Texas A&M University Commerce

COURSE SYLLABUS

BSC 526.01W Developmental Biology

Fall 2014 Online

Instructor: Larry F. Lemanski, Ph.D.
Distinguished Research Professor
Head, Department of Biological and Environmental Sciences

Class Location: Online via Pearson LearningStudio (eCollege).

Class Meeting Time: Regularly log into our online course.

Office: Virtual Office - Online via email and discussion areas;
Monday through Friday

Virtual Office Hours: M-F 10:00-11:00 AM Central (USA) Time Zone or by appointment

Office Phone: 903-886-5909

Department Fax: 903-886-5997

E-Mail: Larry.Lemanski@tamuc.edu

Use for personal questions related to you as an individual student.

For general questions use the discussion areas in our Pearson LearningStudio course web site. This way other students, who might have the same question, may see my response.

Please use the email tool in LearningStudio or my university email.

Email is the best way to communicate with me. After the semester ends use my university email address.

Typically, I respond to student email messages as soon as I can during week days.

Messages received over the weekend will receive a response by 6:00 p.m. on Monday (Central USA Time).

If the message requires a very detailed explanatory response, then my response time might be slightly delayed.

Other Online Communication tools (email and discussion posts) within our course web site.

Discussion areas

Virtual Office – Use for general course related questions.
Content Question/Answer areas – Use for content specific questions
Question as an individual student—use university e-mail

Course Information

Textbook required

Gilbert, Scott F. 2014. Developmental Biology, Tenth Edition. Sinauer Associates, Inc. Publishers. Sunderland, MA, USA. ISBN 978-0-87893-978-7

Course Description

This course is designed to explore the fundamental concepts and mechanisms that regulate the wonder of 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 and more.

Prerequisites

Prerequisites for this course include: An undergraduate degree in biology or a related discipline or permission from the instructor.

Student Learning Outcomes (SLO)

Upon completion of this course, the students will be able to:

1. Describe the general cycle of life in animals beginning with a unfertilized egg through maturation to adulthood.
2. Explain the sequence of events and 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 and 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

The lectures and videos will be related to materials covered in the Gilbert Developmental Biology Text. Chapters or parts of chapters from the textbook will be assigned as well as research publications on selected topics. The reading will be helpful in understanding and supplementing the materials covered in the recorded lecture materials.

Lectures:

PowerPoint video slides will be used for most of the on line lectures. The lectures will not totally replace the information you will need to learn and study from reading in your textbook or other assigned papers/materials, but will certainly illustrate and emphasize the overall important concepts for the course.

Reading Assignments:

Specific reading assignments will be given for the textbook (Gilbert) and selected other papers from the literature. Due to the very detailed and comprehensive nature of this excellent textbook, materials covered in lecture will not always cover all aspects of a given chapter, but rather portions of chapters that have the most important information you need to know pertinent to the learning objectives for the course. It should be noted that the order of topics discussed in lecture for the most part will follow the order of the material presented in the text.

Examinations/Quizzes/Essay

1. Unit Examination: There will be three unit examinations during the 5th, 10th and 15th week of the course (see dates and times below). Each unit examination will count 100 points with a total of 300 points for the three unit examinations given during the semester.

2. A comprehensive final examination will be administered during the regular examination week (see date and time below) which will count 100 points.

3. Essay: A 2-3 page typed (double-spaced) essay will count 100 points. This essay should involve writing a paper on some developmental biology/embryology concept, doing an in depth literature search on a developmental process, writing a detailed description of a specialized embryonical/developmental biology technique and its use in research (e.g., microsurgery, stem cell research, induction experiments, limb pattern formation, etc.), writing on the use of a developmental biology concept to analyze a clinical or research problem (e.g., how developmental biology concepts may be used to explain certain

cancers or to determine whether a developmental anamoly is most likely inherited or environmental in origin, etc.). Basically, you may select any topic related to developmental biology that you have an interest in. This paper is due (must be submitted on line) (December 2, 2014). If you have questions, please consult with the Course Director, Dr. Lemanski, to receive advice.

4. Bonus quizzes: Periodically, announced bonus quizzes will be administered which may be useful in preparing you for the unit/final exams as well as providing an opportunity for each of you to bolster your grade. There will be 5 such bonus quizzes, each worth 10 points for a total of 50 points. The bonus quizzes will be announced sometime during the week prior to the quiz.

