

Instructor Information:

Dr. Anna E. Ross, M.D., Ph.D.
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Office Hours: MTR 2:00 pm – 5:00 pm; WF 6:00 am – 9:00 am; other times by appointment

Course Description: Biology 211 is a study of human embryology with emphasis on the fundamental developmental processes shared by vertebrate embryos. Topics include gametogenesis, fertilization, and development of the embryo from zygote through the differentiation of the neural tube. The second half of the course is devoted to the development of selected human organ systems including the nervous system, sense organs, and the cardiovascular, digestive, respiratory, and urogenital systems.

*BIOL 211 is recommended for biology majors and other students interested in human anatomy. BIOL 211 is especially recommended for students planning post-graduate work in the health professions (e.g., pre-medical students) as well as for students interested in zoology and veterinary medicine. Embryology is designed to be taken first semester of the sophomore year.

- *This course is a Group I biology elective and must be taken in conjunction with 211L.*
- *I highly recommend that you take this course with BIOL 213 (Medical Terminology) if you have not done so already.*

The course has been structured to afford you every opportunity to master the required material and to demonstrate your success in that endeavor. Students who enroll in this course are seeking rigorous pre-professional preparation. Nevertheless, you need not feel intimidated by the demanding career path you have selected. I am here to help you overcome any difficulties you may have with the course material and to help you do your best work.

Prerequisites: BIOL 111 and 112 (Principles of Biology I and II and labs; Biol 112 with grade of “C” or better) and CHEM 113/L. Students who have not achieved grades of “C” or better in the prerequisite courses are advised to repeat the necessary courses before attempting further course work in biology. Completion of BIOL 211 and lab with grades of “C” or better is a recommended prerequisite for BIOL 212/L (Comparative Anatomy) offered spring semester.

Prerequisites by Topic: The prerequisite year of college biology with laboratory should include an introduction to the evolution, cell biology, anatomy, physiology, genetics, and development of vertebrates. The prerequisite courses should also include the use of compound and dissecting microscopes, identification of animal tissues and organs from microscope slides and photo-micrographs, interpreting detailed diagrams of vertebrate anatomy, and dissection of a representative vertebrate.

Required Materials: The following materials are required for this course unless noted otherwise. Additional resources can be found on the Biology shared directory, Canvas, and my personal webpage.

- **Lecture Textbook:** Moore, K. L. and T. V. Persaud and Mark G. Torchia. 2013. *The Developing Human. Clinically Oriented Embryology*. 9th ed. Saunders. ISBN: 978-1437720020
- **Supplemental Textbook:** Barresi, M. J. F., Gilbert, S. F. 2019. *Developmental Biology*, 12th ed. Oxford University Press. ISBN: 9781605358222
- **Supplemental Textbook:** Sadler, T. W. 2018. *Langman's Medical Embryology*, 14th ed. Wolters Kluwer Health. ISBN: 9781496383921

- **Supplemental Textbook:** Carlson, Bruce M. 2008. *Human Embryology and Developmental Biology*, 4th ed. Elsevier Health Sciences. ISBN: 9780323082792
- **Required Supplement:** Slavney, William F. 2021. *Biology 211 Lecture and Laboratory Course Supplement*. Christian Brothers University.
- **Laboratory Manual:** Schoenwolf, G. C. 2009. *Laboratory Studies of Vertebrate and Invertebrate Embryos*. 9 th ed. Prentice Hall. ISBN 978-0321556943

Professionalism: It is good to form a habit of behaving in a professional manner. Behavior that is prohibited includes: the use of inappropriate language; playing with cell phones, tablets, or laptops in class; falling asleep; being disrespectful to the professor or fellow classmates; not addressing a teacher (or any faculty) by his/her appropriate title; and putting legs/feet on the tables or desks. If a student engages in any of this behavior, he/she may be removed from the class and given an F at the discretion of the instructor.

