

Course Syllabus

COURSE TITLE: Fundamentals in Diagnostic Imaging

COURSE NUMBER: CLS-6102

PREREQUISITES: Enrollment in Parker College

TRIMESTER: Fall 2009

CREDIT HOURS: 2.5

CONTACT HOURS: 45

LECTURE HOURS/WK: 2

LAB HOURS/WK: 1

LECTURE TIME: Monday 10:00 am-10:50am
Wednesday 9:00 am-9:50 am

INSTRUCTOR: Sandra R. Norton, DC, DACBR

OFFICE HOURS:

OFFICE: E216, Center for Academics

TBA

OFFICE PHONE: (214)902-2459 ext. 7315

*or by appointment

E-MAIL: snorton@parkercc.edu

COURSE DESCRIPTION:

Fundamentals in Diagnostic Imaging 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.
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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 ed., Marchiori
Class Notes

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:

Fundamentals in 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:

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| ▪ Written Examination I—Wednesday, October 7 th @ 9:00am | 20% |
| ▪ Written Examination II—Wednesday, November 11 th @ 9:00am | 20% |
| ▪ Comprehensive Final – TBA | 25% |

The written examinations will be completed on Scantron® forms and are of multiple choice, matching and true/false format. The midterm will consist of fifty to sixty (50 - 60) questions to be completed in fifty (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 – Wednesday, October 28th @ 9:00am (in classroom) 15%
- Final – Wednesday, December 9th @ 9:00am (in classroom) 15%

The midterm practical examination will consist of twenty (20) to thirty (30) cases presented in PowerPoint® format. The examination will be completed on Scantron® forms and are multiple choice timed at no more 1:15 per question.

Quizzes:

- Lecture and lab 5%

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 five (5) questions covering any previous topic and may be given at any time throughout the class period. Class attendance may count for a quiz grade as well. No make-up will be given for missed quizzes, to include the student arriving to class late. No exceptions for any reason will be accepted.

Lab quizzes will consist of five (5) to ten (10) questions and will be given at the **beginning** of each lab starting with the second lab section. The questions may be any format and will pertain to material covered from the previous labs, thus each quiz could 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”.

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 multifactorial. 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. As the instructor, I have prescribed to the iTunes University, thus each lecture hour is recorded and can be downloaded from the link on the Fundamentals in Diagnostic Imaging home page of MyParker.
 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. This will, of course, be facilitated by coming prepared.
 8. Come see me if you need any help. You may also inquire about a tutor in the Student Affairs office.
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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 Final 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:

The review period for each exam will begin after the posting of the grades and last for five working days only, excluding weekends and holidays. Questions about the final exam and/or final course grades must be reviewed with the Course Director by 3:00 p.m. 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 summer 2009 trimester is Tuesday, July 28th by 3:00 p.m. For more information please see page 76 of 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.