Grading

Grading System

Unit 1 Exam	100 points (20%)	September 22-23, 2014
Unit II Exam	100 points (20%)	October 27-28, 2014
Unit III Exam	100 points (20%)	December 3-4, 2014
Comprehensive Final Exam	100 points (20%)	December 9-10, 2014
Term Paper/Essay	100 points (20%)	Due December 2, 2014
	500 points (100%)	

Bonus Quizzes (50 points) up to 50 points added to your final points score

Grading

A	450-500 points
B	400-449 points
C	350-399 points
D	300-349 points
F	0-299 points

Technology Requirements

- You will need regular access to a computer with a broadband Internet connection. The minimum computer requirements for the Epic Web Client are:
    - Any current Flash-compliant browser (e.g., Internet Explorer 8,9,10 or Firefox)
    - 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
- A sound card and speakers or headphones
- Current anti-virus software must be installed and kept up to date
- Some classes may have specific class requirements for additional software. These requirements will be listed on the course offerings page. Most home computers purchased within the last 3-4 years meet or surpass these requirements.
- You will need some additional free software for enhanced web browsing. Ensure that you download the free versions of the following software:
    - Adobe Reader
    - Adobe Flash Player
- At a minimum, you must have Microsoft Office 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.

Access and Navigation

Pearson LearningStudio Access and Log in information
This course will be facilitated using Pearson LearningStudio, the Learning Management System used by Texas A&M University-Commerce. To get started with the course, go to: http://www.tamuc.edu/myleo.aspx.

You will need your CWID and password to log into the course. If you do not know your CWID or have forgotten your password, contact Technology Services at 903.468.6000 or helpdesk@tamuc.edu

It is strongly recommended that you perform a “Browser Test” prior to the start of your course.

To launch a browser test, login to Pearson LearningStudio, click on the ‘myCourses’ tab, and then select the “Browser Test” link under Support Services.

Pearson LearningStudio Frequently Asked Questions (FAQ)
The TAMUC Center for IT Excellence provides a Student Knowledge Base for Pearson LearningStudio. The web url is as follows:
http://www.tamuc.edu/CampusLife/CampusServices/CITESupportCenter/selfHelp/Student/default.aspx

Pearson LearningStudio Student Technical Support
Texas A&M University-Commerce provides students technical support in the use of Pearson LearningStudio.

The student help desk may be reached by the following means 24 hours a day, seven days a week.

- **Chat Support:** Click on *'Live Support'* on the tool bar within your course to chat with an Pearson LearningStudio Representative.
- **Phone:** 1-866-656-5511 (Toll Free) to speak with Pearson LearningStudio Technical Support Representative.
- **Email:** helpdesk@online.tamuc.org to initiate a support request with Pearson LearningStudio Technical Support Representative.

Help: Click on the *'Tech Support'* icon in the upper left corner the toolbar for information regarding working with Pearson LearningStudio (i.e. how to submit to dropbox, and how to post to discussions, etc.)

Policy for Reporting Problems with Pearson Learning Studio
Should students encounter Pearson LearningStudio based problems while submitting assignments/discussions/comments/exams, the following procedures MUST be followed.

1. Students must report the problem to the help desk. You may reach the helpdesk at helpdesk@online.tamuc.org or 1-866-656-5511.

2. Students **MUST** file their problem with the helpdesk and obtain a helpdesk ticket number.

3. Once a helpdesk ticket number is in your possession, students should Email me to advise me of the problem and to provide me with the helpdesk ticket number.

4. At that time, I will call the helpdesk to confirm your problem and follow up with you.

PLEASE NOTE: Your personal computer/access problems are not a legitimate excuse for filing a ticket with the help desk. You are strongly encouraged to check for compatibility of your browser **BEFORE** the course begins and to take the Pearson LearningStudio tutorial offered for students who may require some extra assistance in navigating the eCollege platform. **ONLY** Pearson LearningStudio based problems are legitimate.

Internet Access

An Internet connection is necessary to participate in discussions and assignments, access readings, transfer course work, and receive feedback from your professor. View the requirements as outlined in Technology Requirements above for more information.

myLeo Support

Your myLeo email address is required to send and receive all student correspondence. Please email helpdesk@tamuc.edu or call us at 903-468-6000 with any questions about setting up your myLeo email account. You may also access information at https://leo.tamuc.edu.

For assistance with the library: To access the Library databases and tutorials click on the Library link under Course Home or minimize your Pearson LearningStudio session and open another browser window going to the Library's web site directly, at the following link: http://www.tamuc.edu/library not from within Pearson LearningStudio.

