BSC 526. DEVELOPMENTAL BIOLOGY

COURSE SYLLABUS: FALL 2019

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

Textbook(s) Required: Developmental Biology by Scott F. Gilbert 11th edition; Sinauer Associates, Inc., ISBN: 978-0-87893-978-7
Software Required: Please see technology requirements.
Optional Texts and/or Materials: N/A

Course Description

This course is designed to explore the fundamental concepts and mechanisms that regulate animal development from fertilization of the egg to formation of the adult organism, including such topics as cycle of life, differential gene expression, cell-cell communication, fertilization, early development, formation of germ layers (ectoderm, mesoderm, endoderm) and their derivatives, inductive cell/tissue interactions, stem cells, organogenesis, environment/genetics/birth defects, evolutionary changes.
Students registered for this course are expected to have strong knowledge in biology, cell biology and chemistry.

The syllabus/schedule are subject to change.

Student Learning Outcomes (Should be measurable; observable; use action verbs)

Upon completion of this course the students will be able to:
1. Describe the general cycle of life in animals beginning with an unfertilized egg through maturation to adulthood.
2. Explain the sequence of events and the mechanisms directing various stages of animal development including gametogenesis, fertilization, cleavage, gastrulation, organogenesis, larval stages and maturity.
3. Explain the role of differential gene expression in embryonic development.
4. Describe how cell-cell communication and tissue induction processes direct the differentiation of cells, tissues, organs during embryogenesis.
5. Describe the general similarities and differences between invertebrate and vertebrate development.
6. Describe the similarities and differences among the classes of vertebrates with respect to embryonic patterns of cleavage, gastrulation and organogenesis.

COURSE REQUIREMENTS

Minimal Technical Skills Needed

Standard skills necessary to use web browsers to access course materials is required. Students should also be able to submit their work as necessary. Students should be able to use Microsoft Word and PowerPoint.

Instructional Methods

This is a fully online course. All course materials other than the text book will be posted in D2L. I will post announcements on the home page of the course or send email notifications.

Student Responsibilities or Tips for Success in the Course

Dedicated time to learn course materials

Have the required technology (a computer, a secure and reliable internet connection, and other requirements detailed in this syllabus – please read "Technology Requirements" section.

Take exams and quiz within the specified time

Submitting assignments before deadlines

If special accommodations need to be made notifying the instructor in advance

Checking both D2L and emails for course related announcements

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GRADING

Final grades in this course will be based on the following scale:

A = 90%-100%
B = 80%-89%
C = 70%-79%
D = 60%-69%
F = 59% or Below

Assessments

There will be three types of assessments that will contribute to the grade. These are:
1. Quizzes
2. Exams
3. Assignments

Distribution:
Quiz   = 32% (4 quiz)
Exams   = 30% (3 exams; 10%/exam)
Assignment   = 8% (two; 4% for each)
Final Exam* = 30%

*Final exam is a comprehensive exam that will cover all the chapters.

Exams and quizzes consist of multiple choice questions. Questions are drawn from the same test pool. Therefore some questions may be repeated. Students are expected to make sure they have the necessary device and a reliable connection. Use of smart phones and/or Wi-Fi of a restaurant or store are discouraged.

Important information
1. There will not be any additional points or extra credits. A student's grade will come only from the points he/she earns in these three types of assessments.
2. Exams and Quizzes:
   (a) You will have one minute to answer each question. If, for example an exam has 20 questions you will need to complete and submit in 20 minutes. No additional time will be provided.
   (b) Please read the instructions, if any, carefully before beginning the exam/quiz.
   (c) Students cannot take the exams or quizzes before the designated time starts. Trying this will result in losing your time without viewing the questions.
   (d) Exams and quizzes will be usually held on Fridays and Saturdays. Students can take the exam/quiz online during this 48 hour time window.

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(e) No requests to open the exams or quizzes earlier will be accepted.

(f) All requests for make-up exams/quizzes <u>must accompany supporting documents</u> (e.g. a doctor's note). The reasons for not taking an exam/zero within the designated should be acceptable, as outlined in your student handbook. Forgetting to take the exam/quiz will not be an acceptable reason.

(g) Failure to take the exams or quizzes within the designated time will result in ZERO credit.

3. All assignments should be submitted before the deadlines. Late submissions will automatically receive ZERO points. Assignments will be checked for plagiarism.

4. It is the students' responsibility to check emails and D2L for exam/quiz dates and assignment postings & deadlines.

TECHNOLOGY REQUIREMENTS

Browser support

D2L is committed to performing key application testing when new browser versions are released. New and updated functionality is also tested against the latest version of supported browsers. However, due to the frequency of some browser releases, D2L cannot guarantee that each browser version will perform as expected. If you encounter any issues with any of the browser versions listed in the tables below, contact D2L Support, who will determine the best course of action for resolution. Reported issues are prioritized by supported browsers and then maintenance browsers.

Supported browsers are the latest or most recent browser versions that are tested against new versions of D2L products. Customers can report problems and receive support for issues. For an optimal experience, D2L recommends using supported browsers with D2L products.

Maintenance browsers are older browser versions that are not tested extensively against new versions of D2L products. Customers can still report problems and receive support for critical issues; however, D2L does not guarantee all issues will be addressed. A maintenance browser becomes officially unsupported after one year.

Note the following:

- Ensure that your browser has JavaScript and Cookies enabled.
- For desktop systems, you must have Adobe Flash Player 10.1 or greater.
- The Brightspace Support features are now optimized for production environments when using the Google Chrome browser, Apple Safari browser, Microsoft Edge browser, Microsoft Internet Explorer browser, and Mozilla Firefox browsers.

