

## Skeletal Biology

TIME & PLACE: T period 3, R period 3-4 TUR 2334(T), TUR 2305(R)

INSTRUCTOR: David Daegling, B376 Turlington Hall (352) 294-7603 [daegling@ufl.edu](mailto:daegling@ufl.edu)  
Office Hours: W 9:30-10:30 AM; R 2:00 – 4:00.

COURSE OBJECTIVES: This course provides a foundation in human skeletal biology. Bone biomechanics, adaptation, physiology and their applications in forensic, bioarchaeological, clinical and comparative contexts are emphasized.

PREREQUISITE: ANT 4525, *Human Osteology and Osteometry*

TEXTBOOK: Burr DB, Allen MR (2019) *Basic and Applied Bone Biology*, 2<sup>nd</sup> edition. Elsevier (required).

STUDENT LEARNING OUTCOMES: Successful completion of the course will provide students with methodological and analytical foundations in the following:

- Epigenetic influences on skeletal growth and development
- Biological profile from skeletal remains
- Structural and material properties of bone
- Biomechanics of the skeleton
- Bone metabolic activity
- Skeletal adaptation

COURSE REQUIREMENTS: Emphasis on in-class participatory activities compels regular attendance. The grading criteria for the course include individual and group quizzes (30% and 30% of your final grade, respectively), participation in group problem-solving activities (30%), peer evaluation (5%) and a final examination (5%). The percentage of your earned points out of total possible points determines your course grade as follows: 92% and above = A; 89% up to 92% = A-; 86% up to 89% = B+; 83% up to 86% = B; 80% up to 83% = B-; 77% up to 80% = C+; 74% up to 77% = C; 70% up to 74% = C-; 65% up to 70% = D+; 60% up to 65% = D; 55% up to 60% = D-; below 55% = E.

OTHER POLICIES: Academic dishonesty in any form will not be tolerated and is subject to university policy (University of Florida Rules - 6C1-4 Student Affairs), which includes provisions for expulsion. Students requesting classroom accommodation must first register with the Dean of Students Office (DSO), which provides documentation to the Instructor when student has requested accommodation. Students experiencing personal problems that are interfering with their academic performance are encouraged to contact the University Counseling Center (301 Peabody Hall, 392-1575), Student Mental Health (Student Health Care Center, 392-1171), or Sexual Assault Recovery Services (Student Health Care Center, 392-1161).

COURSE ADMINISTRATION: Syllabi, assignments, datasets, resources, and readings will be distributed through the CANVAS platform in e-learning: <http://lss.at.ufl.edu/>.

### Special Note for Course Delivery

We will have face-to-face instructional sessions to accomplish the student learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.

You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.

This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations. Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class. Follow the instructor's guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.

If you are experiencing COVID-19 symptoms, please use the UF Health screening system and follow the instructions on whether you are able to attend class. Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. Find more information in the university attendance policies.

This course relies heavily on real-time (synchronous) discussion during scheduled class meeting times. The Zoom meetings, which will be open to both online and in-person registrants, will not be recorded unless the instructor indicates otherwise prior to the beginning of class. In the event that meetings are recorded, please note the following: Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

## COURSE SCHEDULE:

This course utilizes a “flipped classroom” approach, in which foundational learning is undertaken outside of scheduled class times and the bulk of assigned work is done in class. In a typical week, Tuesdays will be devoted to individual and group quizzes, while Thursdays involve group work on problems and issues in skeletal biology. Lectures will be infrequent, generally brief and are supplemental to the assigned readings. In the reading list below, BB# refers to textbook chapters and AA# refers to an application article which you can access and download on Canvas.

Week/Date	Topic	Reading
1	(1/12) Course structure and group assignments (1/14) ISSUE: Inferring fitness from the skeleton	AA1
2	(1/19) Bone structure (1/21) ISSUE: Aging the skeleton	BB1 AA2, AA3
3	(1/26) Bone cells (1/28) ISSUE: Sexing the elbow	BB2, BB3 AA4, AA5
4	(2/2) Cellular signaling and regulation (2/4) ISSUE: The osteological paradox	BB4 AA6
5	(2/9) Modeling and Remodeling (2/11) ISSUE: Secondary bone function	BB5 AA7, AA8
6	(2/16) Tissue Mechanics (2/18) ISSUE: Mineral variation	BB7 AA9
7	(2/23) Skeletal Genetics (2/25) RECHARGE DAY: No Class	BB9
8	(3/2) Growth and Development (3/4) ISSUE: Modularity versus integration	BB10 A12, A13
9	(3/9) Skeletal Adaptation (3/11) ISSUE: Ancestry	BB11 A10, A11
10	(3/16) Fracture Healing (3/18) ISSUE: Bone strength	BB12 A14, A15
11	(3/23) Nutrition (3/25) ISSUE: Drink your milk	BB14 AA17
12	(3/30) Hormonal effects (4/1) ISSUE: Osteoporosis	BB15 AA18, AA19
13	(4/6) Muscle:bone interaction	BB16

	(4/8)	ISSUE: Exercise	AA20, AA21
14	(4/13)	Disease States	BB 17, BB23
	(4/15)	ISSUE: Fracture Risk	AA22, AA16
15	(4/20)	ISSUE: Interpreting Fossils	AA23