC 5306)

**REQUIRED TEXTBOOKS:**

1. Essentials of Skeletal Radiology 3<sup>rd</sup> ed., Yochum & Rowe
2. Class Notes
3. Clinical Imaging 2<sup>nd</sup> ed., Marchiori (recommended reference only)

**RECOMMENDED ADDITIONAL TEXTBOOKS:**

1. Diagnosis of Bone and Joint Disorders 4<sup>th</sup> ed., Resnick
2. Orthopedic Imaging – A Practical Approach 4<sup>th</sup> ed., Greenspan
3. Musculoskeletal Imaging 3<sup>rd</sup> ed., Manaster, May, Disler
4. Musculoskeletal MRI, Kaplan, Helms, Dussault
5. Robbins Pathological Basis of Disease 6<sup>th</sup> ed., Cotran et al

**SUPPLIES:**

1. Pen light (for use during practical exams when the lights are dimmed)

**GRADING SYSTEM:**

Evaluation is an integral part of the educational process and is used as an educational tool in an effort to aid students in identifying areas of both strength and weakness, to recognize and reward achievement, and to identify students who are unable to meet the rigors of the curriculum. Final course grades and their interpretation are listed below.

Grade	Numerical Value	Grade Point Average	Interpretation of Academic Achievement
A	89.5 – 100	4.0	Excellent
B	79.5 – 89.49	3.0	Above Average
C	69.5 – 79.49	2.0	Satisfactory
F	Below 69.49	0.0	Unacceptable

This grading scale is strictly adhered to. There are NO exceptions.

Psychometric evaluation of each examination will be performed. The Scantron<sup>®</sup> analysis will reveal the number or percent of students who missed each question. If sixty percent (60%) of the students answer a question incorrectly then the question comes under scrutiny. If the question was miss keyed, then the Scantron<sup>®</sup> should be regarded giving students credit for the correct answer and taking points off for incorrect answers. If it is determined that the question is poorly worded, misleading, or a bad question then one of the options listed below will be followed.

1. The question can be removed from the examination and the grades recalculated based on one less total items.
2. Points can be added to the exams of those students that missed the question only, resulting in the whole class receiving credit for the question.
3. Points can be added to all examinations, thereby giving credit to those who missed the question and extra points to those who got it right.

### **LABS:**

The scheduled lab sessions are designed to augment the course lecture. A hands-on approach in regards to image interpretation will be utilized in an effort to reinforce pathologies discussed as a part of the core requirements of the course outlined above.

### **OPEN LABS:**

Open labs are available throughout the trimester. The scheduled is typically finalized in the first two weeks of classes and will be posted on the DI2 home page of MyParker.

### **EXTRA CREDIT:**

There is no extra credit for this course.

**A complete listing of all Academic policies is found on the MyParker Website/Academic Home Page/Common Policies:**

Absences for Religious Holidays  
Academic Dishonesty

Academic Promotion, Probation and Dismissal Policy  
Appeals  
Assistance and Accommodations  
Attendance Policy  
Audio/Video Taping  
Cell Phones and Electronic Devices in Class  
Classroom Behavior  
Communications  
Computer Usage  
Examinations (Make up Exams/Lab Practicals)  
Altering Grades on Exams  
Exam Review  
Final Examinations  
Grading System  
Late Instructors to Lecture/Lab  
Missed Exam Policy  
Professional Decorum  
Special Needs Consideration  
Student Bereavement Policy  
Excused Absences

**DISCLAIMER:**

The lecture outlines contained in the lecture booklet are NOT intended to represent the entire content of the course. A lecture outline is intended to be a guide to the lecture. The responsibility of the instructor is to follow the outline, expand the concepts and give explanation and illustrations to clarify content. The role of the student is to attend lecture and take notes over material presented by the lecturer that explains and illustrates the material listed in the outline. It is also the responsibility of the student to question the instructor if explanations and illustrations are not clearly presented or understood.

The instructors take no responsibility for the accuracy or completeness of old notes, quiz questions or exam questions that students may purchase, acquire from off of the internet or be given by previous students.

**IMPORTANT NOTE:**

The provisions contained in this syllabus do not constitute a binding contract between the student and Parker University, College of Chiropractic. These provisions may be changed at any time and for any reason at the discretion of the Course Director. When it is necessary to make changes to this document, appropriate notice (at least one week, if at all possible) will be given to the student(s).