

**SYLLABUS**  
**Human Clinical Embryology (ANAT 6130)**  
**2023 Fall Semester**  
**Tuesdays and Thursdays 12:45pm – 2pm**  
**Ross Hall, Room 117**

**COURSE DESCRIPTION:**

ANAT 6130 is a graduate course for certificate level designed to describe the mechanisms and clinical relevance of human embryology. The first half of the course will focus on developmental mechanisms and early development. The second half of the course will focus on the development of organ systems in the human body. The syllabus is supplemented with additional educational material and assignment, which is appropriate for students enrolled in the graduate certificate in Anatomical and Translational Sciences. Online teaching and animations will provide a thorough understanding of the clinical correlations of human embryological development. The students will work on clinical correlates as well as applied exercises using blackboard and discussion board on obstetrically relevant topics leading to a final written project on a clinical correlate.

**LEARNING OBJECTIVES:**

As a result of completing this course, students will be able to:

1. Describe early human development after fertilization
2. Explain the developmental control mechanisms
3. Reflect the development of selected organ systems in the human body
4. Illustrate how clinical correlations affect embryonic and fetal development

**CREDIT HOURS: 3**

**PREREQUISITES:** An introductory course in biology or its equivalent. Enrollment in the Graduate Certificate in Anatomical and Translational Sciences or permission of the Director of the Graduate Certificate.

**LECTURE CONTACT TIME/HOURS:** two 1-hour 15-minute lectures per week.

**METHOD OF ASSESSMENT:** There will be three examinations during this course. Each will consist of 50 multiple-choice questions. Each question will be worth one point. Your final grade will be determined by the sum of the results of the three equally weighted (20% each) examinations, 30% from the written and presentation assignments on a clinically relevant project focused on one of the thematic lectures on human embryology, and 10% from participating in the discussion board.

**GRADE SCALE FOR GRADUATE STUDENTS:**

A (4.0) = 90 – 100

B (3.0) = 88.0 – 86.9

C (2.0) = 75 – 77.9

A- (3.7) = 89.0 – 89.9

B- (2.7) = 79.0 – 79.9

C- (1.7) = 72 – 74.9

B+ (3.3) = 87.0 – 88.9

C+ (2.3) = 78 – 78.9

F (0) = &lt;71.9

**Grades of D+, D, and D-, are not used for graduate students at GW.**Average independent study time per week:

Students will need to spend about 5-7.5 hours/week during this course in addition to regularly scheduled classes.

**FACULTY****1) Victor Taylor II, Ph.D., Course Director**

Assistant Professor of Anatomy and Cell Biology

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Phone: 202-994-4767; email: [andrew.ferriby@gwu.edu](mailto:andrew.ferriby@gwu.edu)**Office Hours:** Dr. Taylor: 202-994-1006 email: [vwaylorii@gwu.edu](mailto:vwaylorii@gwu.edu) by appointment

OTHER FACULTY WILL HAVE OFFICE HOURS DURING THE WEEK(S) THEY LECTURE

**E-mail Communication:** Your most efficient way to have questions answered or to communicate with the faculty is via e-mail. If our office hours are inconvenient, or if you have a quick question from the lectures, please communicate via e-mail.

**REQUIRED TEXTBOOK:**

Thomas W. Sadler *Langman's Medical Embryology* 13<sup>th</sup> ed, LWW. This textbook provides also online access as well as embryological animations and focuses on problem-solving and clinical correlations of embryological development.

**READING LIST:** Appropriate Reference Articles (TBD)

**CLASS POLICIES**

Attendance policy: mandatory

Late work: accepted with permission, a penalty may be incurred if unduly late as determined by the instructor

University Policy on Religious Holidays:

1. Students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance.
2. Faculty should extend to these students the courtesy of absence without penalty on such occasions, including permission to make up examinations.
3. Faculty who intend to observe a religious holiday should arrange at the beginning of the semester to reschedule missed classes or to make other provisions for their course-related activities

[NOTE: for university policies on teaching, see

<http://www.gwu.edu/~academic/Teaching/main.htm> ]

**ACADEMIC INTEGRITY**

I personally support the GW Code of Academic Integrity. It states: "Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information." For the remainder of the code, see: <http://www.gwu.edu/~ntegrity/code.html>

**SUPPORT FOR STUDENTS OUTSIDE THE CLASSROOM**

*DISABILITY SUPPORT SERVICES (DSS)*

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to <http://gwired.gwu.edu/dss/>

*UNIVERSITY COUNSELING CENTER (UCC) 202-994-5300*

The University Counseling Center (UCC) offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include:

- crisis and emergency mental health consultations
  - confidential assessment, counseling services (individual and small group), and referrals
- <http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices>

## SECURITY

In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuating, seek shelter at a predetermined rendezvous location.

