

Course Syllabus

COURSE TITLE:

Fundamentals of Diagnostic Imaging

PREREQUISITES: Enrollment in Parker College

CREDIT HOURS: 2.5

LECTURE HOURS/WK: 2

LECTURE TIME: Tuesday 7:00 – 7:50 AM
Thursday 7:00 – 7:50 AM

INSTRUCTOR:

Christopher P Petrie, BSE, DC, DACBR

OFFICE: E233, Center for Academics

OFFICE PHONE: (972)438-6932 ext. 7334

E-MAIL: cpetrie@parkercc.edu (best contact method)

COURSE NUMBER: CLSC-5102

TRIMESTER: Spring 2010

CONTACT HOURS: 45

LAB HOURS/WK: 1

OFFICE HOURS:

Tuesday 12 – 1 PM

Wednesday 12 – 1 PM

Thursday 9 – 11 AM

Friday 1 – 2 PM

or by appointment

COURSE DESCRIPTION:

Fundamentals of Diagnostic Imaging (FDI) is an introduction to the basic principles that govern diagnostic imaging. It is designed to provide a succinct tutorial in the production of x-rays and acquisition of diagnostic quality images. The course includes discussion regarding the history and discovery of x-rays, as well as, the practical physics behind them. Additional topics include x-ray interactions with matter, x-ray film and screens, film processing, radiation protection and radiobiology. The course concludes with a look at contemporary imaging modalities such as magnetic resonance imaging (MR), computed tomography (CT), nuclear medicine and ultrasound.

LEARNING OBJECTIVES:

The primary objective of Fundamentals of Diagnostic Imaging is to support the mission of Parker College. It will introduce the student doctors to the primary basics of diagnostic imaging studies, particularly conventional radiography. This will include equipment, technical factors, processing and various factors that influence image quality. A particular stress will be given to image quality and patient protection. Upon successful completion of Fundamentals of Diagnostic Imaging the student doctor should be able to:

1. Relate the discovery of x-ray by Roentgen.
2. Explain electromagnetic radiation and specifically ionizing radiation.
3. Identify the properties of photons.
4. Explain wave-particle duality.
5. Identify the components of an x-ray machine/system.
6. Explain how mAs, kVp, added filtration, target material and voltage ripple affect the x-ray emission spectrum.
7. Identify characteristic and bremsstrahlung radiation.

8. Describe photon interactions with matter, particularly in regards to those occurring in diagnostic ranges.
9. Explain image acquisition
10. Identify image-quality factors and how they influence the characteristics of a radiographic image.
11. List special imaging modalities used in clinical practice.

REQUIRED TEXTS: Radiographic Imaging & Exposure, 3rd edition, Fauber
Clinical Imaging 2nd edition, Marchiori
FDI Lecture Manual
FDI Lab Manual

REFERENCE TEXTS: Radiologic Sciences for Technologist: Physics, Biology and Protection, 9th edition, Bushong
Christensen's Physics of Diagnostic Radiology, 4th edition, Curry

OTHER SUPPLIES: Scantron© forms, #2 pencils, eraser, notebook

GENERAL APPROACH TO TEACHING:

FDI is designed to be interactive. Class lectures will be presented, notes will be handed out and questions from the classroom are encouraged. The Socratic Method will be used as well. I expect areas of confusion to be brought up and discussed.

EVALUATIONS:

Written Examinations:

- Midterm Examination: Thursday, February 25th, 7:00 AM 25%
- Final Examination: Tuesday, April 20th, 9:00am 25%

The written examinations may, at the instructor's discretion, be composed of a combination of multiple choice, matching, true/false, fill-in-blank or short-answer questions. The midterm will consist of approximately 50 questions to be completed in 50 minutes. The final exam will consist of a maximum of one hundred (100) questions to be completed in ninety (90) minutes.

Lab (Practical) Examinations:

- Midterm Examination: Thursday, March 4th, 9:00am (in classroom) 20%
- Final Examination: Tuesday, April 13th, 9:00am (in classroom) 20%

The midterm practical examination will consist of approximately 20 questions presented in PowerPoint® format. The examination will be composed of a combination of multiple choice, fill-in-the-blank or short-answer questions. The questions are timed with approximately 75 seconds per question.

Quizzes:

- Lecture and lab

10%

Lecture quizzes will be given at the discretion of the instructor and may be announced or unannounced. These quizzes will be completed independently by each student, consist of approximately 5 questions covering any previous topic and may be given at any time throughout the class period. Class attendance may also be used as a quiz grade. No make-up will be given for missed quizzes, to include the student arriving late to class. No exceptions for any reason will be accepted.

