

**ANA6514 Advanced Arthrology and Biomechanics of Skeletal Tissue**

**SYLLABUS AND LECTURE SCHEDULE**

**ANA6514 Advanced Arthrology and Biomechanics of Skeletal Tissue**

**WINTER TRIMESTER, 2009**

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Office hours: by appointment.

**ATTENDANCE REQUIREMENTS:**

**Students are expected to attend all lectures and laboratories, and to complete all assignments and required readings pertinent to each course as it is the College's belief that attendance, participation, and classroom interaction are vital to the professional educational process.**

**Attendance in all lectures and laboratories is mandatory and excessive absence in these particular settings will impact a student's grades as follows:**

**Greater than 20% absence from total class hours *or* 20% of lectures or 20% of laboratory will result in the administrative grade of XF (failure due to excessive absences). In such a circumstance, the student will be required to repeat the course in its entirety. The grade of XF will carry 0.0 quality points and can impact a student's academic and financial aid status. Upon successful completion of the course in a subsequent trimester, the new passing grade will replace the XF grade for a cumulative GPA calculation, but the XF will remain on the student's academic transcript as a component of his/her academic history.**

**DISCLAIMER STATEMENT:**

**This syllabus is a representation of the course content, organization and evaluation processes. The faculty teaching this course reserve the right to reasonably alter the sequence of activities, evaluation and assignment dates, and evaluation and assignment methods or styles. Every effort will be made to inform the class members in advance of such changes. Students are responsible for following the syllabus and any changes instituted by the faculty.**

**HEALTH CLEARANCE POLICY**

New York Chiropractic College considers it in the best interest of students to obtain appropriate and periodic health screenings. NYCC provides such health clearance examinations to all students through the Campus Health Center at no charge.

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All first trimester students are required to receive a complete physical examination, which will include diagnostic imaging and laboratory examinations when clinically warranted. Based upon this information a clinician will clear the student for full, limited, or no participation in the practical/clinical classes.

During the fourth trimester, the student must make an appointment and have a reevaluation and an update of their case history.

Students are required to report to the Health Center for the purpose of updating their records if any change occurs between examinations, including any formal referrals made by clinical faculty in the course of a laboratory class.

If any condition is revealed during the health clearance process that may affect a student's ability to participate fully as a patient in technique or diagnosis laboratories, the student must sign a release of information allowing appropriate disclosure of information to all concerned parties, including: Class Instructors, Clinician, Dean of Chiropractic Education, Registrar, and Associate Provost. Refusal to sign such a release will result in the temporary or permanent suspension of participation privileges in practical clinical classes.

The Health Center will notify the Registrar the Friday prior to registration day of all students cleared for participation. Failure to meet the health clearance requirements will prevent the student from registering for the following trimester.

If the student is not cleared for participation as per the technical standards of the College the student must withdraw from the course and/or the program.

Policy Effective: January 4, 2000

Revision: July 24, 2000

### **COURSE OBJECTIVES:**

Upon completion of this course, the student should be able to describe the following:

1. The basic material properties of bone and cartilage.
2. The composition and structure of the major joints of axial and appendicular skeleton.
3. The response of bone, cartilage and ligaments to imposed mechanical loads.
4. Ranges of motion, joint packing, instant centers of rotation
5. Fracture mechanics and mechanisms of common bone fractures.

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### **GRADING:**

A = 90 - 100

B = 80 - 89.99

C = 70 - 79.99

F = <70

### **EXAMINATIONS:**

There will be a take-home midterm and final examination. Each examination will count 50 percent of your grade. These exams will be take-home and open book. See the lecture schedule for the appropriate dates.

#### *Make-up Examinations:*

Make-up examinations will be given only under exceptional and extraordinary circumstances at the discretion of the instructor. The format and timing of such examinations will also be at the discretion of the instructor.

### **REQUIRED TEXTBOOKS: NONE.**

#### **The following texts will be of use, however:**

*Skeletal and Developmental Anatomy*, Second Edition, Walker, Lovejoy, Bedford and Yee. Linus Publishers, New York, 2007. Available at: <http://www.linusbooks.com/catalog.php> or in the bookstore.

*Gray's Anatomy*, Any edition, either American or British, but preferably one from the recent past. Paperback reprints of century-old editions are not recommended for serious study. While the body itself has not changed in the last hundred years, much of the terminology has.

*The Mechanical Adaptations of Bone*, Currey, Princeton University Press, 1984.

*Bones : Structure and Mechanics*, Currey, Princeton University Press, 2002.

*Basic Biomechanics of the Skeletal System*, Frankel and Nordin, Lea and Febiger, Philadelphia, 1980 (The edition I have).

*Basic Biomechanics of the Musculoskeletal System*, 3rd Edition, Nordin and Frankel, Lippincott, Williams, and Wilkins, 2001 (The latest edition, which I don't own).

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### LECTURE SCHEDULE:

*Dates should be considered tentative*, but this is the general sequence that the lectures will follow. From time to time there may be unscheduled guest lectures of general clinical and/or scientific interest. Such guest lectures will be announced in advance and will be considered testable material. Lectures are Mondays 4-5 p.m., ANATOMY CENTER ROOM L03 (former student lounge).

### DATE TOPICS

JAN 12	Introduction.
JAN 19	HOLIDAY: NO CLASS.
JAN 26	Skeletal Tissues, their roles in the joints and their histological and materials
FEB 2	Mechanical Properties of bone: Elastic properties, Strength, Fracture Mechanics
FEB 9	Bone Morphology.
FEB 16	HOLIDAY: NO CLASS.
FEB 23	Mechanical Properties of Tendons, Ligaments and Muscles.
MAR 2	Mechanics of Articulations and Articular Cartilages. TAKE HOME MIDTERM POSTED ON THE PORTAL.
MAR 9	Properties of Solid Joints.
MAR 16	Properties of Synovial Joints. TAKE HOME MIDTERM DUE BY MIDNIGHT, MARCH 16.
MAR 23	Ranges of motion, joint packing, instant centers of rotation.
MAR 30	Mechanics of the zygapophyseal joints. TAKE HOME FINAL POSTED ON THE PORTAL.
APR 6	Ligaments of the Vertebral Column, Symphyses and the Intervertebral Disc, Mechanics of the Vertebral Column.
WEEK OF APRIL 13: Final Exam Week. TAKE HOME FINAL DUE BY MIDNIGHT, APRIL 14.	