Shared Responsibility: I will in every instance treat students like rational, capable, and responsible adults they are. I take responsibility for making this class interesting, engaging, and informative. Students will be expected to take responsibility for their performance, active engagement, and satisfaction for of this course's rules and requirements. If you feel like you are in "trouble" in this course at any time – whether that regards matters related to assignments, exams, or comprehension of the material – please come speak to me sooner rather than later. We are not antagonists in this venture. I want every student to do well.

Personal Responsibility: I do expect a certain level of responsibility, maturity, and integrity from you. I have I very high expectations, and I am sure you can meet them. You've made it this far, which means you have what it takes to get through this class. No excuses, and no giving up. Discuss any issues you may have with me as soon as they arise, and we will come up with a plan to tackle them. Understand, that while I want to see everyone do well and have no ill will towards anyone, it is **NOT** my responsibility to keep your GPA up, or to help you keep that scholarship, or whatever reason it is important that you do well here. These are your responsibilities. My responsibility is to facilitate you learning the material in this syllabus. I shall keep that responsibility. Please keep yours. Help me help you, and don't be shy or afraid to seek help when you need it. You can do well here; it will just take some directed effort and persistence.

Work Ethic: You are not to slack off! You are to read ahead! Very Important! Review each section before coming to class. It's better if you have your mind working on the concepts before coming to class—it will be easier for you to keep up and ask intelligent questions. Start working hard from day 1, don't put yourself in a position where you'll have to catch up. Prevention is better than cure. If you've taken this class before, you should be working harder than everyone else.

**** Class meetings will be used to highlight/supplement/complement the material in the texts; however, *you should NEVER expect me to "read" the text or assigned articles for you. Regularly preparing for class and regularly attending class are two of the easier things you can do to be successful, but they are also two of the most important things you can do as well.***

Classroom Learning Experience: Do not expect a homogeneous learning experience. This will not be the case and it is not good for you anyway. The text, my lectures, homework, and tests all have their place in helping you learn. Don't expect them to all be the same or cover the same material in the same way with the same level of difficulty. This is an unrealistic and unhelpful expectation. Throughout the course, I will be giving you the info you need to be prepared.

Electronic Devices: The use of any electronic device in my class is strictly prohibited. All electronic devices (pagers, phones, computers, calculators, MP3, iPods, apple watches, or any device after 1980) are to be stowed away prior to entering my class. If you walk into my classroom and you have a digital device on your person or sitting out on the table, you will be docked a letter grade. **Pay attention!**

Food & Drinks: Eating in class is NOT allowed, however a drink is permitted, as long as you remove your garbage afterwards. I understand if you need your coffee. If you leave your garbage behind, you will lose a letter grade for each time this occurs.

Attendance Policy: Students are expected to be **on time** and **attend all classes**. The first three absences are “free” (but not recommended—they should be reserved for righteous influenzas, deceased relatives, and other legitimate personal emergencies), the fourth absence and each additional absence automatically knocks the final semester grade in the course down by an entire letter grade. On the seventh absence, the student will automatically fail the course. Tardiness is also a problem! You get one human factor tardy, meaning there is no penalty. Each additional tardy after the first, however, lowers your final course grade by five points. (e.g. *If you had a 93 and you have two tardies, your final grade would be an 88.*) Also, leaving before I dismiss the class will be counted as an absence.

Absences have a way of snowballing. Trust me, I know the cycle: you don’t finish an assignment, so you don’t come to class, and then you’re afraid to come back to class, but then you miss more assignments, so you miss more class. Just come to class, whether you have your work or not. I’ve seen near-geniuses fail due to absences. That said, don’t B.S. me. You’re an adult. Stuff happens. Don’t waste your time or mine with elaborate excuses and doctors’ notes.

Grades: The work that you do and the learning that you accomplish in this class are more important than your grade. I am aware that grades are important to you. However, if you come speak to me about your performance in this course, expect that our conversation will be about how to improve your work or your understanding of the material, not about how to improve your grade.