Lab quizzes will consist of approximately 5 to 10 questions and will be given at the **beginning** of each lab. The questions may be any format and will pertain to material covered from the previous labs, thus each quiz should be considered comprehensive. Missed quizzes will be handled as any missed exam. Students must attend their assigned lab unless arrangements are made prior to the lab. See “Missed Exam Policy”. In the event a student misses lab and the quiz, he may choose to attend a different lab. He will be allowed to take the quiz (as a learning instrument) but will receive of grade of 0. However, attendance credit will be given for attending.

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 – 89.4	3.0	Above Average
C	69.5 – 79.4	2.0	Satisfactory
F	Below 69.5	0.0	Unacceptable

Psychometric evaluation of each examination will be performed. The Scantron[®] 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[®] should be regraded 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.

90/90 RULE:

The 90/90 rule is not applicable for this class.

ESTIMATE OF STUDENT WORK LOAD:

As graduate student doctors', my academic expectations are high. Success in this course is multi-factorial. The following list represents a strategy for successful course completion.

1. Be familiar with this syllabus and the lecture and lab calendars.
2. Consult the course calendars regularly to ensure you stay abreast of the current topics of discussion.
3. You should anticipate spending, at a minimum, 1 – 2 hours each day studying information discussed in this course. This may include review of notes, reading the required textbooks, or discussing topics with your peers (group study).
4. Each lecture hour is recorded and can be downloaded from the link on the Fundamentals in Diagnostic Imaging home page of MyParker or through iTunes University. These should be reviewed as needed.
5. Utilize the Parker Radiology Website. There is a link on the Fundamentals in Diagnostic Imaging home page of MyParker.
6. Come to each class meeting prepared, no matter if it is lecture or lab. Know what topics are to be discussed and read ahead.
7. Participate in lecture and lab sessions.
8. Come see me if you need any help. You may also inquire about a tutor in the Student Affairs office.

STUDENTS WITH SPECIAL NEEDS:

Parker College of Chiropractic in accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 provides assistance to eligible students. Institutions of higher education are required to provide reasonable accommodations to qualified and eligible persons with disabilities that are logically associated with the type and level of impairment of the student. If you believe you are eligible for these services please contact the Student Assistance Program which is located in the Student Affairs office.

POSTING OF EXAMINATION GRADES:

Grades will be posted on My Parker in a timely manner. Every effort will be made to get grades posted within 48 hours. Practical exam grades will not be posted until all groups have completed testing.

FINAL EXAMINATIONS:

Because some students are on special schedules an exception will be made only with documentation of a conflicting examination. In this case, the student will be required to take the exams back to back. Arrangements must be made at least 24 hours in advance of the scheduled time of the final exam.

LECTURE EXAM REVIEW:

Exams will be available for the student's review after the grades have been posted. Changes to grades based on arguments for or against a question/answer will be limited to the first 5 school days following grade posting. After that the exams may be reviewed as a learning instrument but no additional credit will be awarded. Questions about the final exam and/or final course grades must be reviewed with the Course Director by 3:00 PM of the third day of the new trimester.

COURSE WITHDRAWAL POLICY:

Withdrawal from the course is the responsibility of the student. Discontinuing attendance does not officially withdraw you from the course. Withdrawing from a course begins by meeting with the Academic Coordinator, Dr. Lonnie Knight. The deadline for the Spring 2010 trimester is Tuesday, March 30th by 3:00 p.m. For more information please see the Parker College Course Catalog.

MISSED EXAM POLICY:

See "Policies Common to All Parker Courses" on MyParker.

ATTENDANCE POLICY:

See "Policies Common to All Parker Courses" on MyParker.

STUDENT BEREAVEMENT POLICY:

See "Policies Common to All Parker Courses" on MyParker.

COMMUNICATIONS:

See "Policies Common to All Parker Courses" on MyParker.

ACADEMIC DISHONESTY:

See "Policies Common to All Parker Courses" on MyParker.

PROFESSIONAL DECORUM:

See "Policies Common to All Parker Courses" on MyParker.

COMPUTER USE:

See "Policies Common to All Parker Courses" on MyParker.

AUDIO/VIDEO TAPING:

See "Policies Common to All Parker Courses" on MyParker.

IMPORTANT NOTE:

The provisions contained in this syllabus do not constitute a contract between the students and Parker College of Chiropractic. These provisions may be changed at any time, for any reason at the discretion of the course director.