

## SYLLABUS

Name of Course: Radiology III – ACS-324/824

Length of Course: 55 hours, four units

Course Description: A continuation of Radiology I and II, this course follows the approach initiated during Radiology II. Normal radiographic findings are compared to abnormal radiographic findings. Bone tumors, infections, and metabolic diseases are covered. This class has designated lab hours.

Prerequisites: ACS-335

Course offered by: Department of Associated Clinical Sciences

Required text: Yochum TR. Essentials of Skeletal Radiology, third edition 2005  
Taylor and Resnick. Skeletal Imaging. 2010

Recommended text: Greenspan A: Orthopedic Radiology. Fifth edition 2011

Reference texts: Resnick D, Diagnosis of Bone and Joint Disorders, third edition, 1995

Materials: ACR files in the library

Method of Instruction: Lecture – discussion; lab with films.

Evaluation/grading criteria: The course will have one 40 point written midterm, one-80 point comprehensive final written and two 25 point lab examinations. In class quizzes will be graded at 5 points each and would be in addition to the following.

Written midterm 40 points  
Written final 80 points  
Lab 25 points  
Lab final 25 points

A 153 – 170  
B 136 – 152  
C 119 – 135  
F 118 or below

Grades and the Grading System Final Grades are available online through the CAMS student portal. If there are any questions on grading procedures, computation of grade point average, or the accuracy of the grade report, please contact the Registrar's Office or the Office of Academic Affairs. Grades will be reported and evaluation will be based on the Academic Policies, Procedures, & Services. Please refer to Evaluation Policy (**Policy ID: OAA.0007**)

In order to maintain **Satisfactory Academic Progress**, a student must maintain a 2.0 or better in each and every course. **Any grade less than a C must be remedied by repeating the class.** Please refer to Satisfactory Academic Progress (**Policy ID: OAA.0006**)

Attendance: Please refer to Attendance Policy (**Policy ID: OAA.0002**)

Conduct and Responsibilities: Please refer to the Personal Conduct, Responsibility and Academic Responsibility Policy (**Policy ID: OAA.0003**)

Make-up Exams: Please refer to Make-up Assessment Policy (**Policy ID: OAA.0001**)

Request for Special Testing: Please refer to Request for Special Testing (**Policy ID: OAA.0004**)

Accommodation for Students with Disabilities:

If you have approved accommodations, please make an appointment to meet with your instructor as soon as possible. If you believe you require an accommodation, but do not have an approved accommodation letter, please see the Academic Counselor Lori Pino in the Office of Academic Affairs. Contact info: [Lpino@lifewest.edu](mailto:Lpino@lifewest.edu) or 510-780-4500 ext. 2061. Please refer to Service for Students with Disabilities Policy (**Policy ID: OAA.0005**)

Electronic Course Management:

**Canvas** is LCCW's Learning Management System (LMS). Canvas will be used throughout the quarter during this course. Lectures, reminders, and messages will be posted. In addition, documents such as the course syllabus and helpful information about the class project will be posted. Students are expected to check Canvas at least once a week in order to keep updated. The website address for Canvas is <https://lifewest.instructure.com/login/canvas> Please refer to the Educational Technologies Policy (**Policy ID: OAA.0009**)

Course goals: The goal of this course is to prepare the student to recognize and differentiate typical radiographic findings of various neoplastic processes and other bone pathologies. Emphasis is placed on differentiating aggressive versus benign conditions. Class discussion is directed towards assisting the student in developing an appropriate course of clinical care including any additional imaging that may be indicated.

Course objectives:

Week one:

- to introduce specific terminology as it pertains to the identification of neoplastic, infectious and metabolic disorders
- to introduce basic principles of special imaging including CT, MRI, P E T, P E T – CT, and nuclear

bone scan.

Week two:

- to introduce metastatic disease of bone.

Frequency of occurrence

Imaging modalities

Plain film radiographs

Appearance of metastasis

Location

Differential diagnosis

Week three:

- to introduce primary malignant bone tumors. Marrow, osseous and cartilaginous malignant tumors are discussed.

Organization of discussion:

1. age
2. soft tissue involvement
3. size of the lesion
4. location of the lesion
5. zone of transition
6. pattern of bone destruction
7. margin of the lesion
8. tumor matrix
9. host response
10. polyostotic vs. monostotic

Week four:

- to continue the introduction of primary malignant bone tumors

Week five:

-TEST PRACTICAL MIDTERM.

- to introduce benign primary tumors of bone.

Differentiation of benign and malignant lesions:

1. age
2. soft tissue involvement
3. zone of transition
4. pattern of bone destruction
5. margin of the lesion
6. host response

Week six:

- TEST-MIDTERM.

- to introduce Paget's disease, fibrous dysplasia, and neurofibromatosis.