At the end of the semester, there will be a handful of people that need “just a few points” to get the grade they desire. The extra credit assignments given will be designated as THE mechanism to get these points. **I WILL NOT NEGOTIATE GRADES AT THE END OF THE SEMESTER.** It is my expectation that you will accept the grade assigned to you and take responsibility for **YOUR** work throughout the semester. Grade negotiation always leads to someone receiving special treatment and is a policy that I cannot abide as I desire to maintain an atmosphere of academic honesty and integrity. If you are concerned about your grade, please come and talk to me **DURING** the semester when something can be done about it.

Please note that your grade will be calculated as indicated below. You are all perfectly capable of determining your point total (and therefore your grade) at any given time. Thus, you should not ask me to help you calculate your grade. If you do, I will refer you to this document.

Grading Policy: Letter grade assignments conform to the Christian Brothers University standard scale.

$100.0\% - 90.0\% = A$ / $89.9\% - 80.0\% = B$ / $79.9\% - 70.0\% = C$ / $69.9\% - 60.0\% = D$ / $below 60.0\% = F$
Grading in this course will be based on the total points earned over the total possible points. Grades will be based off of the effort you put into this course. **With that being said, I do not and will not round your final grade.** If you have an 97.9999% you will have a 97.0 (A) average for the course.

Exams: In this course, there will be five lecture exams and a cumulative final exam, each worth 250 points. In a sense, all exams in this course will be cumulative; The questions on the second and third exams will emphasize the most recently covered material since the previous exam; however, any material from the previous exam(s) also will be fair game. No exam scores will be curved or dropped. A study

guide for each exam will be given in class and posted on my website about a week prior to the date of the exam. If you miss an exam, for any reason, it is a zero on that exam. No exceptions!

Quizzes: Quizzes will be given pretty frequently in this course and may be announced or unannounced. In this class, a quiz could cover *any material* up to the point where we currently are. Most quizzes will tend to cover information covered from the lectures, laboratory, supplements, assignments, and course textbook. In this course, you will have ten quizzes that are each worth 20 points. If there should be more than ten quizzes given, I will drop the additional ones. A missed quiz, just like a missed exam, is an automatic zero for that quiz. No exceptions!

Homework: Homework assignments will be given at random times throughout the duration of the semester. Each homework assignment will be worth 10 points and be graded based on accuracy. All homework must be turned in on the due date using the proper format and on time. NO late (or incorrectly formatted, I will discuss formatting in class) homework will be accepted under any circumstances. If the assignment is not turned in AT THE BEGINNING of the class period, before I start teaching in other words, in which homework is collected, a zero will be awarded for that assignment. Homework assignments can be found on the course website and Canvas.

Course Deadlines: LATE WORK WILL NOT BE ACCEPTED! Only in a case involving unusual and documented circumstances can the student be given an extension on a deadline. I will employ the strictest possible definitions of “unusual” and “documented,” so be forewarned that it is exceedingly difficult (read: almost impossible) to warrant an extension. Being sick, although documentable, is not unusual and not merit an extension. Being abducted by aliens, although unusual, is not documentable and also will not merit an extension. In other words, consider deadlines in this course as “hard” deadlines.

Classroom Communication: Should there be a need that I have to contact the entire class, I will contact you via your college CBU email and post it to my website, so be sure to check your college email address and my website regularly. Please read the emails.

Office Hours: Don't be scared of coming to office hours! I genuinely enjoy talking to my students outside of class. If you're struggling or confused by some aspect of the class, don't wait until you're failing—come see me! However, don't feel like you need to have a major crisis. You're perfectly welcome to stop by for a casual chat or general guidance/questions. If you're not taking advantage of your professors' office hours, you're not fully taking advantage of the college experience. Individual access to experts in a variety of fields is a big part of what you're paying for.

Academic Honesty: Dishonesty of any kind will not be tolerated in this course. Dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. All policies for academic honesty will be strictly enforced in all that you do for this course.

