

## SYLLABUS

<b>Name of Course:</b>	RADIOLOGY 1 (ACS-313)
<b>Length of Course:</b>	44 hours (4 hrs. lec/wk.), 3 units
<b>Course Description:</b>	First in a series of radiology diagnosis courses, this class is designed to acquaint the student with basic radiographic anatomy. The course covers normal radiographic anatomy, roentgenometrics, skeletal development and common normal variants.
<b>Prerequisites:</b>	ANAT-111, ANAT-118
<b>Course Offered By:</b>	Clinical Sciences Department
<b>Required Text:</b>	Class notes – Available in the bookstore Yochum TR. <i>Essentials of Skeletal Radiology</i> . 3 <sup>rd</sup> ed. 2005
<b>Recommended Text:</b>	Sandrack AR. <i>The Radiologic Clinics of North America</i> . (on reserve) 1977 Aug; 15(2); 133-154, 167-175 (WE 725 S96 1977)
<b>Reference Texts:</b>	Keats TE. <i>Atlas of Normal Roentgen Variants that May Simulate Disease</i> . 8 <sup>th</sup> ed. 2007 Moeller TB. <i>Pocket Atlas of Radiographic Anatomy</i> . 2 <sup>nd</sup> ed 2000 Wicke L. <i>Atlas of Radiologic Anatomy</i> . 7 <sup>th</sup> ed. 2004 Moeller TB. <i>Normal Findings in Radiography</i> . 2000
<b>Materials:</b>	X-ray films: Normals are color-coded. ACR file. Labs - Available on video & CD. Ask at the circulation desk.
<b>Method of Instruction:</b>	Lecture – demonstration, power point presentation, laboratory exercises
<b>Evaluation:</b>	Written Midterm = 50 points Practical Midterm = 50 points Written Final = 50 points Practical Final = 50 points
<b>Testing:</b>	Exams in this course will begin on time. You are advised to show up a few minutes early if possible. If you arrive late to an exam, your arrival may distract your classmates whose exams are already in progress. If you arrive more than 5 minutes late, you will not have an opportunity to take the exam that day. I will post a sign to this effect on the classroom door. If you would like to discuss your reasons for arriving late, you are welcome to come to my office hours or make an appointment, whereupon we will discuss your options. In extreme circumstances (e.g., hospitalization), you may be allowed to take the exam at an alternate time. These exceptions will be rare.

Quarter grades will be assigned according to the following percentage ranges:

A	(4.0) Superior work	90-100%
B	(3.0) Above average work	80-89%
C	(2.0) Average work	70-79%
F	(0.0) Failure	0-69%

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**)

**Extra Credit:** There will be no extra credit work permitted in this class.

**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 goals of this course are to familiarize students with radiographic anatomy, to teach a systematic approach to reading x-rays (plain & digital), and to teach students to identify normal and normal variant findings and to distinguish them from early and late pathology.

## **Course Objectives:**

### **Weeks 1-3:**

Normal Development of Bone will be demonstrated as follows:

- General bone anatomy
- Normal cervical anatomy

Cervical lines of mensuration such as the following will be discussed.

- Atlantodental interspace (ADI)
- George's line
- Posterior cervical line
- Sagittal dimension of cervical spinal canal
- Cervical gravity line
- Cervical lordosis
- Stress angles
- Retropharyngeal space
- Retrotracheal space

Cervical anomalies will be demonstrated

- Occipitalization
- Epitransverse & paracondylar process
- Agenesis of C1 posterior arch
- Posterior ponticle
- Spina bifida occulta C1
- Ossiculum terminale
- Os odontoideum
- Agenetic odontoid
- Block vertebrae
- Klippel – Feil Syndrome
- Cervical ribs

### **Week 4:**

Normal Thoracic anatomy will be discussed

Thoracic lines of mensuration will be demonstrated

- Thoracic kyphosis
- Cobb's angle
- Risser – Ferguson's angle

Thoracic anomalies will be demonstrated

- Butterfly vertebra
- Hemivertebrae
- Schmorl's node and nuclear impression
- Posterior arch anomalies
- Spina bifida

### **Week 5:**

Normal lumbar anatomy will be discussed

Lumbar lines of mensuration will be demonstrated

- Lumbar lordosis
- Sacral base angle
- Lumbosacral disc angle
- Ferguson's gravitational line

- Macnab's line
- Hadley's "S" curve
- Meyerding's grading of spondylolisthesis
- Ullmann's line
- Interpedicular distance
- Eisenstein's sagittal canal measurement
- Lumbar anomalies will be demonstrated
  - Transitional vertebrae
  - Facet tropism
  - Knife clasp syndrome
  - Spondylolysis and spondylolisthesis

***Written and practical midterms.***

**Week 6:**

Normal pelvic anatomy will be discussed  
Pelvic lines of mensuration will be demonstrated

- Tear drop distance
- Hip joint space width
- Protrusio acetabuli
- Shenton's line
- Iliofemoral line
- Skinner's line
- Klein's line

Pelvic anomalies will be discussed

**Week 7:**

Normal knee anatomy will be discussed  
Knee anomalies

- Bipartite patella
- Os fabella

Normal ankle anatomy will be demonstrated  
Ankle measurements

- Boehler's angle

Tarsal & Foot anomalies will be demonstrated

- Ossicles of the foot will be demonstrated

**Week 8:**

Normal shoulder anatomy will be discussed  
Shoulder measurements will be discussed

- Glenohumeral joint space
- Acromioclavicular joint space

Elbow anatomy will be discussed  
Elbow anomalies

- Supracondylar process of the humerus
- Radioulnar synostosis

**Week 9:**

Wrist anatomy will be discussed  
Wrist measurements will be discussed  
Wrist anomalies will be demonstrated

Madelung's deformity  
Anatomy of the hand will be demonstrated  
Finger anomalies will be demonstrated  
Polydactyly  
Syndactyly

**Week 10:**

Chest anatomy will be discussed  
Routine series will be discussed  
Lung fields will be discussed  
Mediastinum  
Diaphragm  
Abdominal anatomy will be discussed  
Normal anatomy of abdominal structures  
Gas patterns  
Abdominal calcifications  
Abdominal aortic aneurysm

**Student Learning Outcomes (SLO):**

1. Students will be able to use a systematic procedure for reading x-ray films. (PLO:1)
2. Students will be able to identify the standard radiographs for each part of the skeleton. (PLO:1)
3. Students will be able to recognize and identify normal anatomic structures of the skeleton, chest, abdomen and identify common normal variants.(PLO:1)
4. Students will be able to recognize and use generic lines of mensuration as part of film analysis. (PLO:1)
5. Students will be able to recognize skeletal abnormalities by virtue of knowing the normal appearance of skeletal structures.(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.