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Desktop Support

Browser	Supported Browser Version(s)	Maintenance Browser Version(s)
Microsoft® Edge	Latest	N/A
Microsoft® Internet Explorer®	N/A	11
Mozilla® Firefox®	Latest, ESR	N/A
Google® Chrome™	Latest	N/A
Apple® Safari®	Latest	N/A

Tablet and Mobile Support

Device	Operating System	Browser	Supported Browser Version(s)
Android™	Android 4.4+	Chrome	Latest
Apple	iOS®	Safari, Chrome	The current major version of iOS (the latest minor or **point** release of that major version) and the previous major version of iOS (the latest minor or **point** release of that major version). For example, as of June 7, 2017, D2Lsupports iOS 10.3.2 and iOS 9.3.5, but not iOS 10.2.1, 9.0.2, or any other version. Chrome: Latest version for the iOS browser.
Windows	Windows 10	Edge, Chrome, Firefox	Latest of all browsers, and Firefox ESR.

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- You will need regular access to a computer with a broadband Internet connection. The minimum computer requirements are:
  - 512 MB of RAM, 1 GB or more preferred
  - Broadband connection required courses are heavily video intensive
  - Video display capable of high-color 16-bit display 1024 x 768 or higher resolution

- **For YouSeeU Sync Meeting sessions _8 Mbps_ is required.** Additional system requirements found here: https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements

- You must have a:
  - Sound card, which is usually integrated into your desktop or laptop computer
  - Speakers or headphones.
  - *For courses utilizing video-conferencing tools and/or an online proctoring solution, a webcam and microphone are required.

- Both versions of Java (32 bit and 64 bit) must be installed and up to date on your machine. At a minimum Java 7, update 51, is required to support the learning management system. The most current version of Java can be downloaded at: JAVA web site   http://www.java.com/en/download/manual.jsp

- Current anti-virus software must be installed and kept up to date.

Running the browser check will ensure your internet browser is supported.
 Pop-ups are allowed.
 JavaScript is enabled.
 Cookies are enabled.

- You will need some additional free software (plug-ins) for enhanced web browsing. Ensure that you download the free versions of the following software:
  - Adobe Reader   https://get.adobe.com/reader/
  - Adobe Flash Player _(version 17 or later)_ https://get.adobe.com/flashplayer/
  - Adobe Shockwave Player   https://get.adobe.com/shockwave/
  - Apple Quick Time   http://www.apple.com/quicktime/download/

- At a minimum, you must have Microsoft Office 2013, 2010, 2007 or Open Office. Microsoft Office is the standard office productivity software utilized by faculty, students, and staff. Microsoft Word is the standard word processing software, Microsoft Excel is the standard spreadsheet software, and Microsoft PowerPoint is the standard presentation software. Copying and pasting, along with attaching/uploading documents for assignment submission, will also be required. If you do not have Microsoft Office, you can check with the bookstore to see if they have any student copies.

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ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT
Brightspace Support
Need Help?
Student Support

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778 or click on the **Live Chat** or click on the words "click here" to submit an issue via email.

System Maintenance

D2L runs monthly updates during the last week of the month, usually on Wednesday. The system should remain up during this time unless otherwise specified in an announcement. You may experience minimal impacts to performance and/or look and feel of the environment.

Interaction with Instructor Statement

Students are encouraged to interact with the instructor during active classroom learning sessions. Response time for Response time to any questions sent by email regarding the course will be within 72 hours. Weekends and holidays are excluded. Students need to use the office hours indicated in this syllabus.

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COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

Students are expected to attend ALL scheduled lectures and take the exams/quizzes as scheduled. There will be a 6 point credit for attendance. Excused absences as defined in the Student Handbook of the university will be accepted. Students are expected to come to class in time. There are no extra credits and late submissions or missed exams/quiz will result in lower than expected grade.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the Student Guidebook.
http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: Netiquette
http://www.albion.com/netiquette/corerules.html

TAMUC Attendance

For more information about the attendance policy please visit the Attendance webpage and Procedure 13.99.99.R0.01.
http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf

Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

Undergraduate Academic Dishonesty 13.99.99.R0.03

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http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf

Graduate Student Academic Dishonesty 13.99.99.R0.10

http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf

ADA Statement

Students with Disabilities

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Texas A&M University-Commerce
Gee Library- Room 162
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: studentdisabilityservices@tamuc.edu

Website: Office of Student Disability Resources and Services

http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

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For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url:
http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

COURSE OUTLINE / CALENDAR

Week 1   (1) Developmental Anatomy and Genetics; (2) Cell-Cell
            Communication
Week 2   Continuation of (1)
Week 3   (3) Fertilization
Week 4   (4) Early Development in Sea Urchins and Snails
Week 5   Continuation of (4)
Week 6   (5) Development of Drosophila
Week 7   Continuation of (5)
Week 8   (6) Amphibian and Fish Development
Week 9   (7) Development of Birds
Week 10   (8) Mammalian Development
Week 11   (9) Ectoderm and Organogenesis
Week 12   (10) Mesoderm and Organogenesis
Week 13   (11) Development of Limbs
Week 14   (12) Sex Determination
Week 15   (13) Postembryonic Development; (14) Evolutionary Aspects

Cumulative Final: <u>Last week of the semester</u>
***Please check the academic calendar for details on holidays, start and end dates of the current semester. Semester begins on August 27, 2018.**
***ALL DATES AND CHAPTERS COVERED ARE TENTATIVE AND SUBJECT TO CHANGE.**

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