Grades are given as an evaluation of your work. Any attempt to pass somebody else's work as your own or being found in violation of academic honesty will earn you a grade of a F for the course as well as a possible academic dismissal from the institution.

Confidentiality of Academic Work: The Family Educational Rights and Privacy Act of 1974 recognizes specific rights held by you as a student. These include your right to consent or denial of disclosure of your academic records, including any and all grades pertaining to this course. In accord with FERPA, apart from the following stated exceptions, I will not discuss your personal academic work in

this course with anyone without your written consent, as filed with the Registrar. The exceptions are: 1) reporting your grades at the end of the semester to the Registrar, 2) cases where performance in the course is low to the point of potential failure in the final grade, in which case I may consult with the Academic Dean, 3) cases where, in my estimation, you may present a danger to yourself or to others.

Students, of course, are free to discuss the specifics of their personal academic performance with whomever they wish. However, the instructor will not be held responsible for any disclosures made by the student on the student's own volition, or for any consequences of such self-disclosures.

Students with Disabilities: Any student who may need class or test accommodations based on the impact of a disability is encouraged to speak with CBU's Dean of Students privately to discuss your specific needs. Students with disabilities should also contact Student Disability Services in the Thomas Center at (901) 321-3536. Student Disability Services coordinates reasonable accommodations for students with documented disabilities. If you have a disability or difference that requires assistance from the Office of Disability Services, please bring me documentation so that we can ensure that the proper arrangements will be made for you.

Finally, Good Luck and May God Bless You!

Note: I reserve the right to make any changes to this syllabus and its accompanying directives as circumstances internal or external to our learning experience may unfold in unanticipated ways throughout the semester.

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### TRACK YOUR SCORES – For your convenience.

|                                              |                                                    |                    |                           |
|----------------------------------------------|----------------------------------------------------|--------------------|---------------------------|
| Lecture Exam 1: ____ / 250                   | Quiz 1: ____ / 25                                  | Quiz 6: ____ / 25  | HW Avg ____ %             |
| Lecture Exam 2: ____ / 250                   | Quiz 2: ____ / 25                                  | Quiz 7: ____ / 25  | (HW % x 2.5) = ____ / 250 |
| Lecture Exam 3: ____ / 250                   | Quiz 3: ____ / 25                                  | Quiz 8: ____ / 25  | Quiz Total ____ / 250     |
| Lecture Exam 4: ____ / 250                   | Quiz 4: ____ / 25                                  | Quiz 9: ____ / 25  | Exams ____ / 1500         |
| Lecture Exam 5: ____ / 250                   | Quiz 5: ____ / 25                                  | Quiz 10: ____ / 25 | <b>Final Grade ↓</b>      |
| Lecture Final Exam ____ / 250                | <small>*Drop and replace lowest quiz score</small> |                    | ____ / 2500 pts           |
| *Do not round your grade because I will not. |                                                    | > > >              | = ____ %                  |