Learner Support

Go to the following link **One Stop Shop**- created to serve you by attempting to provide as many resources as possible in one location.

Go to the following link **Academic Success Center**- focused on providing academic resources to help you achieve academic success.

Academic Integrity

A Texas A&M University-Commerce student does not lie, cheat, steal, and does not tolerate those who do. A violation of the Texas A&M honor code and academic integrity involves any of the following offenses: cheating, fabrication, falsification, multiple submissions, plagiarism, and complicity in any of these offenses. The first instance of cheating will result in a “ZERO” on the examination and/or on the assignment. The second instance of cheating will result in a “ZERO” for the course. Cheating involves copying information from another student, non-allowable materials or source and plagiarism. Once again, violations of academic integrity will not be tolerated. This class will be conducted in strict observance of the Honor Code. Refer to your Student Handbook for details.

Conduct Policy

As per the Texas A&M Universities Student's Guide Handbook, Policies and Procedures, Conduct, all students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment.

Netiquette: Communication Courtesy Code

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. The same rules apply online as they do in person. Be respectful of other students. Foul discourse will not be tolerated. Please take a moment and read the following link concerning "netiquette". http://www.albion.com/netiquette/

ADA Statement

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 132
Phone: 903-886-5150 or 903-886-5835
Fax: 903-468-8148
StudentDisabilityServices@tamuc.edu

Plagiarism:

Plagiarism is a criminal activity. You must cite all sources of information. Unreferenced copying of material, whether parts of sentences, whole sentences, paragraphs, or entire articles can result in a score of zero for your assignment and may result in further disciplinary action.

Topics Covered and Textbook Reading Assignments By Week

(Approximate and Subject to change)

Week	Topic	Textbook Reading Assignment
Aug 25-59	Comprehensive Development	Chapter 1 (1-30)
	Generating New Cells and Organs	
	Differential Gene Expression in Dev.	Chapter 2 (31-43)
Sept 1-5	Cell-Cell Communication in Dev.	Chapter 3 (69-88; 99-105)
Sept 8-12	Specification—Cell Diff. & Commitment	Part Two (107-115)
	Fertilization	Chapter 4 (116-151)
Sept 15-19	Early development—Snails & Nematodes	Chapter 5 (153-178)
Sept 22--23	**Exam I** (Covers Chapters 1-5 and related materials)	
Sept 22-26	Genetics of Axis Specific. in Drosophila	Chapter 6 (179-215)
Sept 29-Oct 3	Sea Urchins and Tunicates	Chapter 7 (217-240)
	Deuterostome Invertebrates	
Oct 6-10	Early Dev. in Vertebrates: Amphibians & Fish	Chapter 8 (241-283)
	Birds and Mammals	Chapter 9 (285-318)
Oct 13-17	The Stem Cell Concept	Part three (319-331)
	Introducing Organogenesis	
	Emergence of the Ectoderm	Chapter 10 (333-374)
	Central Nervous System and Epidermis	
Oct 20-24	Neural Crest Cells and Axonal Specificity	Chapter 11 (375-388)
Oct 27-28	**Exam II** (covers Chapters 6-11 and related materials)	
Oct 27-31	Paraxial and Intermediate Mesoderm	Chapter 12 (415-448)
Nov 3-7	Lateral Plate Mesoderm and the Endoderm	Chapter 13 (449-488)
	Development of the Tetrapod Limb	Chapter 14 (489-518)
Nov 10-14	Sex Determination	Chapter 15 (519-547)
	Postembryonic development	Chapter 16 (550-590)

Topics Covered and Textbook Reading Assignments By Week

(Approximate and Subject to change)

Nov 17-21	Gametogenesis—The Saga of the Germ Line	Chapter 17 (591-625)
	Systems Biology—Expanding Developmental Biology to Medicine, Ecology and Evolution	Part Four (627-634)
	Birth Defects, Endocrine Disruptors & Cancer	Chapter 18 (635-662)
Nov 24-26	Ecological Developmental Biology—Biotic, Abiotic and Sympiatic Regulation of Development	Chapter 19 (663-688)
Nov 27-28	**THANKSGIVING BREAK**	
Dec 1-3	Dev. Mechanisms of Evolutionary Change	Chapter 20 (689-719)
Dec 2	Term Paper/Essay Due	
Dec 3-4	**Exam III** (covers materials in Chapters 12-20)	
Dec 9-10	FINAL EXAMINATION	