Key concepts:

1. definition
2. epidemiology
3. laboratory abnormalities
4. clinical signs
5. radiographic appearance
6. most common sites of occurrence
7. musculoskeletal complications.

Week seven:

- to introduce osteomyelitis. Suppurative vs. nonsuppurative infection.

Week eight:

- to introduce avascular necrosis.

Location

Age

Clinical presentation

Radiographic presentation

Differential diagnosis

Week nine:

- to introduce metabolic and endocrine disease.

Metabolic disease is discussed according to incidence, clinical findings, radiographic findings, laboratory analysis and imaging findings including DEXA scans. The interpretation of DEXA scans is discussed.

Week ten:

- to introduce anemias of bone including sickle cell anemia, thalassemia and iron deficiency anemia.

Clinical findings associated with anemia, such as history, laboratory analysis and imaging findings are discussed. Case examples are utilized.

Week 11 final practical and review.

### **Student learning outcomes:**

1. The student will be able to use correct terminology to describe radiographic findings, differentiating benign versus malignant lesions. (PLO:1)
2. The student will be able to discuss neoplastic lesions as to the location in the bone, and tissue of origin (PLO:1)
3. The student will be able to differentiate Paget's disease, fibrous dysplasia and neurofibromatosis and discuss the pertinent characteristics of each disorder (PLO:1)
4. Student will be able to recognize the clinical presentation of osteomyelitis, cellulitis and other forms of infection.(PLO:1)
5. The student will be able to recognize the radiographic findings indicating infection.(PLO:1)
6. The student will be able to recognize avascular necrosis and differentiate avascular necrosis from arthritis and neoplastic disorders of bone (PLO:1)
7. The student will be able to recognize osteoporosis and perform a differential diagnosis of causes of osteoporosis including metabolic, neoplastic, anemic and endocrine disorders of bone.(PLO:1)

**Program Learning Outcomes (PLO):** Students graduating with a Doctor of Chiropractic degree will be proficient in the following:

1. **ASSESSMENT AND DIAGNOSIS:** An assessment and diagnosis requires developed clinical reasoning skills. Clinical reasoning consists of data gathering and interpretation, hypothesis generation and testing, and critical evaluation of diagnostic strategies. It is a dynamic process that occurs before, during, and after the collection of data through history, physical examination, imaging, laboratory tests and case-related clinical services.
2. **MANAGEMENT PLAN:** Management involves the development, implementation and documentation of a patient care plan for positively impacting a patient's health and well-being, including specific therapeutic goals and prognoses. It may include case follow-up, referral, and/or collaborative care.
3. **HEALTH PROMOTION AND DISEASE PREVENTION:** Health promotion and disease prevention requires an understanding and application of epidemiological principles regarding the nature and identification of health issues in diverse populations and recognizes the impact of biological, chemical, behavioral, structural, psychosocial and environmental factors on general health.
4. **COMMUNICATION AND RECORD KEEPING:** Effective communication includes oral, written and nonverbal skills with appropriate sensitivity, clarity and control for a wide range of healthcare related activities, to include patient care, professional communication, health education, and record keeping and reporting.
5. **PROFESSIONAL ETHICS AND JURISPRUDENCE:** Professionals comply with the law and exhibit ethical behavior.
6. **INFORMATION AND TECHNOLOGY LITERACY:** Information literacy is a set of abilities, including the use of technology, to locate, evaluate and integrate research and other types of evidence to manage patient care.
7. **CHIROPRACTIC ADJUSTMENT/MANIPULATION:** Doctors of chiropractic employ the adjustment/manipulation to address joint and neurophysiologic dysfunction. The adjustment/manipulation is a precise procedure requiring the discrimination and identification of dysfunction, interpretation and application of clinical knowledge; and, the use of cognitive and psychomotor skills.
8. **INTERPROFESSIONAL EDUCATION:** Students have the knowledge, skills and values necessary to function as part of an inter-professional team to provide patient-centered collaborative care. Inter-professional teamwork may be demonstrated in didactic, clinical or simulated learning environments.
9. **BUSINESS:** Assessing personal skills and attributes, developing leadership skills, leveraging talents and strengths that provide an achievable expectation for graduate success. Adopting a systems-based approach to business operations. Networking with practitioners in associated fields with chiropractic, alternative medicine and allopathic medicine. Experiencing and acquiring the hard business skills required to open and operate an on-going business concern. Participating in practical, real time events that promote business building and quantifiable marketing research outcomes
10. **PHILOSOPHY:** Demonstrates an ability to incorporate a philosophically based Chiropractic paradigm in approach to patient care. Demonstrates an understanding of both traditional and contemporary Chiropractic philosophic concepts and principles. Demonstrates an understanding of the concepts of philosophy, science, and art in chiropractic principles and their importance to chiropractic practice.