## The Lectures:

### Part I Early Development and Developmental Mechanisms

1. Thursday, August 24, Organizational Meeting and Introduction, Drs. Johnson and Taylor
2. Tuesday, August 29, Gametogenesis I, Dr. Johnson
3. Thursday, August 31, Gametogenesis II, Dr. Johnson
4. Tuesday, September 5, Fertilization and Cleavage, Dr. Johnson
5. Thursday, September 7, Early Development and Implantation, Dr. Johnson
6. Tuesday, September 12, Gastrulation and Primary Germ Layers, Dr. Johnson
7. Thursday, September 14, Development of the Serous Body Cavity, Dr. Taylor
8. Tuesday, September 19, Neurulation and Neural Induction, Dr. Taylor
9. Thursday, September 21, Review Session
10. Tuesday, September 26, [Exam I](#)
11. Thursday, September 28, Development of the Brain and Axial Skeleton, Dr. Taylor
12. Tuesday, October 3, Cellular and Genetic Mechanisms of Organ Formation I, Dr. Zheng
13. Thursday, October 5, Cellular and Genetic Mechanisms of Organ Formation II, Dr. Zheng,
13. Tuesday, October 10, Congenital Birth Defects, Dr. Johnson
14. Thursday, October 12, Fall Break, NO CLASS
15. Tuesday, October 17, Placenta Formation, Dr. Taylor

### Part II Development of Organ Systems

16. Thursday, October 19, Development of the Cardiovascular System, Dr. Taylor
17. Tuesday, October 24, Development of Pharyngeal Apparatus, Dr. Taylor
18. Thursday, October 26, Review Session, Dr. Taylor
19. Tuesday, October 31, [Exam II](#)
20. Thursday, November 2, Development of the Face
21. Tuesday, November 7, Development of Eye, Dr. Stepp
22. Thursday, November 9, Development of GI System, Dr. Johnson
23. Tuesday, November 14, Development of Endocrine Organs, Dr. Johnson
24. Thursday, November 16, Development of Blood and Immune System, Dr. Hawley
25. Tuesday, November 21, Thanksgiving
26. Thursday, November 23, Thanksgiving
27. Tuesday, November 28, Development of the Urinary System, Dr. Taylor
28. Thursday, December 30, Development of the Reproductive System, Dr. Johnson

29. Tuesday, December 5, Mechanisms of Sex Determination, Johnson  
30. Thursday, December 7, Review Session  
Exam III date TBD (December 13 – 19)

### **Course Requirements, Deadlines, and Grading Values:**

#### **1. Participation on discussion board**

**Ongoing: 5%**

Students are expected to participate in the online discussion board. Students will reflect on what was taught in each lecture and discuss a particular clinical problem related to the lecture. Students will give a brief explanation of a clinical problem, the week the problem occurs, and what molecular mechanism is affected in the developmental process. Questions for the exam can be submitted and will be addressed during the exam review.

#### **2. Peer Evaluations of the Presentations      due one week after the presentation posted: 5%**

Students will submit evaluations on their peers' presentations. Evaluations will be based on the interesting part of the presentation and suggestions on how the presenter can improve their presentation in the future. Submit your evaluations to Dr. Taylor. Dr. Taylor will collect the evaluations and deliver them to the presenters.

#### **3. Class Learning Facilitation and Learning Event Design Presentation      on day of assigned presentation: 15%**

Groups of class members (3 members; one group with 2 members) will give a 15-minute recorded presentation regarding one of the major themes or topics of clinically relevant material. This is a PowerPoint presentation with a bibliography regarding this learning event you are responsible for.

The discussion should include the main points of the related articles and application to practice in medical/health science and care delivery settings. The discussion should be facilitated in a manner consistent with good adult learning practices and small group work. Incorporation of 2 additional resources outside of the assigned readings is required. **The recorded presentation and a copy of the PowerPoint must be submitted on the selected date.** Class members will provide constructive feedback at the end of each facilitated session.

Examples of modules topics:

Molar pregnancy

Assisted Reproductive Technology: benefits and complications

Placenta; bleeding during pregnancy

Reproductive System Development: Male or female?

Face & heart Development: Di George's syndrome

#### **4. Learning Facilitation Topic Paper      due a week after the in-class presentation: 15%**

Prepare an **800 – 2000 words** paper of your presented topic of choice or any clinical topic related to embryo development. Relevant learning concepts covered in the course materials and discussed in class should be cited and referenced; not summarized. Submit your paper on Blackboard.

**5. Multiple choice Exams****60% (each 20%)**

Three Exams as per schedule

**Paper and Presentation Formats:**

Papers and presentations should be prepared in accordance with the main principles of AMA formatting. Papers should be double space, 1-inch margins, and 12-point font Times New Roman.