***\*\* A tentative schedule for this course can be found on the next page.***

• • • *Tentative Schedule for Fall 2021* • • •

*BIOL 211 ~ Vertebrate Embryology*

| <u><b>Week No.</b></u> | <u><b>Day</b></u> | <u><b>Lecture Topic</b></u>               | <u><b>Text Ch.</b></u> |
|------------------------|-------------------|-------------------------------------------|------------------------|
| #1                     | M                 | Embryology: Terms                         | Chap 1                 |
|                        | W                 | Embryology: Terms                         | Chap 1                 |
|                        | F                 | Embryology: History & Concepts            | Chap 1                 |
| <hr/>                  |                   |                                           |                        |
| #2                     | M                 | Embryology: Terms & Concepts              | Chap 1-2               |
|                        | W                 | Spermatogenesis                           | Chap 2                 |
|                        | F                 | Oogenesis <b>[Q1]</b>                     | Chap 2                 |
| <hr/>                  |                   |                                           |                        |
| #3                     | M                 | <b>(Holiday ~ No Classes)</b>             |                        |
|                        | W                 | Meiosis and Nondisjunction                | Chap 2, 20             |
|                        | F                 | Reproductive Cycles <b>[Q2]</b>           | Chap 2                 |
| <hr/>                  |                   |                                           |                        |
| #4                     | M                 | <b>LECTURE EXAM 1</b> (Chps. 1-2, and 20) |                        |
|                        | W                 | Fertilization & Cleavage                  | Chap 2                 |
|                        | F                 | Blastulation & Gastrulation               | Chap 3                 |
| <hr/>                  |                   |                                           |                        |
| #5                     | M                 | Gastrulation                              | Chap 3-4               |
|                        | W                 | Gastrulation & Germ Layers                | Chap 3-4               |
|                        | F                 | Germ Layer Formation                      | Chap 3-7               |
| <hr/>                  |                   |                                           |                        |
| #6                     | M                 | Implantations <b>[Q3]</b>                 | Chap 3-7               |
|                        | W                 | Fetal Layers & Placenta                   | Chap 7                 |
|                        | F                 | Review of Chs. 3, 4, 5 and 7 <b>[Q4]</b>  |                        |
| <hr/>                  |                   |                                           |                        |
| #7                     | M                 | Nervous System                            | Chap 17                |
|                        | W                 | <b>LECTURE EXAM 2</b> (Chps. 2-7, and 17) |                        |
|                        | F                 | Nervous System                            | Chap 17                |
| <hr/>                  |                   |                                           |                        |
| #8                     | M                 | Nervous System                            | Chap 17                |
|                        | W                 | Nervous System                            | Chap 17                |
|                        | F                 | Nervous System                            | Chap 17                |
| <hr/>                  |                   |                                           |                        |
| #9                     | Mon-Fri           | <b>(Fall Break ~ No Classes)</b>          |                        |
| <hr/>                  |                   |                                           |                        |
| #10                    | M                 | Nervous System                            | Chap 17                |
|                        | W                 | Nervous System <b>[Q5]</b>                | Chap 17                |
|                        | F                 | Nervous System                            | Chap 17                |
| <hr/>                  |                   |                                           |                        |
| #11                    | M                 | N.S. & Sense Organs: Eye <b>[Q6]</b>      | Chap 17-18             |
|                        | W                 | Sense Organs: Eye                         | Chap 18                |
|                        | F                 | <b>LECTURE EXAM 3</b> (Chap 17-18)        |                        |
| <hr/>                  |                   |                                           |                        |
| #12                    | M                 | Sense Organs: Ear                         | Chap 18                |
|                        | W                 | Integumentary System                      | Chap 19                |

|       |   |                                              |         |
|-------|---|----------------------------------------------|---------|
|       | F | Cardiovascular System                        | Chap 13 |
| <hr/> |   |                                              |         |
| #13   | M | Cardiovascular System                        | Chap 13 |
|       | W | Cardiovascular System <b>[Q7]</b>            | Chap 13 |
|       | F | Cardiovascular System                        | Chap 13 |
| <hr/> |   |                                              |         |
| #14   | M | Digestive System                             | Chap 11 |
|       | W | <b>LECTURE EXAM 4</b> (Chps. 18, 19, and 13) |         |
|       | F | <b>(Holiday ~ No Classes)</b>                |         |
| <hr/> |   |                                              |         |
| #15   | M | Digestive System                             | Chap 11 |
|       | W | Respiratory System <b>[Q8]</b>               | Chap 10 |
|       | F | Coelom and Mesenteries                       | Chap 8  |
| <hr/> |   |                                              |         |
| #16   | M | Pharyngeal Apparatus                         | Chap 9  |
|       | W | Urogenital System                            | Chap 12 |
|       | F | <b>LECTURE EXAM 5</b> (Chps. 8-12)           |         |
| <hr/> |   |                                              |         |

***STUDY FOR YOUR FINAL EXAMINATION!***

***\*\* Final Exam Date & Time: To Be Announced \*\*\****